# HORTICULTURAL REPORT

## 2014 WEED CONTROL RESEARCH ON FRUIT & VEGETABLE CROPS

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**WEED CONTROL IN HORTICULTURAL CROPS – 2014**
**FOREWORD**

This report summarizes the results of weed control experiments on horticultural crops in Michigan in 2014. It is intended to inform industry and university research and extension colleagues of our current results.

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### Chemical Application

Herbicides were applied with a small plot sprayer using carbon dioxide as a source of pressure. Spray volumes are specified in each experiment. All herbicide rates are expressed as pounds of active ingredient per acre.

### Visual Evaluations

In most instances, weed control ratings were made on individual weed species. General ratings for broad-leaved weeds and grasses were sometimes used in orchard studies or for late-season assessments.

Weed control and crop injury are rated on a 1 to 10 scale; 1 = no visible injury or reduction in growth; 10 = complete kill of plants. The ratings can be roughly translated into percentages as follows:

10 = 100% kill, all the plants are dead or none are visible.
9 = 90-100% kill or reduction in growth and stand.
8 = 80-90% kill or reduction in growth and stand.
7 = 70-80% kill or reduction in growth and stand.
This is still a commercially acceptable control.
6 = 60-70% kill or reduction in growth and stand.
5 = 50% kill or reduction in growth and stand.
4 = 30-40% kill or reduction in growth and stand.
3 = 20-30% reduction in growth and stand.
2 = 10-20% reduction in growth and stand.
1 = 0-10% reduction in growth, no obvious effect of herbicide.

### Experimental Design and Statistical Analysis

Experiments were set up and analyzed in the program Agriculture Research Manager (ARM) version 9.2014.2, from Gylling Data Management, Inc. (RR 4 405 Martin Boulevard, Brookings, SD 57006). Unless otherwise specified, the experiments were laid out as randomized complete blocks. The data were subjected to analysis of variance and the means were compared with the LSD test at the 5% level. Since data transformations were not used, the coefficient of variation for skewed ratings or weed densities may be misleading. In some instances, yields for weeded check plots may be low because of severe early weed competition. In these cases, it may be more desirable to compare new herbicides with standard treatments.

**WEED LIST**

Abbreviations for the common names of weeds correspond to those presented in the NCWSS proceedings volume 28 (1973), 143.

| Abbr. | Common Name | Botanical Name |
|---|---|---|
| **ALFA** | alfalfa | *Medicago sativa* L. |
| **ANBG** | annual bluegrass | *Poa annua* L. |
| **ANFB** | annual fleabane | *Erigeron annuus* (L.) *Pers.* |
| **ATRI** | Atriplex | *Atriplex patula L. (Gray)* |
| **BABR** | bald brome (upright brome) | *Bromus racemosus* L. |
| **BEGR** | Bermudagrass | *Cynodon dactylon* L. *Pers.* |
| **BFTF** | birdsfoot trefoil | *Lotus corniculatus* L. |
| **BHPL** | buckhorn plantain | *Plantago lanceolata* L. |
| **BLDO** | broadleaf dock | *Rumex obtusifolius* L. |
| **BLME** | black medic | *Medicago lupulina* L. |
| **BRFB** | British fleabane | *Inula britannica* L. |
| **BRPL** | broadleaf plantain | *Plantago major* L. |
| **BSPL** | blackseed plantain | *Plantago rugelii* Dcne. |
| **BYGR** | barnyardgrass | *Echinochloa crus-galli* (L.) Beauv. |
| **CABR** | California brome | *Bromus carinatus* L. |
| **CAGE** | Carolina geranium | *Geranium carolinianam L.* |
| **CATH** | Canada thistle | *Cirsium arvense* (L.) Scop. |
| **CAWE** | carpetweed | *Mollugo verticillata* L. |
| **CEPR** | common evening primrose | *Oenothera biennis* L. |
| **CLGC** | clammy groundcherry | *Physalis heterophylla* Nees. |
| **COBD** | common burdock | *Arctium minus (Hill) Bernh.* |
| **COBU** | cocklebur | *Xanthium strumarium* L. |
| **COCW** | common chickweed | *Stellaria media* (L.) Cyrillo |
| **COGR** | common groundsel | *Senecio vulgaris* L. |
| **COLQ** | common lambsquarters | *Chenopodium album* L. |
| **COMA** | common mallow | *Malva neglecta Wallr.* |
| **COMU** | common mullein | *Verbascum Thapsus* L. |
| **COMW** | common milkweed | *Asclepias syriaca* L. |
| **COPU** | common purslane | *Portulaca oleracea* L. |
| **COPW** | common pokeweed | *Phytolacca americana* L. |
| **CORW** | common ragweed | *Ambrosia artemisiifolia* L. |
| **CRWS** | creeping woodsorrel | *Oxalis corniculata* L. |
| **CUDO** | curly dock | *Rumex crispus* L. |
| **CWBS** | catchweed bedstraw | *Galium aparine* L. |
| **DAND** | dandelion | *Taraxacum officinale* Weber |
| **DOBG** | downy bromegrass | *Bromus tectorum* L. |
| **EBNS** | eastern black nightshade | *Solanum ptycanthum* Dun. |
| **FAPA** | fall panicum | *Panicum dichotomiflorum* Michx. |
| **FIBW** | field bindweed | *Convolvulus arvensis* L. |
| **FIPA** | field pansy | *Viola rafinesquii* Greene |
| **FIPC** | field pennycress | *Thlaspi arvense* L. |
| **FISB** | field sandbur | *Cenchrus incertus* M.A.Curtis |
| **FIVI** | field violet | *Viola arvensis* Murray |
| **GALI** | galinsoga | *Galinsoga quadriradiata* Ruiz & Pav. |
| **GIRW** | giant ragweed | *Ambrosia trifida* L. |

**WEED LIST**

| Abbr. | Common Name | Botanical Name |
|---|---|---|
| **GOGR** | goosegrass | *Eleusine indica* (L.) Gaertn. |
| **GORO** | goldenrod | *Solidago nemoralis* Ait. |
| **GIFT** | giant foxtail | *Setaria faberi* Hermm. |
| **GRFT** | green foxtail | *Setaria viridis* (L.) Beauv. |
| **GFPW** | greenflower pepperweed | *Lepidium densiflorum* Schmd. |
| **HABC** | hairy bittercress | *Cardamine hirsute* L. |
| **HANS** | hairy nightshade | *Solanum sarrachoides* Sendtner |
| **HAVE** | hairy vetch | *Vicia villosa* Roth |
| **HENB** | henbit | *Lamium amplexicaule* L. |
| **HEMU** | hedge mustard | *Sisymbrium officinale (L.) Scop.* |
| **HOAL** | hoary alyssum | *Berteroa incana* (L.) DC. |
| **HONE** | horsenettle | *Solanum carolinense* L. |
| **HOWE** | horseweed (marestail) | *Conyza canadensis* (L.) Scop. |
| **IRFB** | Irish fleabane | *Inula salicina* |
| **JABR** | Japanese brome | *Bromus japonicas* L. |
| **JIWE** | jimsonweed | *Datura stramonium* L. |
| **LACG** | large crabgrass | *Digitaria sanguinalis* (L.) Scop |
| **LATH** | ladysthumb | *Polygonum persicaria* L. |
| **MAYC** | marsh yellowcress | *Rorippa islandica* (Oeder) Barbs |
| **MECW** | mouseear chickweed | *Cerastium vulgatum* L. |
| **MECR** | mouseear cress | Arabidopsis thaliana(L.) Heynh |
| **MONO** | monolepis | *Monolepis nuttaliane* Greene |
| **MUTH** | musk thistle | *Carduus nutans* L. |
| **MWCH** | mayweed chamomile | *Anthemis cotula* L. |
| **NLLQ** | narrowleaf lambsquarters | *Chenopodium desiccatum* A. Nels |
| **OEDA** | oxeye daisy | *Chrysanthemum leucanthemum* L. |
| **ORGR** | orchardgrass | *Dactylis glomerata* L. |
| **PAWE** | pineappleweed | *Matricaria matricariodes* (Less)C.L.Porter |
| **PEST** | perennial sowthistle | *Sonchus arvensis L.* |
| **PESW** | Pennsylvania smartweed | *Polygonum pennsylvanicum* L. |
| **PERG** | perennial ryegrass | *Lolium perenne* L. |
| **POAM** | Powell amaranth | *Amaranthus powellii S. Wats* |
| **POIV** | poison ivy | *Rhus radicans* L. |
| **PRKW** | prostrate knotweed | *Polygonum aviculare* L. |
| **PRLE** | prickly lettuce | *Lactuca serriola* L. |
| **PRPW** | prostrate pigweed | *Amaranthus blitoides* S. Wats. |
| **PUDN** | purple deadnettle | *Lamium purpureum* L. |
| **PUSW** | purslane speedwell | *Veronica serpyllifolia* L. |
| **PUVI** | puncturevine | *Tribulus terrestris* L. |
| **QUGR** | quackgrass | *Agropyron repens* (L.) Beauv. |
| **RECL** | red clover | *Trifolium pratense* L. |
| **REFE** | red fescue | *Festuca rubra* L. |
| **RESO** | red sorrel | *Rumex acetosella* L. |
| **ROCI** | rough cinquefoil | *Potentilla norvegica L.* |
| **ROFB** | rough fleabane | *Erigeron asper* Nutt. |
| **RRPW** | redroot pigweed | *Amaranthus retroflexus* L. |
| **RSFI** | redstem filaree | *Erodium cicutarium* (L.) L'Hér. ex Ait. |
| **RUTH** | Russian thistle | *Salsola iberica* L. |
| **SFGE** | smallflower geranium | *Geranium pusillum* |
| **SHPU** | shepherdspurse | *Capsella bursa-pastoris* (L.) Medic. |

**WEED LIST**

| Abbr. | Common Name | Botanical Name |
|---|---|---|
| **SPKW** | spotted knapweed | *Centaurea biebersteinii* DC. |
| **SPSP** | spotted spurge | *Euphorbia maculata L.* |
| **STGR** | stinkgrass | *Eragrostis cilianensis* (All.) E. Mosher |
| **SWSW** | swamp smartweed | *Polygonum coccineum* Muhl. ex Willd. |
| **TAFE** | tall fescue | *Festuca arundinacea* Schreb. |
| **TLSW** | thymeleaf sandwort | *Arenaria serpyllifolia* L. |
| **TRCV** | trailing crownvetch | *Coronilla caria L.* |
| **TUPW** | tumble pigweed | *Amaranthus albus* L. |
| **VELE** | velvetleaf | *Abutilon theophrasti* Medic. |
| **VICR** | Virginia creeper | *Parthenocissus quinquefolia* (L.) Planch. |
| **VIPW** | Virginia pepperweed | *Lepidium virginicum* L. |
| **VOAS** | volunteer asparagus | *Asparagus officinalis* L. |
| **WESA** | western salsify | *Tragopogon dubius* Scop. |
| **WHCA** | white campion | *Silene latifolia Poir.* |
| **WHCL** | white clover | *Trifolium repens* L. |
| **WHHA** | white heath aster | *Symphyotrichum ericoides* L. |
| **WIBW** | wild buckwheat | *Polygonum convolvulus* L. |
| **WICA** | wild carrot | *Daucus carota* L. |
| **WICH** | wild chamomile | *Matricaria chamomilla* L. |
| **WIGR** | witchgrass | *Panicum capillare* L. |
| **WIMU** | wild mustard | *Sinapis arvensis* L. |
| **WIRA** | wild radish | *Raphanus raphanistrum* L. |
| **WLDGRP** | wild grape | *Vitis* sp. |
| **WLDRASP** | wild raspberry | *Rubus* sp. |
| **YEFC** | yellow fieldcress (kiek) | *Rorippa sylvestris* L. |
| **YEFT** | yellow foxtail | *Setaria glauca* (L.) Beauv. |
| **YEHW** | yellow hawkweed | *Hieracium caespitosum Dumort.* |
| **YENS** | yellow nutsedge | *Cyperus esculentus* L. |
| **YERO** | yellow rocket | *Barbarea vulgaris* R. Br. |

**CHEMICAL LIST**

| COMMON NAME | TRADE NAME | FORMULATION | MANUFACTURER |
|---|---|---|---|
| 2,4-D amine | Weedar 64 | 3.8 L | Nufarm Inc. |
| acetochlor | Breakfree | 6.4 EC | DuPont |
| acetochlor | Harness | 7.0 E | Monsanto |
| acetochlor | Surpass | 6.4 E | Dow Agrosciences |
| acetochlor | Warrant | 3 EC | Monsanto |
| acifluorfen | Ultra Blazer | 2 L | United Phosphorus |
| ammonium soap of fatty acid | Finalsan | 22.1% L | Neudorff |
| atrazine | Aatrex | 4 L | Syngenta |
| atrazine + proxasulfone + fluthiacet-methyl | Anthem ATZ | 4.5 SE | FMC |
| bensulide | Prefar | 4 EC | Gowan |
| bentazon | Basagran | 4 L | Arysta |
| bicyclopyrone | A16003E | 1.67 SL | Syngenta |
| bromoxynil | Buctril | 4 EC | Bayer CropScience |
| carfentrazone | Aim | 2.0 EC | FMC |
| chlorimuron-ethyl | Classic | 25 WDG | DuPont |
| clethodim | Intensity One | 0.97 EC | CPS |
| clethodim | Select Max | 0.97 EC | Valent |
| clomazone | Command | 3 ME | FMC |
| clopyralid | Spur | 3 EC | Albaugh |
| clopyralid | Stinger | 3 EC | Dow Agrosciences |
| cloransulam-methyl | Firstrate | 84 WDG | Dow Agrosciences |
| cycloate | Ro-Neet | 6 EC | Helm Agro |
| DCPA | Dacthal | 75 WP | AMVAC |
| dicamba | Clarity | 4 L | BASF |
| diclobenil | Casoron G | 4 G | Chemtura |
| diclobenil | Casoron L | 1.4 CS | Chemtura |
| diflufenzopyr 21.4% + dicamba 55% | Distinct | 76.4 WG | BASF |
| dimethenamid-p | Outlook | 6 EC | BASF |
| diquat | Reglone | 2 EC | Syngenta |
| diuron | Karmex | 80 DF | DuPont |
| EPTC | Eptam | 7 EC | Gowan |
| ethalfluralin | Curbit | 3 EC | CPS |
| ethalfluralin 1.6 lb ai + clomazone 0.5 lb ai | Strategy | 2.1 EC | CPS |
| ethofumesate | Nortron SC | 4 SC | Bayer CropScience |
| FeHEDTA | Fiesta | 4.43% L | Neudorff |
| flazasulfuron | Mission | 25 WG | ISK Bioscience |
| fluazifop-P | Fusilade DX | 2 EC | Syngenta |
| flucarbazone | Everest | 70 WDG | Arysta |
| flufenacet | Define | 60 DF | Bayer CropScience |
| flufenacet 54.4% + metribuzin 13.6% | Axiom | 68 DF | Bayer CropScience |
| flumetsulam | Python | 80 WDG | Dow Agrosciences |
| flumioxazin | Chateau SW | 51 WG | Valent |
| flumioxazin | Sureguard | 51 WDG | Valent |
| fluthiacet | Cadet | 0.91 EC | FMC |
| fluroxypyr | Starane Ultra | 2.8 L | Dow Agrosciences |

**CHEMICAL LIST**

| COMMON NAME | TRADE NAME | FORMULATION | MANUFACTURER |
|---|---|---|---|
| fomesafen | Reflex | 2 EC | Syngenta |
| fomesafen 10.2% + s-metolachlor 46.4% | Prefix | 5.29 L | Syngenta |
| foramsulfuron | Option | 35 WG | Bayer CropScience |
| glufosinate | Rely 280, Liberty 280 | 2.34 L | Bayer CropScience |
| glyphosate | Roundup Weather Max | 5.5 L | Monsanto |
| glyphosate | Touchdown Total | 4.17 L | Syngenta |
| glyphosate | Roundup Original | 4 L | Monsanto |
| glyphosate | Roundup Ultra | 4 L | Monsanto |
| glyphosate | Roundup Ultramax | 5 L | Monsanto |
| glyphosate | Roundup Powermax | 5.5 L | Monsanto |
| glyphosate | Durango | 5.4 L | Dow Agrosciences |
| halosulfuron | Permit | 75 WG | Gowan |
| halosulfuron | Sandea | 75 WG | Gowan |
| hexazinone | Velpar | 2 L | DuPont |
| hexazinone | Velpar ULV | 75 SG | DuPont |
| hexazinone + sulfometuron | Westar | 75 WDG | DuPont |
| imazamox | Raptor | 1 AS | BASF |
| imazapic | Plateau | 70 WG | BASF |
| imazethapyr | Pursuit | 2 EC | BASF |
| imazosulfuron | League | 75 WDG | Valent |
| indaziflam | Alion | 1.67 CS | Bayer CropScience |
| isoxaben | Gallery, Trellis | 75 DF | Dow Agrosciences |
| linuron | Lorox | 50 DF | DuPont |
| mesotrione | Callisto | 4 SC | Syngenta |
| metribuzin | Tricor | 75 DF | UPI |
| napropamide | Devrinol 50 DF-XT | 50 DF | United Phosphorus |
| norflurazon | Solicam | 80 DF | Syngenta |
| oryzalin | Surflan | 4 AS | United Phosphorus |
| oryzalin | KFD-163-01 | 3.2 SC | UPI |
| oxyfluorfen | Goal XL | 2 L | Dow Agrosciences |
| oxyfluorfen | Goaltender | 4 SC | Dow Agrosciences |
| paraquat | Firestorm | 3 L | Chemtura |
| paraquat | Gramoxone SL | 2 L | Syngenta |
| pelargonic acid | Scythe | 4.2 EC | Gowan |
| pendimethalin | Prowl | 3.3 EC | BASF |
| pendimethalin | Prowl H2O | 3.8 ACS | BASF |
| penoxsulam + oxyfluorfen | Pindar GT | 4.013 SC | Dow Agrosciences |
| phenmedipham | Spin-Aid | 1.3 L | Bayer CropScience |
| phenmedipham 0.6 lb ai+ desmedipham 0.6 lb ai | Betamix | 1.3 L | Bayer CropScience |
| prometryn | Caparol | 4 L | Syngenta |
| pronamide | Kerb | 3.3 SC | Dow Agrosciences |
| pyraflufen-ethyl | Venue | 0.17 SC | Nichino |
| pyrazon | Pyramin | 68 DF | Arysta |
| pyroxasulfone + fluthiacet-methyl | Anthem | 2.15 SE | FMC |
| pyroxasulfone | Zidua | 85 WDG | BASF |

**CHEMICAL LIST**

| COMMON NAME | TRADE NAME | FORMULATION | MANUFACTURER |
|---|---|---|---|
| quinclorac | Quinstar | 3.8 L | Albaugh |
| quizalofop p-ethyl | Assure II | 0.88 EC | DuPont |
| quizalofop p-ethyl | Targa | 0.88 EC | Gowan |
| rimsulfuron | Matrix | 25 DF | DuPont |
| rimsulfuron | Pruven | 25 DF | MANA |
| saflufenacil | Treevix | 70 WG | BASF |
| sethoxydim | Poast | 1.53 EC | BASF |
| simazine | Princep | 90 DF | Syngenta |
| s-metolachlor | Dual Magnum | 7.62 EC | Syngenta |
| s-metolachlor 2.68 lb ai+ mesotrione 0.268 lb ai+ atrazine 1.0 lb ai | Lumax | 3.948 L | Syngenta |
| sulfentrazone + metribuzin | Authority MTZ | 45 DF | FMC |
| s-metolachlor 3.34 lb ai+ mesotrione 0.33 lb ai | Camix | 3.67 L | Syngenta |
| s-metolachlor II | Dual II Magnum | 7.64 EC | Syngenta |
| sulfentrazone | Spartan | 4 F | FMC |
| sulfentrazone | Zeus | 4 F | FMC |
| sulfentrazone 3.15 lb ai+ carfentrazone 0.35 lb ai | Spartan Charge, Zeus Prime XC | 3.5 SE | FMC |
| sulfosulfuron | Maverick | 75 WG | Monsanto |
| tembotrione | Laudis | 3.5 SC | Bayer CropScience |
| terbacil | Sinbar | 80 WDG | TKI |
| topramezone | Impact | 2.8 L | Amvac |
| triclopyr | Garlon | 3 SC | Dow Agrosciences |
| trifloxysulfuron | Envoke | 75 WG | Syngenta |
| trifluralin | Treflan | 4 EC | Helena |
| triflusulfuron | Upbeet | 50 WDG | DuPont |

**ADJUVANTS**

| TRADE NAME | ABBREVIATION | DESCRIPTION | MANUFACTURER |
|---|---|---|---|
| Activator 90 | NIS | nonionic surfactant | Loveland |
| Agri-dex | COC | heavy range paraffinic oil | |
| ammonium nitrate | | 100% salt | |
| ammonium sulfate | AMS | spray grade fertilizer | |
| N-Pak | AMS | AMS liquid | Winfield Solutions |
| copper sulfate | | 100% salt | |
| Freeway | | organosilicone surfactant | Loveland |
| Herbimax | COC | 80% paraffin base petroleum oil 20% surfactant | Loveland |
| LI6193-11 | COC | | Loveland |
| MSO | | Methylated Seed Oil | Helena |
| 28% Nitrogen | UAN | 28% urea ammonia nitrate solution | |
| Silwet L-77 | | organosilicone surfactant | Loveland |
| Sylgard 309 | | organosilicone surfactant | DowCorning |

**ABBREVIATIONS USED IN THE REPORT**

| | |
|---|---|
| **A =** | Acre |
| **a.i. =** | Active Ingredient |
| **Amt =** | Amount |
| **ACS =** | Aqueous Capsule Suspension |
| **AMS =** | Ammonium Sulfate |
| **AS =** | Aqueous Solution |
| **ASPA =** | Asparagus |
| **CEC =** | Cation Exchange Capacity |
| **CRC =** | Clarksville Research Center |
| **CS =** | Capsule Suspension |
| **CV =** | Coefficient of Variability |
| **DF =** | Dry Flowable |
| **DS =** | Designator |
| **EC =** | Emulsifiable Concentrate |
| **EPRE =** | Early PRE |
| **EPOS =** | Early POST |
| **F =** | Flowable |
| **FALL =** | Fall Application |
| **FORM =** | Formulation |
| **FM =** | Formulation |
| **FT =** | Distance in FT |
| **g / gr =** | Gram |
| **GAL =** | Gallon |
| **GPA =** | Gallon per acre |
| **GROW STG =** | Growth Stage at time of Application |
| **HTRC =** | Horticulture Teaching and Research Center |
| **IN =** | Inch |
| **KG =** | Kilogram |
| **L =** | Liquid |
| **LPRE =** | Late PRE |
| **LPOS =** | Late POST |
| **LO =** | Low Odor |
| **LSD =** | Least Significant Difference |
| **LB =** | Pounds |
| **ME =** | Microencapsulated |
| **MKTBL =** | Marketable |
| **MPH =** | Mile(s) per hour |
| **MSU =** | Michigan State University |
| **N =** | No |
| **N/A =** | Not Applicable/ Not Available |
| **No. =** | Number |
| **OM =** | Organic Matter |
| **oz =** | Ounce |
| **P =** | Probability |
| **POH =** | Post Harvest |
| **PO1 =** | Postemergence 1 |
| **PO2 =** | Postemergence 2 |
| **POT =** | Post Transplant |
| **PPI =** | Preplant Incorporated |
| **PRE =** | Preemergence |
| **PREC. =** | Precipitation (inches) |
| **PRT =** | Pretransplant |
| **PSI =** | Pounds per square inch |
| **PT PR =** | Pint Product |
| **QT =** | Quart |
| **QT PR =** | Quart Product |
| **RCBD =** | Randomized Complete Block Design |
| **RH =** | Relative Humidity |
| **REPS =** | Replication |
| **SC =** | Suspension Concentrate |
| **SE =** | Suspoemulsion |
| **SNBE =** | Snapbean |
| **SP =** | Soluble Powder |
| **SPRING =** | Spring Application |
| **STBE =** | Strawberry |
| **SURF =** | Surface |
| **T =** | Temperature |
| **TNRC =** | Trevor Nichols Research Complex |
| **TRT =** | Treatment |
| **UNMKTBL =** | Unmarketable |
| **VOAS =** | Volunteer Asparagus |
| **WDG =** | Water Dispersible Granule |
| **WSG =** | Water Soluble Granule |
| **WP =** | Wettable Powder |
| **WT =** | Weight |
| **" =** | Inches |
| **Y =** | Yes |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Horticulture Teaching and Research Center**

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 55.6 | 35.1 | 0.02 | **1** | 50.3 | 40.0 | 0.10 | **1** | 85.9 | 54.3 | |
| **2** | 51.9 | 28.0 | | **2** | 51.2 | 43.1 | 0.07 | **2** | 83.9 | 67.0 | 0.43 |
| **3** | 41.8 | 31.8 | 0.04 | **3** | 57.7 | 44.1 | 0.10 | **3** | 72.6 | 55.1 | 0.03 |
| **4** | 45.8 | 33.1 | 0.12 | **4** | 55.3 | 38.1 | | **4** | 66.5 | 53.3 | 0.22 |
| **5** | 48.1 | 27.5 | | **5** | 55.9 | 35.0 | | **5** | 75.3 | 45.8 | |
| **6** | 55.3 | 22.3 | | **6** | 63.7 | 33.5 | | **6** | 79.5 | 47.1 | |
| **7** | 54.6 | 28.6 | 0.06 | **7** | 64.0 | 42.3 | 0.38 | **7** | 81.7 | 49.3 | |
| **8** | 60.2 | 36.9 | | **8** | 86.5 | 46.6 | | **8** | 76.5 | 59.0 | 0.14 |
| **9** | 57.2 | 32.2 | | **9** | 76.4 | 57.9 | 0.05 | **9** | 80.1 | 55.8 | |
| **10** | 66.8 | 42.3 | | **10** | 69.6 | 44.8 | | **10** | 75.0 | 55.9 | |
| **11** | 65.4 | 29.8 | | **11** | 82.5 | 39.2 | | **11** | 77.9 | 58.0 | 0.92 |
| **12** | 70.2 | 37.7 | | **12** | 71.6 | 56.8 | 0.45 | **12** | 75.7 | 62.9 | 0.01 |
| **13** | 72.8 | 47.6 | | **13** | 81.5 | 55.5 | 0.34 | **13** | 66.9 | 46.1 | |
| **14** | 64.8 | 27.3 | 0.03 | **14** | 58.3 | 44.3 | 0.32 | **14** | 75.3 | 41.8 | |
| **15** | 33.7 | 20.3 | 0.04 | **15** | 47.6 | 38.2 | 1.08 | **15** | 81.3 | 50.1 | |
| **16** | 44.6 | 16.4 | | **16** | 51.4 | 33.0 | | **16** | 85.5 | 63.1 | |
| **17** | 65.7 | 30.8 | | **17** | 55.2 | 37.6 | 0.01 | **17** | 87.1 | 62.9 | |
| **18** | 61.5 | 41.1 | 0.05 | **18** | 66.5 | 36.5 | | **18** | 78.3 | 63.3 | 1.51 |
| **19** | 60.3 | 29.8 | | **19** | 69.8 | 42.2 | 0.02 | **19** | 77.2 | 61.9 | |
| **20** | 73.4 | 32.4 | | **20** | 80.0 | 51.9 | 0.13 | **20** | 66.5 | 57.2 | 0.14 |
| **21** | 78.0 | 45.5 | 0.10 | **21** | 82.7 | 58.9 | 0.07 | **21** | 79.8 | 56.6 | |
| **22** | 57.2 | 37.1 | 0.05 | **22** | 70.4 | 54.9 | | **22** | 80.2 | 59.5 | |
| **23** | 54.5 | 31.1 | | **23** | 70.3 | 47.5 | | **23** | 77.5 | 59.1 | 0.34 |
| **24** | 56.7 | 37.7 | | **24** | 76.2 | 44.0 | | **24** | 75.6 | 65.9 | 0.84 |
| **25** | 58.1 | 41.1 | 0.13 | **25** | 82.2 | 46.6 | | **25** | 74.0 | 61.2 | |
| **26** | 54.3 | 36.5 | | **26** | 85.9 | 50.5 | | **26** | 78.3 | 54.7 | |
| **27** | 56.2 | 31.3 | | **27** | 82.4 | 65.2 | 0.13 | **27** | 82.5 | 58.2 | |
| **28** | 54.3 | 41.5 | | **28** | 70.3 | 55.5 | | **28** | 81.8 | 63.1 | 0.27 |
| **29** | 74.9 | 45.8 | 0.23 | **29** | 75.1 | 47.2 | | **29** | 84.3 | 69.9 | |
| **30** | 62.4 | 46.7 | | **30** | 82.3 | 48.9 | | **30** | 83.0 | 71.7 | |
| | | | | **31** | 83.7 | 53.5 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Horticulture Teaching and Research Center**

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 81.9 | 64.7 | 0.40 | **1** | 81.2 | 56.9 | 0.06 | **1** | 80.7 | 61.9 | 0.53 |
| **2** | 74.0 | 63.3 | | **2** | 81.8 | 51.8 | | **2** | 77.1 | 57.3 | |
| **3** | 72.6 | 49.3 | 0.25 | **3** | 83.9 | 54.9 | | **3** | 81.3 | 53.9 | |
| **4** | 74.4 | 49.3 | | **4** | 82.5 | 57.2 | 0.14 | **4** | 79.1 | 59.0 | |
| **5** | 77.4 | 48.2 | | **5** | 77.4 | 60.1 | 0.19 | **5** | 89.5 | 66.8 | 0.28 |
| **6** | 79.5 | 57.7 | | **6** | 78.0 | 56.1 | | **6** | 72.8 | 53.7 | |
| **7** | 81.9 | 63.4 | 0.57 | **7** | 81.1 | 51.1 | | **7** | 74.6 | 46.9 | |
| **8** | 74.4 | 62.0 | 0.77 | **8** | 78.7 | 54.7 | | **8** | 75.6 | 47.7 | |
| **9** | 73.0 | 56.4 | | **9** | 79.3 | 50.0 | | **9** | 77.7 | 54.2 | |
| **10** | 75.5 | 53.9 | | **10** | 83.9 | 52.9 | | **10** | 75.6 | 61.3 | 0.66 |
| **11** | 78.2 | 52.2 | | **11** | 79.0 | 60.9 | 0.26 | **11** | 61.8 | 48.4 | 0.01 |
| **12** | 82.7 | 58.9 | | **12** | 71.6 | 57.8 | 0.02 | **12** | 55.3 | 47.5 | 0.02 |
| **13** | 79.5 | 64.4 | 0.19 | **13** | 76.2 | 51.6 | | **13** | 57.6 | 39.8 | 0.32 |
| **14** | 76.4 | 59.1 | 0.01 | **14** | 70.1 | 48.3 | | **14** | 63.4 | 36.6 | |
| **15** | 67.4 | 55.2 | 0.03 | **15** | 74.6 | 41.2 | | **15** | 64.1 | 40.5 | 0.19 |
| **16** | 68.7 | 51.0 | | **16** | 80.6 | 47.1 | 0.30 | **16** | 65.4 | 41.2 | |
| **17** | 74.6 | 47.8 | | **17** | 75.5 | 64.4 | 0.20 | **17** | 67.3 | 35.9 | |
| **18** | 76.1 | 48.1 | | **18** | 78.4 | 57.3 | | **18** | 63.3 | 40.1 | |
| **19** | 77.5 | 54.9 | | **19** | 79.4 | 61.9 | 0.53 | **19** | 69.1 | 39.8 | |
| **20** | 79.4 | 56.8 | | **20** | 80.2 | 60.5 | | **20** | 78.9 | 53.3 | 0.05 |
| **21** | 84.4 | 58.5 | | **21** | 79.3 | 58.9 | 0.05 | **21** | 65.9 | 46.7 | 0.86 |
| **22** | 86.4 | 60.9 | | **22** | 81.0 | 68.5 | | **22** | 62.5 | 43.8 | |
| **23** | 79.2 | 60.2 | 0.02 | **23** | 81.4 | 64.4 | | **23** | 73.5 | 40.0 | |
| **24** | 74.8 | 51.9 | | **24** | 80.0 | 62.3 | | **24** | 74.4 | 44.6 | |
| **25** | 76.3 | 48.6 | | **25** | 87.4 | 63.8 | | **25** | 76.3 | 46.3 | |
| **26** | 79.2 | 55.8 | | **26** | 85.5 | 65.5 | 1.27 | **26** | 77.4 | 42.8 | |
| **27** | 82.8 | 58.4 | 0.10 | **27** | 76.1 | 59.7 | | **27** | 77.5 | 44.9 | |
| **28** | 67.5 | 47.3 | | **28** | 74.5 | 54.8 | | **28** | 77.2 | 48.0 | |
| **29** | 74.3 | 44.8 | 0.02 | **29** | 75.8 | 55.9 | | **29** | 77.8 | 45.9 | 0.10 |
| **30** | 74.2 | 49.6 | 0.05 | **30** | 82.4 | 66.8 | 0.36 | **30** | 56.4 | 48.6 | 0.34 |
| **31** | 79.0 | 46.6 | | **31** | 81.8 | 65.6 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Clarksville Research Center**

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 50.1 | 31.2 | 0.10 | **1** | 46.4 | 37.0 | 0.17 | **1** | 85.2 | 54.4 | |
| **2** | 51.9 | 24.4 | | **2** | 48.2 | 41.6 | 0.03 | **2** | 80.7 | 66.7 | 0.06 |
| **3** | 38.3 | 29.4 | 0.10 | **3** | 55.7 | 42.9 | 0.05 | **3** | 70.3 | 57.4 | 0.24 |
| **4** | 42.7 | 30.5 | 0.27 | **4** | 55.2 | 41.1 | | **4** | 67.1 | 54.2 | 0.18 |
| **5** | 45.6 | 27.5 | | **5** | 56.8 | 36.6 | | **5** | 76.3 | 44.9 | |
| **6** | 54.7 | 27.7 | | **6** | 61.1 | 36.8 | | **6** | 80.8 | 47.0 | |
| **7** | 53.4 | 30.4 | | **7** | 61.4 | 38.5 | 1.14 | **7** | 82.8 | 51.6 | |
| **8** | 58.5 | 34.8 | | **8** | 84.9 | 45.9 | | **8** | 77.5 | 58.0 | 0.25 |
| **9** | 56.4 | 29.2 | | **9** | 74.4 | 52.2 | 0.10 | **9** | 79.9 | 53.7 | |
| **10** | 64.5 | 39.6 | | **10** | 65.0 | 45.7 | | **10** | 76.5 | 54.7 | 0.06 |
| **11** | 64.8 | 33.1 | | **11** | 80.6 | 42.5 | | **11** | 77.8 | 54.8 | 0.56 |
| **12** | 68.9 | 38.8 | 0.12 | **12** | 70.5 | 56.1 | 0.88 | **12** | 75.5 | 58.1 | |
| **13** | 66.6 | 45.2 | 0.36 | **13** | 75.7 | 52.1 | 0.02 | **13** | 62.7 | 48.7 | |
| **14** | 62.7 | 23.6 | 0.04 | **14** | 56.4 | 43.5 | 0.26 | **14** | 76.5 | 42.3 | |
| **15** | 32.5 | 19.7 | 0.04 | **15** | 46.0 | 33.3 | 0.65 | **15** | 80.4 | 52.4 | |
| **16** | 45.3 | 18.4 | | **16** | 48.0 | 32.6 | | **16** | 83.7 | 65.5 | |
| **17** | 63.9 | 30.6 | | **17** | 55.5 | 32.3 | | **17** | 82.7 | 64.8 | |
| **18** | 59.3 | 37.7 | | **18** | 64.8 | 40.7 | | **18** | 72.8 | 62.9 | 2.35 |
| **19** | 59.9 | 28.4 | | **19** | 69.3 | 43.9 | 0.06 | **19** | 77.2 | 59.8 | |
| **20** | 72.8 | 36.3 | | **20** | 78.8 | 49.5 | 0.11 | **20** | 64.8 | 57.1 | 0.13 |
| **21** | 76.4 | 53.2 | 0.21 | **21** | 80.0 | 57.3 | 0.21 | **21** | 77.1 | 56.1 | |
| **22** | 54.3 | 35.5 | 0.01 | **22** | 67.1 | 50.3 | | **22** | 81.6 | 61.3 | 0.09 |
| **23** | 56.5 | 26.9 | | **23** | 69.4 | 50.9 | 0.01 | **23** | 75.9 | 59.0 | 0.51 |
| **24** | 55.2 | 38.5 | | **24** | 75.9 | 44.0 | | **24** | 77.1 | 65.6 | 0.75 |
| **25** | 59.2 | 36.7 | 0.35 | **25** | 80.2 | 48.4 | | **25** | 76.0 | 60.8 | |
| **26** | 57.9 | 36.7 | | **26** | 82.9 | 55.4 | | **26** | 78.7 | 56.1 | |
| **27** | 55.2 | 35.0 | | **27** | 81.2 | 65.0 | | **27** | 83.4 | 58.9 | |
| **28** | 55.2 | 38.0 | | **28** | 68.6 | 55.9 | | **28** | 83.4 | 63.8 | 0.16 |
| **29** | 70.8 | 41.9 | 0.36 | **29** | 77.3 | 46.0 | | **29** | 82.5 | 69.4 | 0.01 |
| **30** | 59.7 | 42.4 | 0.01 | **30** | 84.0 | 49.8 | | **30** | 83.5 | 65.8 | 0.43 |
| | | | | **31** | 85.8 | 54.2 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Clarksville Research Center**

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 78.1 | 63.1 | 0.16 | **1** | 80.6 | 56.7 | 0.26 | **1** | 78.5 | 63.4 | 0.51 |
| **2** | 69.1 | 57.3 | | **2** | 80.6 | 52.3 | | **2** | 77.4 | 58.9 | 0.02 |
| **3** | 71.3 | 48.1 | 0.47 | **3** | 83.6 | 53.3 | | **3** | 79.7 | 55.9 | |
| **4** | 76.6 | 48.7 | | **4** | 80.7 | 59.7 | 3.03 | **4** | 81.6 | 60.8 | 0.17 |
| **5** | 75.1 | 49.6 | | **5** | 78.1 | 61.8 | | **5** | 83.2 | 63.1 | 0.70 |
| **6** | 78.3 | 60.6 | 0.97 | **6** | 79.4 | 56.0 | | **6** | 70.8 | 53.7 | |
| **7** | 80.6 | 66.6 | 0.43 | **7** | 81.0 | 52.3 | | **7** | 75.3 | 49.1 | |
| **8** | 73.1 | 61.7 | 0.69 | **8** | 79.3 | 54.5 | | **8** | 75.9 | 52.0 | |
| **9** | 71.4 | 56.0 | | **9** | 78.3 | 51.7 | | **9** | 76.7 | 56.1 | |
| **10** | 76.2 | 50.5 | | **10** | 83.8 | 54.3 | | **10** | 73.6 | 54.0 | 0.60 |
| **11** | 78.5 | 51.0 | | **11** | 75.2 | 62.9 | 0.35 | **11** | 56.6 | 47.4 | |
| **12** | 79.1 | 58.5 | | **12** | 66.5 | 54.6 | 0.39 | **12** | 55.6 | 44.7 | 0.09 |
| **13** | 77.2 | 64.5 | 0.49 | **13** | 75.0 | 50.2 | | **13** | 57.5 | 44.1 | 0.22 |
| **14** | 74.4 | 57.8 | | **14** | 68.3 | 45.4 | | **14** | 60.9 | 40.3 | |
| **15** | 63.6 | 52.2 | 0.18 | **15** | 72.0 | 42.3 | | **15** | 62.3 | 43.1 | 0.07 |
| **16** | 68.2 | 49.7 | | **16** | 78.4 | 51.6 | | **16** | 63.0 | 41.7 | |
| **17** | 72.9 | 47.9 | | **17** | 75.5 | 61.2 | 0.01 | **17** | 64.3 | 39.1 | |
| **18** | 77.0 | 49.3 | | **18** | 78.5 | 55.2 | 0.01 | **18** | 65.8 | 40.8 | |
| **19** | 81.3 | 52.8 | | **19** | 76.2 | 62.4 | 0.88 | **19** | 69.0 | 42.3 | |
| **20** | 80.6 | 58.4 | | **20** | 78.2 | 60.9 | | **20** | 76.0 | 55.1 | 0.14 |
| **21** | 84.1 | 59.5 | | **21** | 78.1 | 60.0 | 0.11 | **21** | 64.1 | 44.6 | 0.43 |
| **22** | 84.6 | 61.3 | 0.05 | **22** | 80.6 | 66.0 | | **22** | 60.7 | 38.6 | |
| **23** | 74.3 | 56.1 | 0.01 | **23** | 80.4 | 62.5 | | **23** | 71.2 | 42.8 | |
| **24** | 76.2 | 50.8 | | **24** | 80.2 | 63.6 | | **24** | 74.0 | 45.4 | |
| **25** | 73.2 | 48.2 | | **25** | 82.9 | 64.1 | 0.21 | **25** | 77.6 | 45.9 | |
| **26** | 77.6 | 57.9 | | **26** | 79.4 | 60.9 | 0.48 | **26** | 75.7 | 46.2 | |
| **27** | 81.3 | 57.4 | 0.01 | **27** | 75.0 | 56.1 | | **27** | 78.9 | 47.9 | |
| **28** | 66.7 | 48.7 | 0.01 | **28** | 73.7 | 49.1 | | **28** | 78.5 | 49.5 | |
| **29** | 72.0 | 47.1 | | **29** | 74.6 | 58.2 | 0.16 | **29** | 76.6 | 47.9 | 0.05 |
| **30** | 73.3 | 49.8 | 0.11 | **30** | 79.8 | 67.6 | 0.81 | **30** | 57.9 | 45.8 | 0.01 |
| **31** | 76.2 | 49.7 | | **31** | 80.9 | 64.3 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Southwest Michigan Research and Extension Center**

Recorded at
MSU Southwest Michigan Research and Extension Center (Benton Harbor)
Benton Harbor, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 60.0 | 35.3 | | **1** | 49.2 | 40.6 | 0.12 | **1** | 88.8 | 61.6 | |
| **2** | 49.6 | 29.6 | | **2** | 52.1 | 43.9 | | **2** | 81.2 | 67.8 | 0.21 |
| **3** | 47.0 | 33.0 | 1.00 | **3** | 61.9 | 45.7 | 0.05 | **3** | 76.2 | 58.9 | |
| **4** | 46.3 | 33.3 | 0.28 | **4** | 50.9 | 38.5 | | **4** | 66.5 | 51.5 | 0.16 |
| **5** | 45.7 | 31.6 | | **5** | 61.2 | 38.1 | | **5** | 70.9 | 44.8 | |
| **6** | 55.1 | 31.8 | | **6** | 68.0 | 41.0 | | **6** | 78.0 | 45.2 | |
| **7** | 54.5 | 36.7 | | **7** | 73.2 | 51.0 | | **7** | 83.6 | 49.0 | |
| **8** | 49.2 | 34.4 | | **8** | 92.9 | | | **8** | 69.9 | 52.1 | 0.53 |
| **9** | 58.6 | 27.6 | | **9** | 77.5 | 52.1 | 0.21 | **9** | 79.1 | 51.0 | |
| **10** | 64.5 | 40.9 | | **10** | 70.9 | 42.7 | | **10** | 75.9 | 59.5 | 0.15 |
| **11** | 64.8 | 33.3 | | **11** | 82.5 | 52.4 | 0.04 | **11** | 77.3 | 56.4 | 1.19 |
| **12** | 75.9 | 49.4 | | **12** | 83.1 | 60.6 | | **12** | 78.3 | 55.4 | |
| **13** | 68.7 | 52.9 | 0.10 | **13** | 75.1 | 51.0 | 0.58 | **13** | 65.8 | 48.3 | |
| **14** | 67.2 | 26.3 | 0.02 | **14** | 53.8 | 43.4 | 0.37 | **14** | 78.1 | 45.6 | |
| **15** | 33.0 | 25.1 | 0.02 | **15** | 49.4 | 34.5 | 0.25 | **15** | 83.1 | 57.8 | |
| **16** | 48.6 | 24.1 | | **16** | 44.4 | 31.1 | 0.02 | **16** | 85.9 | 68.3 | |
| **17** | 63.3 | 35.7 | | **17** | 56.4 | 32.3 | | **17** | 84.3 | 71.5 | 0.03 |
| **18** | 54.4 | 32.3 | | **18** | 66.5 | 38.4 | | **18** | 80.4 | 60.7 | 0.57 |
| **19** | 63.9 | 30.2 | | **19** | 69.5 | 46.0 | | **19** | 79.4 | 63.1 | 0.01 |
| **20** | 74.6 | 40.7 | | **20** | 82.3 | 58.6 | | **20** | 79.1 | 64.4 | 0.01 |
| **21** | 79.1 | 55.2 | 0.43 | **21** | 81.5 | 57.6 | 0.06 | **21** | 82.6 | 60.3 | 0.31 |
| **22** | 58.0 | 37.6 | 0.02 | **22** | 64.7 | 45.0 | | **22** | 79.2 | 61.9 | |
| **23** | 49.0 | 31.8 | | **23** | 61.6 | 43.2 | | **23** | 82.4 | 66.8 | 1.83 |
| **24** | 59.5 | 41.0 | | **24** | 71.8 | 39.0 | | **24** | 79.1 | 67.2 | 0.42 |
| **25** | 62.7 | 41.6 | 0.27 | **25** | 79.2 | 47.3 | | **25** | 73.0 | 61.4 | |
| **26** | 51.8 | 36.7 | | **26** | 87.3 | 55.3 | 0.13 | **26** | 74.2 | 59.8 | |
| **27** | 61.0 | 39.7 | | **27** | 82.0 | 61.4 | 0.24 | **27** | 87.8 | 58.6 | |
| **28** | 58.4 | 45.6 | 0.03 | **28** | 74.3 | 51.9 | | **28** | 84.8 | 68.9 | |
| **29** | 71.4 | 47.5 | 0.27 | **29** | 81.1 | 56.4 | | **29** | 85.8 | 72.2 | |
| **30** | 59.0 | 41.2 | 0.02 | **30** | 83.4 | 58.1 | | **30** | 87.3 | 66.4 | 0.37 |
| | | | | **31** | 87.5 | 55.7 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**MSU Southwest Michigan Research and Extension Center**

Recorded at
MSU Southwest Michigan Research and Extension Center (Benton Harbor)
Benton Harbor, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 81.7 | 61.9 | 1.78 | **1** | 81.7 | 61.9 | 1.78 | **1** | 81.8 | 68.8 | 0.67 |
| **2** | 70.4 | 57.3 | 0.05 | **2** | 70.4 | 57.3 | 0.05 | **2** | 77.9 | 62.4 | |
| **3** | 69.2 | 52.4 | 0.20 | **3** | 69.2 | 52.4 | 0.20 | **3** | 83.6 | 59.4 | |
| **4** | 77.1 | 50.6 | | **4** | 77.1 | 50.6 | | **4** | 81.5 | 66.3 | 0.45 |
| **5** | 78.0 | 51.2 | | **5** | 78.0 | 51.2 | | **5** | 87.3 | 65.0 | 0.41 |
| **6** | 82.3 | 60.5 | | **6** | 82.3 | 60.5 | | **6** | 69.7 | 52.6 | 0.01 |
| **7** | 82.8 | 66.0 | 0.22 | **7** | 82.8 | 66.0 | 0.22 | **7** | 76.1 | 51.0 | |
| **8** | 78.0 | 64.8 | 0.54 | **8** | 78.0 | 64.8 | 0.54 | **8** | 77.6 | 55.6 | |
| **9** | 74.1 | 58.7 | | **9** | 74.1 | 58.7 | | **9** | 77.9 | 59.4 | |
| **10** | 74.5 | 53.3 | | **10** | 74.5 | 53.3 | | **10** | 79.5 | 57.5 | 0.97 |
| **11** | 81.6 | 53.5 | | **11** | 81.6 | 53.5 | | **11** | 58.3 | 51.1 | 0.04 |
| **12** | 78.0 | 65.9 | | **12** | 78.0 | 65.9 | | **12** | 59.8 | 44.6 | 0.06 |
| **13** | 81.6 | 65.5 | 0.43 | **13** | 81.6 | 65.5 | 0.43 | **13** | 58.2 | 44.9 | 0.28 |
| **14** | 75.1 | 59.2 | 0.19 | **14** | 75.1 | 59.2 | 0.19 | **14** | 63.0 | 40.9 | |
| **15** | 65.2 | 57.7 | 0.03 | **15** | 65.2 | 57.7 | 0.03 | **15** | 62.3 | 45.2 | 0.08 |
| **16** | 65.8 | 50.1 | 0.05 | **16** | 65.8 | 50.1 | 0.05 | **16** | 64.2 | 42.6 | 0.01 |
| **17** | 74.6 | 46.8 | | **17** | 74.6 | 46.8 | | **17** | 65.9 | 41.9 | |
| **18** | 78.9 | 53.5 | | **18** | 78.9 | 53.5 | | **18** | 70.8 | 42.0 | |
| **19** | 80.2 | 53.8 | | **19** | 80.2 | 53.8 | | **19** | 72.1 | 50.6 | |
| **20** | 81.0 | 56.3 | | **20** | 81.0 | 56.3 | | **20** | 79.9 | 57.2 | 0.05 |
| **21** | 85.7 | 59.2 | | **21** | 85.7 | 59.2 | | **21** | 68.1 | 52.3 | 0.06 |
| **22** | 87.5 | 63.8 | | **22** | 87.5 | 63.8 | | **22** | 59.9 | 39.0 | |
| **23** | 78.0 | 58.6 | 0.08 | **23** | 78.0 | 58.6 | 0.08 | **23** | 69.3 | 42.9 | |
| **24** | 73.0 | 52.4 | | **24** | 73.0 | 52.4 | | **24** | 75.8 | 50.3 | |
| **25** | 76.7 | 48.4 | | **25** | 76.7 | 48.4 | | **25** | 78.1 | 53.4 | |
| **26** | 78.0 | 59.6 | | **26** | 78.0 | 59.6 | | **26** | 81.2 | 53.6 | |
| **27** | 83.6 | 61.8 | 0.19 | **27** | 83.6 | 61.8 | 0.19 | **27** | 80.4 | 54.9 | |
| **28** | 62.2 | 52.8 | | **28** | 62.2 | 52.8 | | **28** | 76.6 | 52.2 | |
| **29** | 72.2 | 46.4 | | **29** | 72.2 | 46.4 | | **29** | 77.6 | 46.9 | |
| **30** | 71.3 | 53.5 | | **30** | 71.3 | 53.5 | | **30** | 56.1 | 47.7 | |
| **31** | 80.2 | 52.7 | | **31** | 80.2 | 52.7 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Fremont**

Recorded at
City of Fremont
Fremont, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 51.1 | 30.2 | 0.06 | **1** | 44.9 | 37.5 | 0.03 | **1** | 85.8 | 59.3 | |
| **2** | 51.3 | 23.0 | | **2** | 47.8 | 41.3 | 0.02 | **2** | 79.4 | 63.1 | |
| **3** | 39.2 | 31.9 | | **3** | 56.6 | 42.9 | 0.10 | **3** | 72.4 | 59.7 | 0.05 |
| **4** | 40.1 | 29.2 | 0.50 | **4** | 55.0 | 39.8 | | **4** | 73.2 | 52.7 | 0.03 |
| **5** | 46.5 | 28.0 | | **5** | 59.7 | 37.3 | | **5** | 77.4 | 45.2 | |
| **6** | 54.8 | 25.6 | | **6** | 62.3 | 35.4 | | **6** | 80.3 | 46.7 | |
| **7** | 58.2 | 31.0 | | **7** | 57.7 | 40.3 | 0.61 | **7** | 83.9 | 49.4 | |
| **8** | 57.4 | 36.0 | | **8** | 81.2 | 49.5 | | **8** | 78.5 | 58.6 | |
| **9** | 52.4 | 25.8 | | **9** | 76.4 | 52.9 | 1.29 | **9** | 81.4 | 52.4 | |
| **10** | 56.2 | 42.4 | 0.01 | **10** | 64.9 | 45.8 | | **10** | 77.5 | 57.8 | |
| **11** | 60.4 | 29.1 | | **11** | 77.0 | 44.5 | 0.26 | **11** | 74.4 | 54.4 | 0.60 |
| **12** | 62.1 | 37.2 | 2.21 | **12** | 70.9 | 56.4 | 1.59 | **12** | 73.7 | 59.3 | 0.02 |
| **13** | 62.8 | 49.3 | 1.36 | **13** | 68.5 | 50.2 | 0.13 | **13** | 66.4 | 46.8 | |
| **14** | 63.6 | 23.6 | 0.83 | **14** | | | 0.38 | **14** | 77.0 | 40.9 | |
| **15** | 32.9 | 22.1 | 0.02 | **15** | 48.1 | 36.3 | 0.43 | **15** | 79.2 | 54.7 | |
| **16** | 47.0 | 20.3 | | **16** | 49.9 | 30.2 | | **16** | 83.2 | 60.5 | |
| **17** | 55.3 | 34.5 | | **17** | 55.2 | 33.1 | | **17** | 80.0 | 65.2 | 0.58 |
| **18** | 55.3 | 35.8 | | **18** | 62.9 | 38.6 | | **18** | 72.1 | 63.8 | 1.23 |
| **19** | 59.5 | 29.7 | | **19** | 69.2 | 40.4 | 0.16 | **19** | 77.1 | 60.1 | |
| **20** | 70.0 | 42.7 | | **20** | 73.1 | 50.9 | 0.25 | **20** | 62.5 | 56.8 | 0.34 |
| **21** | 73.3 | 52.8 | 0.03 | **21** | 81.2 | 59.2 | 0.15 | **21** | 76.3 | 56.7 | |
| **22** | 53.5 | 34.8 | | **22** | 67.7 | 50.8 | | **22** | 79.9 | 64.3 | |
| **23** | 57.2 | 30.2 | | **23** | 72.3 | 46.7 | | **23** | 76.2 | 62.7 | 0.17 |
| **24** | 58.6 | 38.6 | | **24** | 75.4 | 45.2 | | **24** | 80.9 | 64.7 | 0.02 |
| **25** | 59.1 | 38.7 | 0.15 | **25** | 77.1 | 47.4 | | **25** | 77.3 | 62.7 | |
| **26** | 55.5 | 35.7 | | **26** | 76.9 | 52.8 | 0.03 | **26** | 78.9 | 59.8 | |
| **27** | 55.2 | 38.3 | | **27** | 76.3 | 62.8 | | **27** | 83.9 | 59.9 | |
| **28** | 56.6 | 42.7 | | **28** | 74.4 | 58.3 | | **28** | 83.8 | 66.8 | 0.01 |
| **29** | 59.1 | 41.5 | 0.77 | **29** | 81.0 | 49.7 | | **29** | 80.1 | 71.0 | 0.04 |
| **30** | 58.4 | 42.4 | 0.01 | **30** | 85.4 | 52.0 | | **30** | 81.8 | 65.9 | 0.14 |
| | | | | **31** | 85.5 | 58.0 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Fremont**

Recorded at
City of Fremont
Fremont, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 76.0 | 62.5 | 0.17 | **1** | 81.2 | 56.3 | 0.05 | **1** | 78.3 | 63.5 | 0.12 |
| **2** | 66.5 | 59.1 | | **2** | 81.7 | 54.3 | | **2** | 79.8 | 57.6 | |
| **3** | 74.0 | 53.9 | | **3** | 83.1 | 52.0 | | **3** | 79.7 | 56.5 | |
| **4** | 79.2 | 47.0 | | **4** | 84.1 | 58.0 | 0.33 | **4** | 81.5 | 58.9 | 0.23 |
| **5** | 75.0 | 47.9 | | **5** | 80.6 | 63.2 | | **5** | 80.9 | 62.4 | 0.54 |
| **6** | 77.5 | 57.3 | 0.26 | **6** | 83.3 | 54.2 | | **6** | 74.1 | 52.5 | |
| **7** | 80.6 | 67.0 | 0.33 | **7** | 86.4 | 51.4 | | **7** | 75.3 | 46.6 | |
| **8** | 73.0 | 61.2 | 0.14 | **8** | 83.5 | 58.5 | | **8** | 77.1 | 50.6 | |
| **9** | 73.4 | 54.4 | | **9** | 81.2 | 54.7 | | **9** | 78.5 | 53.7 | |
| **10** | 77.6 | 48.9 | | **10** | 85.7 | 56.5 | | **10** | 73.8 | 51.4 | 0.73 |
| **11** | 77.1 | 52.3 | | **11** | 78.5 | 65.0 | 0.21 | **11** | 57.1 | 47.8 | |
| **12** | 76.5 | 57.9 | 0.02 | **12** | 66.0 | 53.9 | 0.16 | **12** | 54.7 | 45.8 | 0.36 |
| **13** | 75.5 | 61.7 | 0.28 | **13** | 77.5 | 46.0 | | **13** | 61.8 | 39.6 | 0.09 |
| **14** | 76.1 | 54.1 | | **14** | 70.6 | 46.2 | | **14** | 60.2 | 35.7 | |
| **15** | 62.9 | 52.9 | 0.09 | **15** | 73.6 | 41.5 | | **15** | 55.8 | 43.9 | 0.11 |
| **16** | 71.8 | 51.4 | | **16** | 75.3 | 50.9 | 0.02 | **16** | 63.5 | 37.0 | 0.01 |
| **17** | 73.8 | 46.5 | | **17** | 81.5 | 58.3 | | **17** | 66.2 | 37.2 | |
| **18** | 76.7 | 46.5 | | **18** | 79.5 | 58.2 | | **18** | 68.4 | 43.2 | |
| **19** | 81.5 | 53.2 | | **19** | 75.3 | 64.4 | 0.32 | **19** | 69.3 | 43.0 | |
| **20** | 79.3 | 54.4 | | **20** | 77.3 | 61.3 | | **20** | 70.5 | 57.4 | 0.29 |
| **21** | 81.7 | 57.0 | | **21** | 77.6 | 58.8 | 0.36 | **21** | 61.2 | 46.4 | 0.52 |
| **22** | 83.9 | 61.4 | 0.29 | **22** | 83.0 | 66.2 | | **22** | 62.7 | 39.2 | |
| **23** | 74.6 | 56.4 | | **23** | 81.7 | 63.5 | 0.01 | **23** | 70.5 | 43.7 | |
| **24** | 76.6 | 48.4 | | **24** | 80.6 | 65.1 | | **24** | 74.4 | 45.7 | |
| **25** | 72.9 | 49.3 | | **25** | 78.7 | 67.1 | | **25** | 77.8 | 49.9 | |
| **26** | 77.3 | 58.6 | | **26** | 77.8 | 59.1 | | **26** | 79.6 | 49.1 | |
| **27** | 82.3 | 58.0 | 0.02 | **27** | 78.5 | 53.8 | | **27** | 78.3 | 48.8 | |
| **28** | 68.8 | 51.2 | | **28** | 77.3 | 46.3 | | **28** | 79.7 | 48.5 | |
| **29** | 74.7 | 47.2 | | **29** | 74.8 | 60.4 | 0.08 | **29** | 75.8 | 47.8 | 0.13 |
| **30** | 77.3 | 50.0 | | **30** | 77.9 | 67.5 | 0.06 | **30** | 55.4 | 45.2 | |
| **31** | 76.7 | 49.5 | | **31** | 80.8 | 61.8 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Grand Junction**

Recorded at
MBG Marketing
Grand Junction, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 57.8 | 35.1 | 0.03 | **1** | 48.5 | 40.1 | 0.16 | **1** | 90.9 | 61.9 | 0.03 |
| **2** | 53.0 | 26.4 | | **2** | 52.3 | 44.4 | 0.07 | **2** | 83.8 | 67.2 | 0.11 |
| **3** | 47.0 | 33.9 | 0.48 | **3** | 62.1 | 46.1 | 0.03 | **3** | 76.0 | 56.6 | |
| **4** | 47.4 | 33.9 | 0.19 | **4** | 54.7 | 38.5 | | **4** | 68.7 | 52.1 | 0.22 |
| **5** | 46.0 | 28.9 | 0.01 | **5** | 59.5 | 39.9 | | **5** | 74.5 | 43.5 | |
| **6** | 56.9 | 25.0 | | **6** | 69.6 | 34.2 | | **6** | 82.7 | 46.1 | |
| **7** | 58.2 | 29.5 | | **7** | 73.2 | 48.1 | 0.03 | **7** | 86.7 | 48.5 | |
| **8** | 52.7 | 34.0 | 0.02 | **8** | 91.7 | 55.3 | | **8** | 78.6 | 56.8 | 0.41 |
| **9** | 60.0 | 29.5 | | **9** | 79.3 | 54.6 | 0.36 | **9** | 81.2 | 53.7 | |
| **10** | 67.4 | 37.7 | | **10** | 72.9 | 42.7 | | **10** | 76.6 | 58.8 | 0.10 |
| **11** | 67.9 | 29.7 | | **11** | 85.2 | 46.0 | 0.14 | **11** | 77.6 | 60.0 | 1.19 |
| **12** | 75.2 | 38.2 | 0.05 | **12** | 86.9 | 57.2 | 0.07 | **12** | 79.2 | 56.0 | |
| **13** | 68.8 | 50.8 | 0.12 | **13** | 77.5 | 52.0 | 0.14 | **13** | 66.7 | 48.0 | |
| **14** | 67.2 | 27.0 | 0.07 | **14** | 58.2 | 47.9 | 0.35 | **14** | 79.0 | 42.6 | |
| **15** | 34.9 | 22.5 | 0.06 | **15** | 51.3 | 34.2 | 0.26 | **15** | 84.3 | 52.3 | |
| **16** | 50.8 | 20.7 | | **16** | 50.2 | 31.0 | | **16** | 87.8 | 66.2 | 0.01 |
| **17** | 66.3 | 36.6 | | **17** | 59.4 | 32.5 | | **17** | 87.1 | 69.3 | |
| **18** | 61.2 | 33.3 | | **18** | 69.7 | 37.7 | | **18** | 75.9 | 64.7 | 0.25 |
| **19** | 66.6 | 30.7 | | **19** | 73.3 | 42.3 | 0.07 | **19** | 79.5 | 64.3 | |
| **20** | 77.2 | 41.7 | | **20** | 84.7 | 55.9 | 0.02 | **20** | 74.9 | 61.9 | 0.03 |
| **21** | 80.5 | 51.3 | 0.20 | **21** | 81.8 | 59.1 | 1.22 | **21** | 83.2 | 60.4 | 0.15 |
| **22** | 58.3 | 39.9 | | **22** | 68.7 | 48.6 | | **22** | 84.9 | 64.8 | 0.01 |
| **23** | 55.2 | 28.0 | | **23** | 65.3 | 42.3 | | **23** | 82.1 | 65.4 | 1.16 |
| **24** | 61.4 | 41.9 | | **24** | 77.8 | 40.5 | | **24** | 81.1 | 67.5 | 0.25 |
| **25** | 63.3 | 42.4 | 0.27 | **25** | 82.3 | 47.5 | | **25** | 80.1 | 63.2 | |
| **26** | 53.5 | 36.4 | | **26** | 86.1 | 54.1 | 0.01 | **26** | 81.3 | 61.4 | |
| **27** | 63.7 | 40.8 | | **27** | 85.0 | 61.3 | 0.03 | **27** | 87.9 | 59.5 | |
| **28** | 59.4 | 45.1 | 0.17 | **28** | 79.0 | 58.0 | | **28** | 86.3 | 69.7 | |
| **29** | 72.8 | 48.4 | 0.28 | **29** | 82.7 | 54.6 | | **29** | 88.6 | 73.8 | 0.01 |
| **30** | 64.0 | 43.4 | 0.01 | **30** | 85.5 | 51.4 | | **30** | 89.4 | 68.4 | 0.48 |
| | | | | **31** | 89.2 | 54.1 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Grand Junction**

Recorded at
MBG Marketing
Grand Junction, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 83.8 | 65.1 | 0.63 | **1** | 84.9 | 58.9 | | **1** | 83.5 | 68.7 | 0.19 |
| **2** | 74.0 | 57.2 | 0.01 | **2** | 85.5 | 55.2 | | **2** | 82.3 | 63.0 | |
| **3** | 72.8 | 54.0 | 0.17 | **3** | 87.4 | 50.9 | | **3** | 83.9 | 58.0 | |
| **4** | 79.6 | 49.6 | | **4** | 85.5 | 63.7 | 0.39 | **4** | 86.2 | 63.6 | 0.94 |
| **5** | 80.6 | 49.0 | | **5** | 81.8 | 64.4 | 0.09 | **5** | 89.1 | 65.0 | 0.29 |
| **6** | 82.6 | 60.6 | | **6** | 83.2 | 59.4 | | **6** | 74.0 | 54.1 | |
| **7** | 85.0 | 66.2 | 0.19 | **7** | 84.7 | 53.9 | | **7** | 80.3 | 49.7 | |
| **8** | 79.8 | 63.2 | 0.51 | **8** | 85.0 | 57.0 | | **8** | 79.0 | 53.0 | |
| **9** | 76.0 | 56.9 | 0.01 | **9** | 82.1 | 57.8 | | **9** | 80.7 | 59.1 | |
| **10** | 78.7 | 50.9 | | **10** | 88.0 | 56.6 | | **10** | 80.0 | 57.2 | 0.73 |
| **11** | 82.8 | 51.3 | | **11** | 83.1 | 67.7 | 0.14 | **11** | 60.2 | 51.0 | 0.06 |
| **12** | 80.2 | 62.0 | 0.07 | **12** | 68.3 | 58.0 | 0.02 | **12** | 60.4 | 47.7 | 0.04 |
| **13** | 82.4 | 66.0 | 0.21 | **13** | 78.6 | 49.3 | | **13** | 62.9 | 42.6 | 0.14 |
| **14** | 76.8 | 58.2 | | **14** | 71.8 | 46.7 | | **14** | 66.1 | 39.9 | |
| **15** | 67.7 | 52.7 | 0.59 | **15** | 76.4 | 41.7 | | **15** | 62.4 | 45.0 | 0.07 |
| **16** | 71.1 | 52.1 | 0.01 | **16** | 83.7 | 53.4 | | **16** | 68.7 | 40.3 | |
| **17** | 77.1 | 46.9 | | **17** | 77.4 | 68.5 | | **17** | 70.3 | 37.5 | |
| **18** | 80.1 | 50.3 | | **18** | 84.5 | 62.6 | | **18** | 73.3 | 39.6 | 0.02 |
| **19** | 83.4 | 52.9 | | **19** | 83.7 | 64.4 | 1.43 | **19** | 74.0 | 48.0 | 0.01 |
| **20** | 84.7 | 56.2 | | **20** | 84.5 | 62.6 | | **20** | 79.6 | 56.8 | 0.12 |
| **21** | 88.4 | 58.7 | | **21** | 83.2 | 66.1 | | **21** | 68.5 | 47.5 | 0.27 |
| **22** | 90.0 | 62.4 | | **22** | 86.3 | 69.6 | | **22** | 63.8 | 37.6 | |
| **23** | 79.2 | 57.5 | 0.53 | **23** | 85.8 | 69.2 | | **23** | 73.3 | 41.4 | |
| **24** | 77.1 | 52.9 | | **24** | 85.6 | 69.2 | | **24** | 76.3 | 45.0 | |
| **25** | 78.3 | 49.0 | | **25** | 91.6 | 70.2 | | **25** | 80.0 | 49.8 | |
| **26** | 78.7 | 59.4 | | **26** | 82.7 | 63.7 | 0.33 | **26** | 82.3 | 47.9 | |
| **27** | 86.6 | 62.6 | 0.01 | **27** | 80.8 | 58.1 | | **27** | 80.7 | 46.8 | |
| **28** | 66.1 | 49.0 | | **28** | 78.8 | 52.2 | | **28** | 80.6 | 52.0 | |
| **29** | 76.0 | 46.2 | | **29** | 81.3 | 64.3 | 0.71 | **29** | 80.6 | 46.1 | 0.03 |
| **30** | 75.6 | 53.4 | | **30** | 84.3 | 70.3 | 0.21 | **30** | 56.5 | 46.1 | 0.07 |
| **31** | 82.0 | 51.7 | | **31** | 85.9 | 66.6 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Hart**

Recorded at
Asparagus Research Farm
Hart, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 53.2 | 28.5 | 0.08 | **1** | 45.8 | 39.1 | 0.02 | **1** | | | |
| **2** | 43.2 | 26.5 | | **2** | 47.1 | 39.6 | 0.04 | **2** | 78.4 | 61.2 | 0.42 |
| **3** | 39.5 | 31.5 | | **3** | 56.2 | 38.0 | 0.11 | **3** | 71.0 | 57.9 | |
| **4** | 39.5 | 27.9 | 0.31 | **4** | 54.1 | 37.9 | | **4** | 71.3 | 46.7 | |
| **5** | 44.6 | 26.2 | 0.02 | **5** | 55.7 | 37.0 | | **5** | 71.5 | 39.9 | |
| **6** | 51.6 | 32.9 | | **6** | 62.8 | 36.0 | | **6** | 77.8 | 42.8 | |
| **7** | 57.5 | 34.8 | | **7** | 53.8 | 41.4 | 0.66 | **7** | 82.1 | 49.7 | |
| **8** | 51.8 | 33.2 | | **8** | 79.7 | 50.3 | | **8** | 74.6 | 52.3 | 0.02 |
| **9** | 53.5 | 24.0 | | **9** | 75.6 | 52.0 | 1.17 | **9** | 77.3 | 49.3 | |
| **10** | 56.5 | 39.5 | 0.02 | **10** | 67.1 | 47.4 | | **10** | 75.5 | 55.7 | |
| **11** | 60.5 | 29.3 | | **11** | 75.0 | 48.6 | 0.18 | **11** | 69.3 | 56.0 | 1.21 |
| **12** | 56.8 | 33.9 | 1.02 | **12** | 71.9 | 56.5 | 0.96 | **12** | 71.5 | 52.4 | |
| **13** | 61.6 | 41.1 | 1.89 | **13** | 69.8 | 47.6 | 0.13 | **13** | 64.7 | 42.9 | |
| **14** | 51.1 | 24.1 | 0.92 | **14** | 55.8 | 43.4 | 0.08 | **14** | 75.0 | 41.9 | |
| **15** | 31.6 | 22.6 | 0.01 | **15** | 45.8 | 33.3 | 0.42 | **15** | 79.1 | 53.9 | 0.01 |
| **16** | 46.6 | 21.5 | | **16** | 49.8 | 28.3 | | **16** | | | |
| **17** | 54.6 | 35.1 | | **17** | 55.5 | 30.7 | | **17** | 79.0 | 58.5 | 0.63 |
| **18** | 48.4 | 31.6 | | **18** | 64.3 | 43.5 | | **18** | 74.8 | 60.1 | 0.74 |
| **19** | 60.2 | 27.8 | | **19** | 67.0 | 48.2 | 0.27 | **19** | 78.3 | 60.1 | |
| **20** | 69.1 | 44.7 | | **20** | 72.5 | 51.7 | 0.06 | **20** | 63.6 | 57.4 | 0.11 |
| **21** | 70.3 | 51.6 | 0.04 | **21** | 80.1 | 48.3 | | **21** | 75.6 | 58.7 | |
| **22** | 52.2 | 34.1 | | **22** | 65.3 | 46.2 | | **22** | 76.4 | 56.5 | |
| **23** | 49.1 | 28.9 | | **23** | 63.4 | 39.3 | | **23** | 73.5 | 60.4 | 0.10 |
| **24** | 59.3 | 36.0 | | **24** | 73.0 | 38.9 | | **24** | 75.5 | 57.6 | 0.02 |
| **25** | 58.1 | 39.2 | 0.19 | **25** | 76.7 | 41.5 | | **25** | 71.9 | 56.3 | |
| **26** | 49.7 | 34.5 | | **26** | 78.7 | 51.9 | 0.08 | **26** | 72.4 | 54.6 | |
| **27** | 53.9 | 36.9 | | **27** | 67.3 | 55.5 | 0.21 | **27** | | | |
| **28** | 55.4 | 43.5 | | **28** | 74.1 | 54.4 | 0.02 | **28** | 86.5 | 67.7 | |
| **29** | 60.3 | 41.6 | 0.40 | **29** | 74.3 | 49.9 | | **29** | 80.1 | 69.0 | 0.04 |
| **30** | 59.8 | 42.7 | 0.01 | **30** | 78.7 | 53.1 | | **30** | 82.8 | 66.3 | 0.91 |
| | | | | **31** | 83.1 | 52.8 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Hart**

Recorded at
Asparagus Research Farm
Hart, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 76.9 | 63.2 | 0.06 | **1** | 81.2 | 52.7 | | **1** | | | |
| **2** | 66.3 | 56.6 | | **2** | 77.8 | 52.0 | | **2** | | | |
| **3** | 70.9 | 49.8 | | **3** | 84.6 | 49.4 | | **3** | | | |
| **4** | 74.8 | 44.8 | | **4** | 81.0 | 57.1 | | **4** | | | |
| **5** | 76.1 | 45.1 | | **5** | 80.4 | 54.3 | | **5** | | | |
| **6** | 77.3 | 61.5 | 0.14 | **6** | 81.2 | 49.6 | | **6** | 70.2 | 52.0 | |
| **7** | 81.6 | 64.4 | | **7** | 82.6 | 48.8 | | **7** | 75.3 | 48.8 | |
| **8** | 69.8 | 56.8 | 0.11 | **8** | 84.6 | 58.2 | | **8** | 76.4 | 47.7 | |
| **9** | 71.7 | 52.8 | 0.01 | **9** | 82.0 | 55.1 | | **9** | 80.2 | 56.8 | |
| **10** | 74.8 | 45.7 | | **10** | 84.5 | 57.0 | | **10** | 73.1 | 50.4 | 0.48 |
| **11** | 78.4 | 54.0 | | **11** | 79.1 | 64.7 | 0.02 | **11** | 53.2 | 46.9 | 0.05 |
| **12** | 77.9 | 60.6 | 0.03 | **12** | 66.4 | 51.9 | 0.56 | **12** | 53.6 | 45.0 | 0.14 |
| **13** | 77.0 | 58.6 | 0.27 | **13** | 73.1 | 49.2 | 0.01 | **13** | 58.5 | 37.0 | 0.05 |
| **14** | 77.5 | 51.1 | 0.01 | **14** | 66.7 | 41.8 | | **14** | 60.6 | 37.1 | |
| **15** | 64.0 | 51.2 | 0.03 | **15** | 73.0 | 41.9 | | **15** | 56.6 | 39.6 | 0.34 |
| **16** | 67.3 | 51.0 | | **16** | 73.7 | 60.4 | 0.07 | **16** | 61.0 | 37.5 | 0.01 |
| **17** | 74.1 | 48.2 | | **17** | 77.1 | 55.1 | | **17** | 65.6 | 37.1 | |
| **18** | 77.8 | 49.9 | | **18** | 80.4 | 54.0 | 0.33 | **18** | 67.5 | 45.0 | |
| **19** | 78.6 | 55.1 | | **19** | 77.6 | 63.0 | 0.53 | **19** | 70.3 | 44.6 | |
| **20** | 79.8 | 51.3 | | **20** | 75.0 | 58.7 | | **20** | 73.8 | 62.8 | 0.19 |
| **21** | 81.9 | 57.9 | | **21** | 76.3 | 57.4 | | **21** | 64.8 | 44.8 | 0.74 |
| **22** | 84.7 | 64.8 | 0.49 | **22** | 81.2 | 67.1 | | **22** | 61.3 | 40.1 | |
| **23** | 70.8 | 54.2 | | **23** | 83.1 | 63.6 | | **23** | 71.9 | 43.7 | |
| **24** | 71.0 | 46.3 | | **24** | 80.7 | 65.4 | | **24** | 72.7 | 49.4 | |
| **25** | 72.9 | 49.9 | | **25** | 78.6 | 67.7 | 0.39 | **25** | 77.1 | 51.2 | |
| **26** | 78.5 | 60.7 | | **26** | 73.2 | 56.3 | | **26** | 78.2 | 51.3 | |
| **27** | 79.5 | 59.0 | | **27** | | | | **27** | 78.2 | 49.7 | |
| **28** | 65.2 | 46.4 | | **28** | | | | **28** | 79.1 | 50.6 | |
| **29** | 71.0 | 46.4 | | **29** | | | | **29** | 76.1 | 46.6 | 0.09 |
| **30** | 71.0 | 48.6 | | **30** | | | | **30** | 55.8 | 42.6 | 0.01 |
| **31** | 77.5 | 52.8 | | **31** | | | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Hudsonville**

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 55.4 | 32.0 | 0.08 | **1** | 45.6 | 37.7 | 0.14 | **1** | 86.5 | 60.4 | |
| **2** | 52.2 | 26.4 | | **2** | 49.5 | 42.2 | 0.03 | **2** | 80.6 | 67.9 | 0.09 |
| **3** | 43.2 | 31.6 | 0.15 | **3** | 57.7 | 42.8 | 0.13 | **3** | 70.6 | 57.8 | 0.05 |
| **4** | 43.8 | 30.6 | 0.30 | **4** | 56.7 | 39.6 | | **4** | 69.9 | 51.8 | 0.24 |
| **5** | 43.8 | 29.5 | | **5** | 56.1 | 39.6 | | **5** | 70.8 | 43.8 | |
| **6** | 56.4 | 29.0 | | **6** | 63.6 | 36.8 | | **6** | 80.3 | 45.5 | |
| **7** | 55.1 | 31.6 | | **7** | 63.3 | 46.0 | | **7** | 82.5 | 48.7 | |
| **8** | 57.7 | 34.0 | | **8** | 86.0 | 51.1 | | **8** | 77.9 | 58.5 | 0.15 |
| **9** | 55.4 | 28.9 | | **9** | 76.9 | 51.4 | 0.49 | **9** | 80.1 | 53.6 | |
| **10** | 60.6 | 38.2 | | **10** | 65.9 | 43.9 | | **10** | 75.3 | 60.4 | 0.03 |
| **11** | 63.7 | 28.6 | | **11** | 79.9 | 42.8 | | **11** | 77.3 | 56.7 | 2.21 |
| **12** | 69.5 | 38.4 | 0.08 | **12** | 80.8 | 57.4 | 0.06 | **12** | 76.3 | 54.4 | |
| **13** | 64.6 | 48.5 | 0.44 | **13** | 72.8 | 50.2 | 0.02 | **13** | 64.8 | 46.9 | |
| **14** | 65.9 | 24.7 | 0.09 | **14** | 58.2 | 48.0 | 0.29 | **14** | 77.6 | 42.3 | |
| **15** | 32.8 | 21.2 | 0.03 | **15** | 48.2 | 33.3 | 0.37 | **15** | 79.7 | 55.0 | |
| **16** | 47.4 | 21.0 | | **16** | 46.7 | 29.6 | | **16** | 82.0 | 64.1 | |
| **17** | 59.6 | 34.2 | | **17** | 55.8 | 33.6 | | **17** | 80.3 | 68.8 | |
| **18** | 58.0 | 36.7 | | **18** | 64.7 | 39.3 | | **18** | 71.9 | 63.5 | 1.37 |
| **19** | 62.0 | 32.6 | | **19** | 71.1 | 45.5 | 0.08 | **19** | 76.9 | 63.5 | |
| **20** | 73.3 | 41.3 | | **20** | 77.5 | 53.5 | 0.03 | **20** | 69.3 | 60.7 | 0.03 |
| **21** | 74.1 | 53.4 | 0.10 | **21** | 77.2 | 53.2 | 0.17 | **21** | 77.5 | 59.2 | 1.64 |
| **22** | 54.1 | 36.6 | 0.01 | **22** | 68.1 | 48.5 | | **22** | 80.6 | 60.8 | 0.01 |
| **23** | 55.0 | 29.9 | | **23** | 64.3 | 43.5 | | **23** | 78.3 | 64.0 | 0.29 |
| **24** | 57.5 | 43.7 | | **24** | 75.7 | 40.2 | | **24** | 79.8 | 66.2 | 0.06 |
| **25** | 57.7 | 40.1 | 0.16 | **25** | 77.5 | 46.3 | | **25** | 76.8 | 62.0 | 0.08 |
| **26** | 56.7 | 34.4 | | **26** | 80.3 | 53.2 | | **26** | 81.2 | 62.0 | |
| **27** | 57.3 | 38.8 | | **27** | 77.8 | 62.3 | | **27** | 85.5 | 60.3 | |
| **28** | 57.6 | 43.5 | | **28** | 73 | 55.3 | | **28** | 85.9 | 68.0 | |
| **29** | 67.5 | 44.1 | 0.38 | **29** | 79.1 | 52.3 | | **29** | 83.2 | 70.1 | 0.31 |
| **30** | 59.1 | 42.5 | 0.01 | **30** | 86.3 | 52.2 | | **30** | 86.5 | 66.9 | 0.28 |
| | | | | **31** | 86.6 | 55.5 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Hudsonville**

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 78.0 | 62.9 | 0.13 | **1** | 80.3 | 59.5 | | **1** | 79.7 | 67.6 | 0.14 |
| **2** | 67.6 | 57.1 | | **2** | 79.7 | 53.1 | | **2** | 78.3 | 59.5 | |
| **3** | 70.2 | 53.5 | 0.08 | **3** | 82.2 | 49.7 | | **3** | 80.5 | 56.0 | |
| **4** | 78.1 | 48.2 | | **4** | 81.5 | 61.6 | | **4** | 86.0 | 64.9 | 0.59 |
| **5** | 76.7 | 48.5 | | **5** | 80.7 | 63.3 | 0.84 | **5** | 81.5 | 63.4 | 0.67 |
| **6** | 79.0 | 60.2 | 0.44 | **6** | 82.1 | 58.6 | | **6** | 73.7 | 53.3 | |
| **7** | 80.5 | 67.2 | 0.12 | **7** | 81.7 | 53.7 | | **7** | 76.7 | 49.4 | |
| **8** | 73.8 | 63.3 | 0.52 | **8** | 81.1 | 58.0 | | **8** | 76.2 | 53.4 | |
| **9** | 72.5 | 56.7 | | **9** | 79.5 | 57.5 | | **9** | 77.7 | 57.2 | |
| **10** | 79.1 | 50.1 | | **10** | 83.9 | 56.8 | | **10** | 75.7 | 53.7 | 0.63 |
| **11** | 80.3 | 52.4 | | **11** | 79.2 | 65.0 | | **11** | 58.9 | 48.5 | |
| **12** | 76.2 | 61.2 | 0.08 | **12** | 65.9 | 55.8 | 0.10 | **12** | 57.3 | 46.4 | 0.16 |
| **13** | 77.2 | 64.3 | 0.61 | **13** | 75.9 | 48.6 | | **13** | 60.2 | 42.0 | 0.10 |
| **14** | 76.7 | 56.8 | | **14** | 68.7 | 46.2 | | **14** | 62.7 | 38.5 | |
| **15** | 65.4 | 53.7 | 0.02 | **15** | 71.8 | 41.5 | | **15** | 63.4 | 46.5 | |
| **16** | 68.5 | 51.0 | | **16** | 77.8 | 54.6 | | **16** | 64.4 | 37.8 | |
| **17** | 73.5 | 47.2 | | **17** | 75.0 | 63.9 | | **17** | 66.1 | 37.3 | |
| **18** | 77.6 | 48.1 | | **18** | 80.6 | 60.6 | | **18** | 71.0 | 40.9 | |
| **19** | 82.3 | 54.2 | | **19** | 77.1 | 63.9 | 1.22 | **19** | 71.4 | 46.3 | |
| **20** | 81.5 | 55.5 | | **20** | 78.9 | 61.5 | | **20** | 75.2 | 58.7 | 0.28 |
| **21** | 82.2 | 58.4 | | **21** | 79.7 | 61.8 | | **21** | 64.7 | 43.6 | 0.56 |
| **22** | 87.9 | 63.9 | 0.47 | **22** | 82.5 | 68.6 | | **22** | 61.8 | 37.9 | |
| **23** | 76.1 | 59.2 | 0.01 | **23** | 81.7 | 66.8 | | **23** | 71.7 | 44.9 | |
| **24** | 76.2 | 52.1 | | **24** | 81.1 | 67.0 | | **24** | 74.8 | 45.2 | |
| **25** | 74.4 | 48.9 | | **25** | 83.7 | 68.8 | 0.08 | **25** | 79.3 | 48.0 | |
| **26** | 78.6 | 59.0 | | **26** | 80.5 | 60.0 | 0.57 | **26** | 79.0 | 47.8 | |
| **27** | 81.3 | 59.5 | 0.04 | **27** | 77.9 | 55.8 | | **27** | 77.1 | 47.4 | |
| **28** | 67.6 | 50.5 | | **28** | 73.2 | 50.3 | | **28** | 79.4 | 51.1 | |
| **29** | 72.6 | 47.0 | 0.01 | **29** | 76.2 | 62.4 | | **29** | 77.0 | 45.8 | 0.05 |
| **30** | 72.0 | 51.1 | | **30** | 81.2 | 68.3 | 0.02 | **30** | 58.5 | 45.5 | 0.01 |
| **31** | 76.0 | 50.6 | | **31** | 81.0 | 64.8 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Imlay City**

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 60.1 | 31.8 | | **1** | 54.2 | 39.8 | 0.20 | **1** | 86.3 | 50.2 | |
| **2** | 53.3 | 25.5 | | **2** | 56.0 | 42.0 | 0.09 | **2** | 86.7 | 60.8 | 0.02 |
| **3** | 39.4 | 28.2 | 0.02 | **3** | 61.2 | 40.3 | 0.13 | **3** | 78.7 | 54.4 | |
| **4** | 46.4 | 32.9 | 0.18 | **4** | 56.9 | 34.9 | 0.05 | **4** | 68.6 | 52.7 | |
| **5** | 49.4 | 26.5 | | **5** | 58.4 | 30.8 | | **5** | 75.2 | 45.1 | |
| **6** | 59.6 | 21.5 | | **6** | 58.7 | 31.0 | | **6** | 81.9 | 42.7 | |
| **7** | 52.8 | 25.6 | 0.09 | **7** | 56.3 | 36.5 | 0.30 | **7** | 83.8 | 45.7 | |
| **8** | 64.0 | 31.2 | 0.05 | **8** | 84.0 | 46.8 | 0.15 | **8** | 78.0 | 56.1 | |
| **9** | 58.1 | 29.0 | | **9** | 79.5 | 62.6 | 0.14 | **9** | 83.3 | 50.6 | |
| **10** | 70.9 | 43.7 | | **10** | 72.0 | 47.2 | | **10** | 78.9 | 50.5 | |
| **11** | 68.6 | 29.6 | | **11** | 80.3 | 38.4 | | **11** | 77.4 | 58.7 | 1.28 |
| **12** | 71.5 | 34.8 | 0.22 | **12** | 69.7 | 57.8 | 0.55 | **12** | 79.6 | 61.2 | 0.01 |
| **13** | 73.0 | 46.1 | 0.08 | **13** | 85.7 | 58.7 | 0.64 | **13** | 68.7 | 46.2 | |
| **14** | 68.2 | 28.1 | | **14** | 59.0 | 45.7 | 0.09 | **14** | 75.0 | 41.2 | |
| **15** | 35.3 | 20.8 | 0.23 | **15** | 52.4 | 41.0 | 0.60 | **15** | 77.9 | 46.2 | |
| **16** | 44.7 | 15.7 | | **16** | 53.1 | 33.1 | | **16** | 88.4 | 63.7 | |
| **17** | 63.4 | 28.2 | | **17** | 58.0 | 37.1 | 0.01 | **17** | 88.6 | 60.1 | |
| **18** | 62.7 | 32.9 | 0.15 | **18** | 69.2 | 36.3 | | **18** | 79.2 | 61.9 | 0.37 |
| **19** | 54.2 | 24.5 | | **19** | 74.0 | 38.5 | | **19** | 75.1 | 54.3 | 0.04 |
| **20** | 73.2 | 30.7 | | **20** | 71.4 | 51.4 | 0.05 | **20** | 70.3 | 49.8 | 0.04 |
| **21** | 83.4 | 42.2 | 0.07 | **21** | 84.3 | 56.6 | 0.30 | **21** | 81.4 | 58.2 | |
| **22** | 56.1 | 36.7 | 0.16 | **22** | 72.0 | 48.0 | | **22** | 81.4 | 56.9 | |
| **23** | 54.0 | 34.6 | | **23** | 67.9 | 43.3 | | **23** | 78.2 | 54.0 | 0.05 |
| **24** | 56.1 | 27.8 | | **24** | 79.6 | 42.6 | | **24** | 76.4 | 65.4 | 0.44 |
| **25** | 47.4 | 35.1 | 0.23 | **25** | 84.3 | 46.1 | | **25** | 76.0 | 58.9 | |
| **26** | 48.4 | 32.9 | | **26** | 86.1 | 50.6 | | **26** | 79.6 | 52.1 | |
| **27** | 52.0 | 26.0 | | **27** | 85.4 | 63.6 | 0.50 | **27** | 83.8 | 52.1 | |
| **28** | 54.5 | 38.0 | | **28** | 72.8 | 51.5 | | **28** | 88.8 | 56.1 | |
| **29** | 66.3 | 44.6 | 0.83 | **29** | 74.8 | 44.9 | | **29** | 86.9 | 69.2 | 0.04 |
| **30** | 67.3 | 50.3 | 0.16 | **30** | 83.9 | 46.5 | | **30** | 87.2 | 70.7 | |
| | | | | **31** | 81.2 | 49.8 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Imlay City**

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 82.1 | 66.3 | 0.55 | **1** | 82.6 | 53.7 | 0.20 | **1** | 81.7 | 58.4 | 0.43 |
| **2** | 77.4 | 62.1 | | **2** | 84.3 | 56.0 | 0.02 | **2** | 79.3 | 55.9 | 0.01 |
| **3** | 70.1 | 51.6 | 0.13 | **3** | 86.1 | 52.4 | | **3** | 83.2 | 49.9 | |
| **4** | 75.6 | 46.3 | | **4** | 84.6 | 58.2 | | **4** | 85.7 | 57.5 | |
| **5** | 78.1 | 46.4 | | **5** | 78.5 | 58.6 | 0.04 | **5** | 90.9 | 63.8 | 0.14 |
| **6** | 80.7 | 54.8 | 0.01 | **6** | 79.9 | 52.1 | | **6** | 74.9 | 51.2 | 0.03 |
| **7** | 83.9 | 64.5 | 1.73 | **7** | 80.3 | 49.7 | | **7** | 78.8 | 44.7 | |
| **8** | 75.0 | 61.0 | 0.91 | **8** | 76.9 | 48.7 | | **8** | 76.4 | 45.6 | |
| **9** | 73.4 | 55.7 | | **9** | 79.4 | 47.3 | | **9** | 80.7 | 53.2 | |
| **10** | 76.8 | 52.7 | | **10** | 84.0 | 50.0 | | **10** | 73.6 | 55.2 | 0.36 |
| **11** | 80.5 | 50.3 | | **11** | 73.9 | 58.1 | 0.55 | **11** | 71.4 | 48.3 | |
| **12** | 83.6 | 55.9 | | **12** | 78.5 | 58.9 | 0.49 | **12** | 61.5 | 42.4 | 0.04 |
| **13** | 82.3 | 63.8 | 0.42 | **13** | 75.8 | 52.8 | | **13** | 55.8 | 37.0 | 0.50 |
| **14** | 79.9 | 60.7 | 0.03 | **14** | 69.3 | 48.4 | | **14** | 61.4 | 33.7 | |
| **15** | 69.2 | 56.8 | 0.36 | **15** | 74.9 | 41.3 | | **15** | 64.6 | 36.8 | 0.10 |
| **16** | 70.5 | 50.4 | | **16** | 77.1 | 46.9 | 0.02 | **16** | 67.8 | 42.7 | 0.02 |
| **17** | 76.3 | 46.9 | | **17** | 78.8 | 53.9 | | **17** | 69.8 | 34.8 | |
| **18** | 78.0 | 48.1 | | **18** | 80.2 | 54.7 | | **18** | 60.8 | 36.9 | |
| **19** | 75.1 | 54.4 | | **19** | 83.2 | 62.5 | 0.81 | **19** | 68.6 | 30.0 | |
| **20** | 83.6 | 55.1 | | **20** | 81.1 | 60.9 | 0.36 | **20** | 78.5 | 48.7 | 0.15 |
| **21** | 86.1 | 56.1 | | **21** | 80.7 | 56.6 | | **21** | 68.7 | 45.4 | 0.61 |
| **22** | 87.2 | 58.2 | | **22** | 80.8 | 61.7 | | **22** | 62.7 | 42.4 | |
| **23** | 78.9 | 52.1 | | **23** | 77.9 | 58.6 | | **23** | 75.0 | 37.7 | 0.01 |
| **24** | 76.1 | 47.3 | | **24** | 73.5 | 60.8 | | **24** | 74.5 | 39.9 | |
| **25** | 77.2 | 46.8 | | **25** | 85.6 | 58.0 | | **25** | 77.4 | 42.8 | |
| **26** | 81.7 | 56.8 | 0.03 | **26** | 87.3 | 64.8 | 0.04 | **26** | 78.0 | 39.9 | |
| **27** | 82.5 | 59.0 | 0.22 | **27** | 76.9 | 57.8 | | **27** | 79.2 | 42.2 | |
| **28** | 64.9 | 47.4 | 0.18 | **28** | 74.4 | 47.6 | | **28** | 78.1 | 44.6 | |
| **29** | 72.7 | 43.9 | 0.09 | **29** | 72.6 | 52.0 | | **29** | 80.3 | 43.5 | 0.07 |
| **30** | 76.2 | 51.4 | 0.01 | **30** | 82.3 | 65.5 | 0.17 | **30** | 58.0 | 49.3 | 0.10 |
| **31** | 77.8 | 49.6 | 0.47 | **31** | 84.4 | 64.5 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Momence**

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2014

| APRIL | | | | MAY | | | | JUNE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 52.2 | 31.8 | 0.01 | **1** | 48.9 | 40.1 | 0.05 | **1** | 88.0 | 56.4 | 0.04 |
| **2** | 46.9 | 35.5 | 0.02 | **2** | 51.6 | 43.2 | | **2** | 85.6 | 68.7 | 0.05 |
| **3** | 45.5 | 37.4 | 1.79 | **3** | 68.3 | 40.6 | | **3** | 84.6 | 66.1 | 0.02 |
| **4** | 44.9 | 34.3 | 0.02 | **4** | 59.3 | 44.3 | | **4** | 69.9 | 53.6 | 0.69 |
| **5** | 51.6 | 30.2 | | **5** | 65.3 | 41.4 | 0.01 | **5** | 77.7 | 49.7 | |
| **6** | 54.8 | 28.1 | | **6** | 72.9 | 40.1 | | **6** | 84.1 | 49.1 | |
| **7** | 51.2 | 36.9 | 0.02 | **7** | 86.6 | 51.0 | | **7** | 81.5 | 55.4 | 1.00 |
| **8** | 58.9 | 36.7 | 0.02 | **8** | 89.4 | 60.6 | 0.18 | **8** | 73.1 | 53.7 | 0.28 |
| **9** | 61.3 | 30.7 | | **9** | 73.3 | 47.5 | 0.78 | **9** | 81.0 | 47.9 | |
| **10** | 61.7 | 40.7 | | **10** | 76.2 | 42.9 | | **10** | 65.0 | 59.4 | 1.38 |
| **11** | 68.9 | 35.0 | | **11** | 83.3 | 53.5 | 0.88 | **11** | 67.7 | 61.0 | |
| **12** | 77.6 | 40.9 | | **12** | 83.1 | 61.0 | 0.10 | **12** | 77.9 | 54.9 | |
| **13** | 67.8 | 57.8 | 0.15 | **13** | 66.1 | 49.4 | 0.47 | **13** | 72.4 | 47.6 | |
| **14** | 60.9 | 28.4 | 0.18 | **14** | 54.7 | 41.3 | 0.12 | **14** | 75.5 | 47.4 | |
| **15** | 38.2 | 24.4 | 0.01 | **15** | 54.3 | 41.5 | 0.26 | **15** | 78.7 | 64.7 | |
| **16** | 52.7 | 24.3 | | **16** | 45.5 | 39.4 | 1.02 | **16** | 88.0 | 58.3 | |
| **17** | 63.9 | 33.7 | | **17** | 57.4 | 36.3 | | **17** | 90.1 | 70.7 | |
| **18** | 64.9 | 33.0 | | **18** | 65.8 | 36.0 | | **18** | 87.8 | 64.4 | 0.06 |
| **19** | 70.0 | 31.5 | | **19** | 68.9 | 41.2 | | **19** | 86.6 | 62.6 | 0.88 |
| **20** | 78.3 | 37.1 | | **20** | 84.6 | 56.6 | | **20** | 82.4 | 65.7 | 0.20 |
| **21** | 77.6 | 45.5 | 0.56 | **21** | 87.5 | 63.6 | | **21** | 84.8 | 61.2 | 0.28 |
| **22** | 59.2 | 33.7 | | **22** | 73.1 | 53.3 | | **22** | 84.8 | 60.3 | |
| **23** | 56.3 | 28.5 | 0.02 | **23** | 73.6 | 47.2 | | **23** | 82.9 | 65.8 | 0.12 |
| **24** | 67.3 | 41.6 | 0.07 | **24** | 77.0 | 43.0 | | **24** | 83.1 | 65.3 | 0.14 |
| **25** | 70.5 | 48.0 | 0.07 | **25** | 84.4 | 53.1 | | **25** | 84.1 | 60.1 | |
| **26** | 60.1 | 38.3 | | **26** | 90.1 | 56.1 | 0.45 | **26** | 83.2 | 59.7 | 0.01 |
| **27** | 71.9 | 39.7 | 0.10 | **27** | 83.0 | 62.5 | | **27** | 84.6 | 64.7 | |
| **28** | 59.7 | 44.6 | 0.78 | **28** | 84.5 | 55.9 | 0.02 | **28** | 84.4 | 66.8 | |
| **29** | 62.4 | 47.9 | 0.05 | **29** | 82.0 | 54.7 | 0.03 | **29** | 84.3 | 66.6 | 0.17 |
| **30** | 49.2 | 42.5 | 0.01 | **30** | 84.5 | 56.0 | | **30** | 83.2 | 61.7 | 1.30 |
| | | | | **31** | 86.3 | 59.5 | | | | | |

**TEMPERATURE AND PRECIPITATION DATA**

**Momence**

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2014

| JULY | | | | AUGUST | | | | SEPTEMBER | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. | Date | High Temp F | Low Temp F | Total Prec. in. |
| **1** | 80.2 | 62.6 | 0.03 | **1** | 80.9 | 55.3 | | **1** | 80.6 | 66.2 | |
| **2** | 68.1 | 57.9 | 0.10 | **2** | 80.1 | 52.3 | | **2** | 79.0 | 60.3 | 0.79 |
| **3** | 73.9 | 52.7 | 0.10 | **3** | 82.7 | 54.4 | | **3** | 82.0 | 55.4 | |
| **4** | 79.1 | 51.8 | | **4** | 83.0 | 57.3 | 0.21 | **4** | 83.7 | 65.8 | 0.12 |
| **5** | 76.3 | 56.3 | 0.01 | **5** | 79.9 | 62.5 | | **5** | 87.7 | 59.8 | 0.73 |
| **6** | 84.8 | 59.3 | 0.02 | **6** | 79.4 | 57.4 | | **6** | 71.5 | 51.9 | |
| **7** | 85.7 | 67.3 | | **7** | 77.3 | 59.4 | | **7** | 76.9 | 48.8 | |
| **8** | 79.0 | 60.1 | 0.21 | **8** | 79.6 | 60.5 | | **8** | 76.1 | 48.8 | |
| **9** | 77.1 | 57.4 | | **9** | 80.9 | 60.3 | | **9** | 78.5 | 55.5 | 0.24 |
| **10** | 79.1 | 53.1 | | **10** | 78.7 | 62.9 | | **10** | 75.6 | 56.2 | 2.05 |
| **11** | 80.1 | 53.3 | | **11** | 79.6 | 64.0 | 1.85 | **11** | 56.4 | 48.7 | |
| **12** | 80.2 | 66.4 | 2.27 | **12** | 69.0 | 53.5 | | **12** | 57.1 | 43.2 | 0.03 |
| **13** | 81.1 | 67.7 | 0.49 | **13** | 77.8 | 51.4 | | **13** | 59.7 | 37.1 | |
| **14** | 79.0 | 56.1 | 0.07 | **14** | 73.9 | 48.8 | | **14** | 66.9 | 35.7 | |
| **15** | 67.0 | 50.6 | | **15** | 73.5 | 44.9 | | **15** | 55.7 | 45.7 | 0.35 |
| **16** | 71.5 | 50.2 | | **16** | 76.1 | 55.8 | 0.05 | **16** | 67.2 | 41.7 | |
| **17** | 76.6 | 48.8 | | **17** | 76.6 | 61.3 | 0.02 | **17** | 71.1 | 40.2 | |
| **18** | 76.0 | 53.8 | | **18** | 79.7 | 61.4 | | **18** | 71.9 | 45.1 | |
| **19** | 78.1 | 51.0 | | **19** | 79.9 | 59.8 | 0.28 | **19** | 73.6 | 45.7 | |
| **20** | 79.3 | 54.0 | | **20** | 80.9 | 57.2 | | **20** | 81.1 | 51.3 | 0.02 |
| **21** | 81.4 | 56.1 | | **21** | 86.2 | 66.7 | 0.05 | **21** | 68.3 | 45.8 | |
| **22** | 85.5 | 57.3 | | **22** | 81.8 | 68.2 | 3.18 | **22** | 67.7 | 40.4 | |
| **23** | 73.6 | 53.0 | 0.86 | **23** | 83.7 | 66.7 | 1.37 | **23** | 74.4 | 41.5 | |
| **24** | 74.9 | 51.5 | | **24** | 84.7 | 65.7 | | **24** | 76.7 | 44.2 | |
| **25** | 72.3 | 49.0 | | **25** | 90.0 | 65.8 | 0.03 | **25** | 78.8 | 47.6 | |
| **26** | 79.5 | 63.3 | 0.03 | **26** | 83.8 | 63.8 | | **26** | 81.9 | 50.8 | |
| **27** | 82.3 | 61.7 | 0.08 | **27** | 79.2 | 61.4 | | **27** | 80.2 | 54.0 | |
| **28** | 70.3 | 51.3 | | **28** | 80.9 | 59.5 | 0.10 | **28** | 81.2 | 49.2 | |
| **29** | 77.2 | 51.0 | 0.12 | **29** | 83.1 | 66.6 | 0.01 | **29** | 83.1 | 49.9 | |
| **30** | 77.3 | 55.5 | | **30** | 80.7 | 63.3 | 1.01 | **30** | 64.4 | 47.0 | |
| **31** | 79.6 | 50.6 | | **31** | 81.2 | 63.8 | | | | | |

# Weed Control in Asparagus – Hart – 2014

**Project Code: 120-14-01** **Location: Hart, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Asparagus** **Variety: Jersey Supreme**
**Planting Method: Crowns** **Planting Date: 2011** **Harvest Date: 5/10-6/21/14**
**Spacing: 1 ft** **Row Spacing: 4.5 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 4 ft wide x 50 ft long**

**Soil Type: Spinks Loamy Fine Sand** **OM: 1%** **pH: 5.2**
**Sand: 86%** **Silt: 8%** **Clay: 6%** **CEC: 4.0**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/2/14 | 10:30 am | 46/47 | F | Damp | 2-4 SW | 76 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/2 | ASPARAGUS | 1-2″ | Emerging | Good |
| 5/2 | DAND = dandelion | 4-6″ | Foliar | Few |
| 5/2 | HOWE = horseweed | 0.5-1″ | Small rosette | Moderate |
| 5/2 | SFGE = smallflower geranium | 1-2″ | Foliar | Few |
| 5/2 | MECW = mouseear chickweed | 1-2″ | Flower | Moderate |
| | COLQ = common lambsquarters | | | |
| | DOBG = downy bromegrass | | | |
| | FIPA = field pansy | | | |
| | FISB = field sandbur | | | |
| | HAVE = hairy vetch | | | |
| | POAM = Powell amaranth | | | |
| | RUTH = Russian thistle | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. There were 22 harvests from 10 May through 21 June 2014.

**Weed Control in Asparagus - Hart - 2014**

Trial ID: 120-14-01 Location: Hart, MI
Protocol ID: 120-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA | DOBG | FISB | DAND | HAVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | ASPA | | | | |
| | Rating Date | | | | | | 5/Jun/14 | 5/Jun/14 | 5/Jun/14 | 5/Jun/14 | 5/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 1.6 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | metribuzin | 75 | DF | 1.6 | lb ai/a | PRE | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 1.7 | 9.0 | 10.0 | 8.7 | 10.0 |
| 4 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1.5 | lb ai/a | PRE | 1.0 | 4.3 | 10.0 | 6.0 | 4.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 1.0 | 7.0 | 10.0 | 8.7 | 9.0 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 1.7 | 5.0 | 2.3 | 10.0 | 10.0 |
| 9 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.0 | 8.3 | 10.0 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | | |
| 10 | Untreated | | | | | | 1.3 | 1.0 | 1.0 | 9.0 | 7.0 |
| LSD (P=.05) | | | | | | | 0.73 | 2.83 | 0.63 | 3.01 | 3.75 |
| Standard Deviation | | | | | | | 0.43 | 1.65 | 0.37 | 1.76 | 2.18 |
| CV | | | | | | | 34.54 | 22.07 | 4.38 | 19.01 | 24.26 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HOWE | MECW | RUTH | SFGE |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | HOWE | MECW | RUTH | SFGE |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 5/Jun/14 | 5/Jun/14 | 5/Jun/14 | 5/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 9.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 1.6 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 |
| | metribuzin | 75 | DF | 1.6 | lb ai/a | PRE | | | | |
| 3 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 10.0 |
| 4 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 4.0 | 10.0 | 10.0 | 10.0 |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 9.7 | 10.0 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1.5 | lb ai/a | PRE | 1.0 | 7.7 | 4.0 | 7.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 7.0 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 7.7 | 10.0 | 4.0 | 3.0 |
| 9 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 10.0 | 10.0 | 7.7 | 7.0 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | |
| 10 | Untreated | | | | | | 1.7 | 1.0 | 4.0 | 3.0 |
| LSD (P=.05) | | | | | | | 2.87 | 2.19 | 4.20 | 4.67 |
| Standard Deviation | | | | | | | 1.67 | 1.28 | 2.45 | 2.72 |
| CV | | | | | | | 26.42 | 14.41 | 30.72 | 35.36 |

# Weed Control in Asparagus – Hart – 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 23/Jun/14 RATING 1-10 | FISB 23/Jun/14 RATING 1-10 | COLQ 23/Jun/14 RATING 1-10 | FIPA 23/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 1.6 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 |
| | metribuzin | 75 | DF | 1.6 | lb ai/a | PRE | | | | |
| 3 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 |
| 4 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 1.7 | 10.0 | 10.0 | 10.0 |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1.5 | lb ai/a | PRE | 1.0 | 10.0 | 9.3 | 10.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 1.3 | 10.0 | 8.7 | 7.0 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 2.7 | 1.0 | 1.0 | 4.3 |
| 9 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.0 | 6.3 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | |
| 10 | Untreated | | | | | | 2.3 | 1.0 | 7.0 | 4.0 |
| LSD (P=.05) | | | | | | | 1.11 | 1.57 | 3.25 | 4.42 |
| Standard Deviation | | | | | | | 0.65 | 0.91 | 1.90 | 2.58 |
| CV | | | | | | | 44.11 | 11.65 | 22.05 | 30.18 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HAVE 23/Jun/14 RATING 1-10 | HOWE 23/Jun/14 RATING 1-10 | MECW 23/Jun/14 RATING 1-10 | POAM 23/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 10.0 | 9.0 | 10.0 | 1.0 |
| 2 | diuron | 80 | DF | 1.6 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 1.3 |
| | metribuzin | 75 | DF | 1.6 | lb ai/a | PRE | | | | |
| 3 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 9.7 | 8.7 | 10.0 | 10.0 |
| 4 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 9.7 | 3.3 | 10.0 | 10.0 |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 10.0 | 8.3 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1.5 | lb ai/a | PRE | 1.3 | 1.0 | 10.0 | 7.7 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 7.0 | 1.0 | 10.0 | 10.0 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 7.7 | 5.3 | 7.7 | 1.7 |
| 9 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 7.3 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | |
| 10 | Untreated | | | | | | 7.0 | 1.0 | 4.0 | 7.0 |
| LSD (P=.05) | | | | | | | 4.71 | 2.49 | 3.07 | 3.85 |
| Standard Deviation | | | | | | | 2.74 | 1.45 | 1.79 | 2.24 |
| CV | | | | | | | 33.59 | 25.47 | 19.51 | 33.97 |

# Weed Control in Asparagus – Hart – 2014

| Pest Code | | | | | | RUTH | SFGE | | HOWE | |
|---|---|---|---|---|---|---|---|---|---|---|
| Crop Code | | | | | | | | ASPA | | ASPA |
| Rating Date | | | | | | 23/Jun/14 | 23/Jun/14 | 16/Jul/14 | 16/Jul/14 | |
| Rating Type | | | | | | RATING | RATING | RATING | RATING | TOTAL |
| Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | KG/PLOT |
| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
| 1 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 10.0 | 10.0 | 2.0 | 9.7 | 6.21 |
| 2 | diuron | 80 | DF | 1.6 | lb ai/a | PRE | 10.0 | 10.0 | 1.3 | 10.0 | 7.42 |
| | metribuzin | 75 | DF | 1.6 | lb ai/a | PRE | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 8.7 | 10.0 | 1.3 | 8.7 | 8.15 |
| 4 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 10.0 | 9.3 | 1.0 | 4.0 | 7.49 |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 9.0 | 10.0 | 1.7 | 8.3 | 7.92 |
| 6 | isoxaben | 75 | DF | 1.5 | lb ai/a | PRE | 6.0 | 10.0 | 1.3 | 1.0 | 6.75 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 10.0 | 5.0 | 1.0 | 1.0 | 7.76 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 2.7 | 1.3 | 2.3 | 7.0 | 6.77 |
| 9 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 4.7 | 7.3 | 1.7 | 9.3 | 7.16 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | | |
| 10 | Untreated | | | | | | 4.0 | 4.0 | 1.0 | 1.3 | 7.36 |
| LSD (P=.05) | | | | | | | 4.31 | 4.11 | 1.08 | 2.55 | 1.312 |
| Standard Deviation | | | | | | | 2.51 | 2.40 | 0.63 | 1.49 | 0.765 |
| CV | | | | | | | 33.53 | 31.13 | 42.92 | 24.67 | 10.48 |

# Weed Control in Asparagus – HTRC - 2014

**Project Code: 120-14-02** **Location: East Lansing, MI**
**Block 115-116**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Asparagus** **Variety: Millennium**
**Planting Method: Transplant** **Planting Date: 2009** **Harvest Date: 5/8 - 6/20/14**
**Spacing: 1 ft** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.33 ft wide x 50 ft long**

**Soil Type: Capac Loam** **OM: 2.1%** **pH: 6.8**
**Sand: 54%** **Silt: 32%** **Clay: 14%** **CEC: 4.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/29/14 | 2:30 pm | 74/56 | F | Damp | 4-5 SE | 40 | 30% Cloudy | N |
| PO1 | 6/4/14 | 9:00 am | 64/62 | F | Moist | 0-1 E | 73 | 100% Cloudy | Y |
| PO2 | 6/16/14 | 11:30 am | 87/75 | F | Dry | 5-8 SW | 45 | 50% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/29 | ASPARAGUS | | Pre-emergence | |
| 4/29 | DAND = dandelion | 5-7″ | Veg | Few |
| 4/29 | HOWE = horseweed | 1-2″ | Veg | Moderate |
| 4/29 | WICA = wild carrot | 1-2″ | Veg | Few |
| 6/4 | COLQ = common lambsquarters | 4-6″ | Veg | Many |
| 6/4 | DAND = dandelion | 8-10″ | Post-flower | Many |
| 6/4 | WICA = wild carrot | 6-10″ | Veg | Many |
| 6/16 | COLQ = common lambsquarters | 6-10″ | Veg | Many |
| 6/16 | DAND = dandelion | 12-18″ | Post-flower | Many |
| 6/16 | LATH = ladysthumb | 6-18″ | Flower | Few |
| 6/16 | WICA = wild carrot | 12-18″ | Flower | Many |
| 6/16 | WIRA = wild radish | 8-18″ | Flower | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. There were 26 harvests taken from 8 May through 20 June 2014.

# Weed Control in Asparagus – HTRC - 2014

**Weed Control in Asparagus - HTRC - 2014**

Trial ID: 120-14-02 Location: East Lansing, MI
Protocol ID: 120-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 18/May/14 RATING 1-10 | GRFT 18/May/14 RATING 1-10 | QUGR 18/May/14 RATING 1-10 | DAND 18/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 2.0 | 10.0 | 10.0 | 9.0 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 3.0 | 10.0 | 9.3 | 9.7 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.3 | 10.0 | 8.3 | 9.3 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 2.3 | 10.0 | 10.0 | 9.7 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 7.3 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 2.7 | 10.0 | 9.3 | 9.3 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.7 | 10.0 | 8.3 | 9.3 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 3.7 | 10.0 | 7.7 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 9.3 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 9.0 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 2.3 | 9.7 | 10.0 | 9.3 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 2.0 | 10.0 | 10.0 | 6.3 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 2.7 | 10.0 | 7.3 | 7.0 |
| 15 | Untreated | | | | | | 2.3 | 8.3 | 9.3 | 7.0 |
| LSD (P=.05) | | | | | | | 1.80 | 1.28 | 3.12 | 4.10 |
| Standard Deviation | | | | | | | 1.08 | 0.77 | 1.87 | 2.45 |
| CV | | | | | | | 52.05 | 7.76 | 20.03 | 27.91 |

# Weed Control in Asparagus – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HOWE | WICA | WIRA | ASPA |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | HOWE | WICA | WIRA | |
| | Crop Code | | | | | | | | | ASPA |
| | Rating Date | | | | | | 18/May/14 | 18/May/14 | 18/May/14 | 26/May/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 10.0 | 9.7 | 10.0 | 1.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 5.7 | 10.0 | 1.3 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 10.0 | 9.7 | 10.0 | 2.3 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 8.7 | 10.0 | 10.0 | 1.3 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 1.0 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 6.3 | 6.7 | 10.0 | 1.3 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 4.0 | 8.7 | 10.0 | 1.3 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 5.0 | 10.0 | 1.3 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 7.3 | 10.0 | 2.3 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 7.7 | 10.0 | 1.7 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 7.0 | 10.0 | 1.0 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 9.3 | 7.0 | 10.0 | 1.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 9.7 | 9.3 | 10.0 | 2.3 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 4.3 | 6.3 | 10.0 | 1.3 |
| 15 | Untreated | | | | | | 6.3 | 5.7 | 8.0 | 1.7 |
| LSD (P=.05) | | | | | | | 3.94 | 5.62 | 0.75 | 1.22 |
| Standard Deviation | | | | | | | 2.35 | 3.36 | 0.45 | 0.73 |
| CV | | | | | | | 27.44 | 43.6 | 4.53 | 49.2 |

# Weed Control in Asparagus – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | DAND | HOWE | WICA |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 26/May/14 | 26/May/14 | 26/May/14 | 26/May/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 9.0 | 10.0 | 4.3 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 10.0 | 9.7 | 10.0 | 9.3 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 10.0 | 9.7 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 10.0 | 8.7 | 6.7 | 7.0 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 10.0 | 10.0 | 4.0 | 8.3 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 4.0 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 10.0 | 9.3 | 8.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 7.0 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 7.0 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 9.3 | 8.3 | 7.0 | 7.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 10.0 | 7.0 | 9.7 | 9.0 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 10.0 | 7.7 | 6.0 | 7.0 |
| 15 | Untreated | | | | | | 4.0 | 7.0 | 6.0 | 4.0 |
| LSD (P=.05) | | | | | | | 2.28 | 3.05 | 4.16 | 6.15 |
| Standard Deviation | | | | | | | 1.36 | 1.82 | 2.49 | 3.68 |
| CV | | | | | | | 14.27 | 20.27 | 29.04 | 49.23 |

# Weed Control in Asparagus – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 17/Jun/14 RATING 1-10 | LACG 17/Jun/14 RATING 1-10 | HOWE 17/Jun/14 RATING 1-10 | WICA 17/Jun/14 RATING 1-10 | WIRA 17/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 7.3 | 9.7 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 8.0 | 6.7 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 10.0 | 6.7 | 10.0 | 10.0 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.0 | 9.0 | 7.0 | 5.3 | 10.0 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.0 | 10.0 | 4.7 | 3.3 | 10.0 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.7 | 6.0 | 10.0 | 4.3 | 10.0 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 7.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 6.3 | 10.0 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 7.0 | 10.0 | 7.7 | 9.0 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 1.0 | 10.0 | 6.0 | 7.7 | 10.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 1.3 | 10.0 | 8.3 | 8.7 | 10.0 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 1.0 | 10.0 | 5.0 | 1.7 | 10.0 |
| 15 | Untreated | | | | | | 1.0 | 4.0 | 1.7 | 3.3 | 5.3 |
| LSD (P=.05) | | | | | | | 0.51 | 3.71 | 3.50 | 4.66 | 2.31 |
| Standard Deviation | | | | | | | 0.31 | 2.22 | 2.09 | 2.79 | 1.38 |
| CV | | | | | | | 27.54 | 24.44 | 26.3 | 41.55 | 14.73 |

# Weed Control in Asparagus – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 22/Jun/14 RATING 1-10 | LACG 22/Jun/14 RATING 1-10 | COLQ 22/Jun/14 RATING 1-10 | EBNS 22/Jun/14 RATING 1-10 | HOWE 22/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 9.3 | 9.3 | 10.0 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 10.0 | 6.7 | 2.7 | 3.7 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.3 | 5.3 | 3.0 | 10.0 | 3.0 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 2.7 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 4.7 | 10.0 | 8.7 | 10.0 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.7 | 10.0 | 10.0 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 9.3 | 9.7 | 10.0 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 1.0 | 10.0 | 1.0 | 10.0 | 7.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 10.0 | 7.0 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 1.0 | 10.0 | 8.3 | 10.0 | 2.0 |
| 15 | Untreated | | | | | | 2.0 | 4.3 | 1.0 | 8.3 | 1.7 |
| LSD (P=.05) | | | | | | | 0.51 | 3.04 | 1.91 | 1.82 | 3.37 |
| Standard Deviation | | | | | | | 0.31 | 1.82 | 1.14 | 1.09 | 2.01 |
| CV | | | | | | | 25.98 | 20.28 | 14.46 | 11.77 | 28.22 |

# Weed Control in Asparagus – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW 22/Jun/14 RATING 1-10 | WICA 22/Jun/14 RATING 1-10 | WIRA 22/Jun/14 RATING 1-10 | ASPA TOTAL #/PLOT | ASPA TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 1.2 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 733.3 | 15.86 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 9.0 | 3.7 | 9.3 | 633.3 | 14.15 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 3 | clomazone | 3 | ME | 2 | lb ai/a | PRE | 10.0 | 7.7 | 4.7 | 543.3 | 11.51 |
| | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | | | | | |
| 4 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 589.0 | 12.90 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 524.3 | 11.52 |
| 6 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 10.0 | 2.7 | 10.0 | 639.7 | 14.58 |
| 7 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 10.0 | 2.7 | 10.0 | 713.0 | 15.99 |
| | pendimethalin | 3.8 | CS | 2 | lb ai/a | PRE | | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 2.7 | 10.0 | 641.3 | 14.59 |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | | |
| 9 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 5.7 | 10.0 | 378.7 | 8.08 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 7.0 | 10.0 | 704.0 | 15.04 |
| | dicamba | 4 | L | 0.25 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 11 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 7.7 | 10.0 | 713.3 | 15.31 |
| | quinclorac | 3.8 | L | 0.37 | lb ai/a | PO2 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | | |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 10.0 | 4.0 | 10.0 | 688.0 | 15.84 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | | | | | |
| 13 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 10.0 | 8.7 | 10.0 | 621.3 | 12.33 |
| 14 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 10.0 | 5.3 | 9.0 | 657.7 | 13.99 |
| 15 | Untreated | | | | | | 8.7 | 3.0 | 4.7 | 538.7 | 11.42 |
| LSD (P=.05) | | | | | | | 0.96 | 4.74 | 2.55 | 238.72 | 5.058 |
| Standard Deviation | | | | | | | 0.58 | 2.83 | 1.53 | 142.76 | 3.025 |
| CV | | | | | | | 5.85 | 47.56 | 16.62 | 22.98 | 22.34 |

# Weed Control in Asparagus with Alion – Hart - 2014

**Project Code: 120-14-03** **Location: Hart, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Asparagus** **Variety: Millennium**
**Planting Method: Crowns** **Planting Date: 2007** **Harvest Date: 5/10 – 6/21/14**
**Spacing: 1 ft** **Row Spacing: 4.5 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.33 ft wide x 50 ft long**

**Soil Type: Spinks loamy fine sand** **OM: 3.1%** **pH: 6.0**
**Sand: 70%** **Silt: 20%** **Clay: 9%** **CEC: 7.3**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/2/14 | 12:05 pm | 46/49 | F | Damp | 4-6 SW | 81 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/2 | ASPARAGUS | 0-0.5″ | Emerging | Good |
| 5/2 | No weeds | | | |

DAND = dandelion
FIPA = field pansy
HAVE = hairy vetch
HOWE = horseweed
POAM = Powell amaranth
SFGE = smallflower geranium

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. This is a 3-4 year experiment.
4. There were 22 harvests from 10 May through 21 June 2014.

# Weed Control in Asparagus with Alion – Hart - 2014

**Weed Control in Asparagus with Alion – Hart - 2014**

Trial ID: 120-14-03 Location: Hart, MI
Protocol ID: 120-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 5/Jun/14 RATING 1-10 | DAND 5/Jun/14 RATING 1-10 | HAVE 5/Jun/14 RATING 1-10 | SFGE 5/Jun/14 RATING 1-10 | ASPA 23/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 1.0 | 9.0 | 10.0 | 6.7 | 1.0 |
| 2 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 1.0 | 9.0 | 10.0 | 10.0 | 1.7 |
| 3 | indaziflam | 1.67 | SC | 0.046 | lb ai/a | PRE | 1.0 | 9.3 | 9.3 | 10.0 | 1.0 |
| 4 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 1.0 | 7.0 | 10.0 | 9.3 | 1.0 |
| 5 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | PRE | 1.0 | 10.0 | 9.7 | 10.0 | 1.3 |
| 6 | flumioxazin | 51 | WDG | 0.128 | lb ai/a | PRE | 1.0 | 9.3 | 9.3 | 7.0 | 1.0 |
| 7 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.0 | 9.7 | 10.0 | 9.3 | 1.0 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 10.0 | 10.0 | 1.0 |
| | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 8.0 | 10.0 | 9.7 | 1.0 |
| LSD (P=.05) | | | | | | | 0.00 | 2.81 | 1.01 | 3.91 | 0.46 |
| Standard Deviation | | | | | | | 0.00 | 1.62 | 0.59 | 2.26 | 0.26 |
| CV | | | | | | | 0.0 | 17.96 | 5.96 | 24.81 | 23.72 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | FIPA 23/Jun/14 RATING 1-10 | HAVE 23/Jun/14 RATING 1-10 | HOWE 23/Jun/14 RATING 1-10 | POAM 23/Jun/14 RATING 1-10 | SFGE 23/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 10.0 | 4.0 | 7.3 | 1.0 | 1.0 |
| 2 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 6.7 | 10.0 |
| 3 | indaziflam | 1.67 | SC | 0.046 | lb ai/a | PRE | 9.3 | 9.0 | 10.0 | 6.7 | 9.0 |
| 4 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 7.7 | 9.3 | 9.3 | 7.3 | 10.0 |
| 5 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | PRE | 9.7 | 10.0 | 9.7 | 8.3 | 10.0 |
| 6 | flumioxazin | 51 | WDG | 0.128 | lb ai/a | PRE | 10.0 | 5.7 | 8.3 | 5.3 | 9.3 |
| 7 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 6.3 | 9.7 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 3.7 | 10.0 |
| | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| LSD (P=.05) | | | | | | | 2.31 | 3.38 | 2.30 | 3.14 | 1.12 |
| Standard Deviation | | | | | | | 1.34 | 1.95 | 1.33 | 1.81 | 0.65 |
| CV | | | | | | | 13.88 | 22.73 | 14.15 | 29.49 | 7.35 |

# Weed Control in Asparagus with Alion – Hart - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ASPA 16/Jul/14 RATING 1-10 | HOWE 16/Jul/14 RATING 1-10 | POAM 16/Jul/14 RATING 1-10 | ASPA TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 1.0 | 9.0 | 1.0 | 13.28 |
| 2 | terbacil | 80 | WDG | 1 | lb ai/a | PRE | 1.3 | 10.0 | 4.0 | 11.54 |
| 3 | indaziflam | 1.67 | SC | 0.046 | lb ai/a | PRE | 1.0 | 10.0 | 4.3 | 11.59 |
| 4 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 1.3 | 9.0 | 7.7 | 10.63 |
| 5 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | PRE | 1.0 | 9.3 | 8.3 | 11.27 |
| 6 | flumioxazin | 51 | WDG | 0.128 | lb ai/a | PRE | 1.0 | 4.7 | 1.7 | 11.56 |
| 7 | mesotrione | 4 | SC | 0.241 | lb ai/a | PRE | 1.3 | 10.0 | 4.0 | 10.75 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | | | | |
| 8 | diuron | 80 | DF | 3 | lb ai/a | PRE | 1.0 | 10.0 | 3.0 | 12.17 |
| | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRE | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | PRE | 1.0 | 10.0 | 6.7 | 11.90 |
| LSD (P=.05) | | | | | | | 0.58 | 2.99 | 4.34 | 3.053 |
| Standard Deviation | | | | | | | 0.33 | 1.73 | 2.50 | 1.764 |
| CV | | | | | | | 30.0 | 18.97 | 55.43 | 15.17 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

**Project Code: 109-14-01** **Location: East Lansing, MI**
**Block 68**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Red beet, Sugar beet, Swiss chard** **Variety: Detroit Dark Red, HM9042RR, Fordhook Giant (respectively)**
**Planting Method: seeded** **Planting Date: 4/24/14** **Harvest Date: see data**
**Spacing: 3 in** **Row Spacing: 14 in**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.33 ft wide x 35 ft long**

**Soil Type: Capac loam** **OM: 2.7%** **pH: 5.8**
**Sand: 37.8%** **Silt: 36.4%** **Clay: 25.8%** **CEC: 6.9**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/24/14 | 2:00 pm | 55/58 | F | Dry | 8-10 SE | 20 | 100% Cloudy | N |
| PO1 | 5/30/14 | 10:50 am | 76/68 | F | Dry | 0.5-1 E | 38 | 10% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/24 | CROP | | Preemergence | |
| 4/24 | No weeds | | | None |
| 5/30 | RED BEET | 3-4″ | Veg | |
| 5/30 | SUGAR BEET | 3-5″ | Veg | |
| 5/30 | SWISS CHARD | 3-4″ | Veg | Poor germ. |
| 5/30 | COLQ = common lambsquarters | 1-2″ | Veg | Many |
| 5/30 | CORW = common ragweed | 3-4″ | Veg | Many |
| 5/30 | LATH = ladysthumb | 2-3″ | Veg | Many |
| 5/30 | RRPW = redroot pigweed | 1-2″ | Veg | Few |
| 5/30 | WIRA = wild radish | 6-8″ | Veg | Many |
| 5/30 | YENS = yellow nutsedge | 2-3″ | Veg | Many |

**Notes and Comments**
**1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**
**3. Two rows red beet, one row chard, two rows sugar beet.**
**4. Sugar beet had very poor stand.**

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

**Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC – 2014**

Trial ID: 109-14-01 Location: East Lansing, MI
Protocol ID: 109-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RED BEET 26/May/14 RATING 1-10 | SUG BEET 26/May/14 RATING 1-10 | SW CHARD 26/May/14 RATING 1-10 | GRFT 26/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | | | | |
| | Rating Type | | | | | | | | | |
| | Rating Unit | | | | | | | | | |
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 5.3 | 8.3 | 3.0 | 10.0 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 5.7 | 8.7 | 3.0 | 10.0 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 1.7 | 6.0 | 1.0 | 10.0 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 3.7 | 9.7 | 4.7 | 10.0 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 2.3 | 7.7 | 2.0 | 10.0 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 2.0 | 8.3 | 1.7 | 10.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 2.0 | 9.0 | 2.0 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 1.7 | 8.7 | 1.3 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 9 | Untreated | | | | | PRE | 1.3 | 7.7 | 1.0 | 9.3 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated, handweeded | | | | | | 1.0 | 8.0 | 1.0 | 10.0 |
| LSD (P=.05) | | | | | | | 2.35 | 2.23 | 1.19 | 0.63 |
| Standard Deviation | | | | | | | 1.37 | 1.30 | 0.70 | 0.37 |
| CV | | | | | | | 51.39 | 15.87 | 33.7 | 3.68 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CORW | LATH | WIRA | RED BEET |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 26/May/14 | 26/May/14 | 26/May/14 | 26/May/14 | 9/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 10.0 | 9.3 | 10.0 | 6.0 | 2.3 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 10.0 | 9.3 | 9.3 | 6.0 | 2.7 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 7.7 | 9.7 | 9.7 | 7.3 | 1.0 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 8.7 | 1.7 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 4.3 | 6.3 | 5.3 | 4.3 | 1.7 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 10.0 | 9.0 | 10.0 | 6.0 | 1.7 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 6.0 | 3.7 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 8.3 | 8.3 | 8.7 | 6.0 | 3.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 9 | Untreated | | | | | PRE | 1.0 | 4.0 | 1.0 | 1.3 | 4.3 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | Untreated, handweeded | | | | | | 1.0 | 4.0 | 1.7 | 1.7 | 1.0 |
| LSD (P=.05) | | | | | | | 3.02 | 4.19 | 2.60 | 3.91 | 1.09 |
| Standard Deviation | | | | | | | 1.76 | 2.44 | 1.52 | 2.28 | 0.64 |
| CV | | | | | | | 24.33 | 30.55 | 20.06 | 42.77 | 27.63 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | GRFT | YENS | COLQ |
| Crop Code | | | | | | | SUG BEET | SW CHARD | | | |
| Rating Date | | | | | | | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 3.0 | 1.7 | 10.0 | 10.0 | 7.3 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 4.7 | 1.7 | 10.0 | 9.3 | 8.3 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 1.0 | 1.0 | 9.3 | 1.7 | 8.3 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 10.0 | 4.7 | 10.0 | 1.0 | 10.0 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 1.7 | 1.0 | 8.3 | 3.0 | 1.0 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 3.3 | 1.0 | 9.7 | 6.0 | 8.7 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 5.0 | 4.0 | 10.0 | 10.0 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 2.7 | 2.0 | 10.0 | 8.7 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 9 | Untreated | | | | | PRE | 2.7 | 3.7 | 10.0 | 8.0 | 9.3 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | Untreated, handweeded | | | | | | 4.0 | 1.7 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 4.10 | 1.62 | 1.72 | 2.01 | 1.88 |
| Standard Deviation | | | | | | | 2.39 | 0.94 | 1.00 | 1.17 | 1.09 |
| CV | | | | | | | 62.93 | 42.3 | 11.36 | 19.98 | 14.78 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW | LATH | PRKW | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 5.3 | 8.3 | 8.7 | 10.0 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 7.0 | 8.0 | 8.0 | 10.0 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 8.7 | 9.3 | 10.0 | 8.3 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 9.0 | 10.0 | 10.0 | 6.7 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 4.7 | 1.0 | 8.0 | 8.3 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 6.7 | 9.3 | 10.0 | 10.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 9.7 | 10.0 | 10.0 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 9 | Untreated | | | | | PRE | 10.0 | 10.0 | 10.0 | 9.7 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated, handweeded | | | | | | 4.7 | 1.0 | 4.0 | 1.0 |
| LSD (P=.05) | | | | | | | 3.45 | 1.80 | 2.85 | 2.10 |
| Standard Deviation | | | | | | | 2.01 | 1.05 | 1.66 | 1.22 |
| CV | | | | | | | 26.57 | 13.62 | 18.72 | 14.54 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | SHPU 9/Jun/14 RATING 1-10 | WIRA 9/Jun/14 RATING 1-10 | SW CHARD 9/Jul/14 COUNT #/PLOT | SW CHARD 9/Jul/14 WEIGHT KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 10.0 | 8.7 | 81.7 | 28.21 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 10.0 | 8.3 | 61.7 | 35.83 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 10.0 | 8.7 | 80.0 | 27.89 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 10.0 | 8.7 | 49.3 | 19.81 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 6.3 | 4.0 | 56.0 | 7.11 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 9.7 | 7.7 | 83.0 | 31.72 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 10.0 | 9.0 | 71.0 | 37.33 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 10.0 | 9.3 | 93.0 | 38.43 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 9 | Untreated | | | | | PRE | 10.0 | 8.3 | 88.7 | 24.04 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated, handweeded | | | | | | 1.0 | 4.0 | 69.7 | 5.59 |
| LSD (P=.05) | | | | | | | 1.93 | 3.67 | 28.30 | 13.071 |
| Standard Deviation | | | | | | | 1.12 | 2.14 | 16.50 | 7.620 |
| CV | | | | | | | 12.92 | 27.94 | 22.48 | 29.77 |

# Weed Control in Red Beet, Sugar Beet, and Swiss Chard – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RED BEET 14/Jul/14 ROOT COUNT #/PLOT | RED BEET 14/Jul/14 ROOT WEIGHT KG/PLOT | SUG BEET 23/Sep/14 ROOT COUNT #/PLOT | SUG BEET 23/Sep/14 ROOT WEIGHT KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 14/Jul/14 | 14/Jul/14 | 23/Sep/14 | 23/Sep/14 |
| | Rating Type | | | | | | ROOT COUNT | ROOT WEIGHT | ROOT COUNT | ROOT WEIGHT |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 95.7 | 11.48 | 10.7 | 20.52 |
| 2 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 90.3 | 11.77 | 8.3 | 17.41 |
| 3 | pyrazon | 68 | DF | 2 | lb ai/a | PRE | 87.0 | 7.59 | 12.7 | 13.90 |
| 4 | clomazone | 3 | ME | 0.3 | lb ai/a | PRE | 89.3 | 11.48 | 2.7 | 2.56 |
| 5 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 48.7 | 4.50 | 11.0 | 6.61 |
| 6 | ethofumesate | 4 | SC | 2 | lb ai/a | PRE | 93.0 | 13.29 | 12.7 | 21.63 |
| 7 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | PRE | 83.7 | 11.58 | 9.0 | 19.09 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 8 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE | 111.3 | 12.60 | 10.0 | 17.15 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 9 | Untreated | | | | | PRE | 101.7 | 8.54 | 11.3 | 16.44 |
| | phenmediphan | 1.3 | L | 0.488 | lb ai/a | PO1 | | | | |
| | ethofumesate | 4 | SC | 0.33 | lb ai/a | PO1 | | | | |
| | triflusulfuron | 50 | WDG | 0.0156 | lb ai/a | PO1 | | | | |
| | clopyralid | 3 | L | 0.188 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated, handweeded | | | | | | 36.0 | 1.57 | 6.0 | 4.55 |
| LSD (P=.05) | | | | | | | 42.00 | 6.406 | 6.91 | 12.056 |
| Standard Deviation | | | | | | | 24.49 | 3.734 | 4.03 | 7.028 |
| CV | | | | | | | 29.27 | 39.56 | 42.71 | 50.25 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

**Project Code:** 114-14-01 **Location:** East Lansing, MI Block 57

**Personnel:** Bernard H. Zandstra, Colin Phillippo
**Crop:** Cabbage, Chinese Cabbage **Variety:** Artost, China Express
**Planting Method:** Transplant **Planting Date:** 5/27/14 **Harvest Date:** 7/14 - 8/7/14
**Spacing:** 22 in **Row Spacing:** 3 ft
**Tillage Type:** Conventional **Study Design:** RCB **Replications:** 3
**Plot Size:** 5.5 ft wide x 30 ft long

**Soil Type:** Marlette Fine Sandy Loam **OM:** 2.0% **pH:** 6.8
**Sand:** 50.7% **Silt:** 31.3% **Clay:** 18.0% **CEC:** 9.1

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRT | 5/27/14 | 1:00 pm | 85/70 | F | Moist | 3-4 SW | 54 | 90% Cloudy | N |
| POT | 5/28/14 | 10:00 am | 63/68 | F | Moist | 1-3 NE | 70 | 100% Cloudy | N |
| PO1 | 6/16/14 | 3:20 pm | 87/89 | F | Dry | 5-7 SW | 41 | 30% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/27 | No Crop | | | |
| 5/27 | No Weeds | | | |
| 5/28 | Transplant | | | |
| 5/28 | No Weeds | | | |
| 6/16 | CABBAGE | 12-14″ | Veg | Many |
| 6/16 | CHINESE CABBAGE | 8-18″ | Veg | Many |
| 6/16 | COLQ = common lambsquarters | 2-4″ | Veg | Many |
| 6/16 | COPU = common purslane | 1-2″ | Veg | Many |
| 6/16 | CORW = common ragweed | 2-3″ | Veg | Few |
| 6/16 | GRFT = green foxtail | 3-5″ | Veg | Many |
| 6/16 | LATH = ladysthumb | 1-2″ | Veg | Many |
| 6/16 | YENS = yellow nutsedge | 2-4″ | Veg | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Crops transplanted; 16-19 plants/plot.

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

**Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014**

Trial ID: 114-14-01 Location: East Lansing, MI
Protocol ID: 114-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CABBAGE 13/Jun/14 RATING 1-10 | CHI CAB 13/Jun/14 RATING 1-10 | GRFT 13/Jun/14 RATING 1-10 | CORW 13/Jun/14 RATING 1-10 | RRPW 13/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 1.0 | 1.7 | 10.0 | 9.3 | 10.0 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 1.3 | 3.3 | 10.0 | 9.7 | 10.0 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 9.3 | 9.3 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 1.0 | 1.0 | 10.0 | 8.7 | 9.3 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 1.7 | 3.7 | 10.0 | 10.0 | 10.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 3.0 | 8.3 | 10.0 | 10.0 | 10.0 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 2.7 | 5.0 | 10.0 | 10.0 | 10.0 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 1.3 | 2.7 | 10.0 | 10.0 | 10.0 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 1.0 | 6.7 | 10.0 | 10.0 | 10.0 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 1.3 | 2.3 | 10.0 | 10.0 | 10.0 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 4.3 | 5.0 | 10.0 | 10.0 | 10.0 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 4.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 2.3 | 6.3 | 10.0 | 10.0 | 10.0 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 1.3 | 1.0 | 6.7 | 7.0 | 6.7 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 1.0 | 1.3 | 10.0 | 9.7 | 10.0 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.06 | 1.55 | 2.06 | 2.40 | 2.91 |
| Standard Deviation | | | | | | | 0.64 | 0.93 | 1.23 | 1.44 | 1.74 |
| CV | | | | | | | 38.69 | 28.92 | 14.23 | 16.96 | 19.89 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CABBAGE 26/Jun/14 RATING 1-10 | CHI CAB 26/Jun/14 RATING 1-10 | BYGR 26/Jun/14 RATING 1-10 | GRFT 26/Jun/14 RATING 1-10 | COLQ 26/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | BYGR | GRFT | COLQ |
| | Crop Code | | | | | | CABBAGE | CHI CAB | | | |
| | Rating Date | | | | | | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 1.3 | 1.3 | 9.7 | 9.7 | 10.0 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 1.7 | 1.7 | 10.0 | 9.7 | 10.0 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.3 | 1.0 | 9.7 | 10.0 | 9.0 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 1.3 | 1.3 | 9.7 | 9.3 | 8.7 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 2.7 | 3.0 | 10.0 | 10.0 | 10.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 3.7 | 8.7 | 10.0 | 10.0 | 9.7 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 2.0 | 3.3 | 10.0 | 10.0 | 10.0 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 1.7 | 2.3 | 10.0 | 10.0 | 10.0 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 1.7 | 6.7 | 9.7 | 10.0 | 10.0 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 1.3 | 1.0 | 10.0 | 9.7 | 10.0 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 4.3 | 5.0 | 10.0 | 9.3 | 9.0 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 3.3 | 5.0 | 8.7 | 8.3 | 8.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 3.3 | 6.3 | 10.0 | 10.0 | 10.0 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 1.0 | 1.0 | 9.7 | 9.0 | 3.0 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 2.7 | 6.0 | 10.0 | 10.0 | 9.7 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 1.0 | 1.0 | 9.0 | 8.3 | 7.3 |
| LSD (P=.05) | | | | | | | 1.05 | 1.71 | 0.83 | 1.14 | 1.31 |
| Standard Deviation | | | | | | | 0.63 | 1.03 | 0.50 | 0.68 | 0.79 |
| CV | | | | | | | 29.47 | 30.01 | 5.13 | 7.13 | 8.73 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW | EBNS | LATH | RRPW | CABBAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 14/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | #/PLOT |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 7.0 | 9.7 | 9.0 | 9.3 | 6.3 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 8.0 | 9.7 | 9.0 | 9.3 | 9.7 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 7.0 | 1.7 | 7.0 | 7.7 | 8.7 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 5.0 | 1.0 | 7.3 | 8.7 | 5.7 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 9.7 | 10.0 | 8.3 | 10.0 | 3.3 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 9.7 | 10.0 | 9.3 | 10.0 | 3.7 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 10.0 | 7.0 | 9.7 | 8.0 | 12.3 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 9.0 | 10.0 | 9.0 | 9.7 | 7.0 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 7.7 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 9.7 | 10.0 | 8.0 | 9.7 | 5.0 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 10.0 | 10.0 | 7.3 | 10.0 | 1.3 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 9.3 | 9.0 | 8.0 | 9.0 | 5.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 3.3 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 4.3 | 9.0 | 1.7 | 8.7 | 5.7 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 9.7 | 10.0 | 9.3 | 10.0 | 3.3 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 7.7 | 8.3 | 6.3 | 8.0 | 10.0 |
| LSD (P=.05) | | | | | | | 3.92 | 2.47 | 1.19 | 1.55 | 5.60 |
| Standard Deviation | | | | | | | 2.35 | 1.48 | 0.71 | 0.93 | 3.36 |
| CV | | | | | | | 27.68 | 17.52 | 8.8 | 10.02 | 54.66 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CABBAGE 14/Jul/14 HARVEST KG/PLOT | CABBAGE 21/Jul/14 HARVEST #/PLOT | CABBAGE 21/Jul/14 HARVEST KG/PLOT | CABBAGE 25/Jul/14 HARVEST #/PLOT | CABBAGE 25/Jul/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | CABBAGE | CABBAGE | CABBAGE | CABBAGE | CABBAGE |
| | Rating Date | | | | | | 14/Jul/14 | 21/Jul/14 | 21/Jul/14 | 25/Jul/14 | 25/Jul/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | KG/PLOT | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 7.39 | 1.7 | 2.93 | 0.7 | 1.53 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 12.18 | 1.0 | 1.97 | 0.3 | 0.83 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 10.15 | 1.0 | 1.85 | 1.3 | 3.13 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 7.88 | 2.3 | 4.68 | 0.3 | 0.64 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 4.55 | 1.7 | 3.08 | 1.0 | 2.14 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 4.01 | 1.3 | 2.34 | 4.3 | 9.02 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 15.80 | 1.3 | 2.46 | 0.3 | 0.74 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 8.03 | 2.3 | 4.55 | 2.3 | 5.32 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 10.22 | 3.0 | 6.82 | 3.3 | 8.09 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 5.90 | 4.7 | 10.24 | 1.0 | 2.16 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 1.68 | 1.0 | 1.95 | 1.3 | 3.23 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 6.34 | 3.0 | 6.04 | 1.3 | 3.24 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 4.27 | 3.0 | 5.78 | 2.0 | 4.78 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 6.88 | 1.7 | 3.06 | 0.7 | 1.41 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 3.88 | 2.7 | 5.25 | 2.0 | 4.58 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 14.81 | 1.7 | 3.29 | 1.0 | 2.27 |
| LSD (P=.05) | | | | | | | 7.268 | 2.52 | 5.390 | 1.70 | 4.034 |
| Standard Deviation | | | | | | | 4.359 | 1.51 | 3.233 | 1.02 | 2.419 |
| CV | | | | | | | 56.27 | 72.47 | 78.04 | 69.75 | 72.9 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CABBAGE 31/Jul/14 HARVEST #/PLOT | CABBAGE 31/Jul/14 HARVEST KG/PLOT | CABBAGE TOTAL # #/PLOT | CABBAGE TOTAL WT KG/PLOT | CHI CAB 17/Jul/14 HARVEST #/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 31/Jul/14 | 31/Jul/14 | | | 17/Jul/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | TOTAL # | TOTAL WT | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT | #/PLOT |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 6.0 | 11.60 | 14.7 | 23.45 | 7.0 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 4.3 | 9.90 | 13.7 | 24.88 | 6.0 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 6.0 | 12.21 | 17.0 | 27.35 | 10.7 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 8.0 | 17.53 | 16.3 | 30.73 | 8.3 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 7.0 | 13.62 | 13.0 | 23.39 | 5.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 6.7 | 11.46 | 16.0 | 26.83 | 0.0 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 3.7 | 7.93 | 17.7 | 26.93 | 8.0 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 6.3 | 12.35 | 18.0 | 30.25 | 3.7 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 3.7 | 8.39 | 17.7 | 33.52 | 0.0 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 5.3 | 11.26 | 16.0 | 29.55 | 8.0 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 5.7 | 10.27 | 9.3 | 17.12 | 1.7 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 8.7 | 18.74 | 18.3 | 34.36 | 0.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 8.7 | 18.08 | 17.0 | 32.92 | 0.0 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 8.0 | 14.15 | 16.0 | 25.49 | 8.0 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 8.3 | 16.92 | 16.3 | 30.62 | 5.0 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 4.3 | 9.59 | 17.0 | 29.96 | 6.3 |
| LSD (P=.05) | | | | | | | 5.04 | 10.353 | 3.23 | 7.098 | 4.12 |
| Standard Deviation | | | | | | | 3.03 | 6.210 | 1.94 | 4.257 | 2.47 |
| CV | | | | | | | 48.08 | 48.7 | 12.2 | 15.23 | 50.89 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHI CAB 17/Jul/14 HARVEST KG/PLOT | CHI CAB 25/Jul/14 HARVEST #/PLOT | CHI CAB 25/Jul/14 HARVEST KG/PLOT | CHI CAB 31/Jul/14 HARVEST #/PLOT | CHI CAB 31/Jul/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | | | | | |
| | Rating Type | | | | | | | | | | |
| | Rating Unit | | | | | | | | | | |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 10.75 | 1.0 | 2.08 | 1.7 | 3.20 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 10.12 | 3.0 | 5.76 | 0.3 | 0.46 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 22.00 | 0.0 | 0.00 | 0.7 | 0.90 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 16.92 | 1.0 | 1.53 | 0.7 | 0.58 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 9.23 | 1.0 | 1.93 | 1.3 | 2.30 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 0.00 | 0.3 | 0.70 | 0.0 | 0.00 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 12.44 | 1.0 | 2.98 | 2.3 | 4.37 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 8.67 | 1.7 | 2.48 | 1.0 | 1.36 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 0.00 | 0.3 | 0.56 | 2.3 | 3.57 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 17.87 | 1.0 | 2.47 | 0.7 | 1.39 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 3.09 | 1.3 | 2.31 | 2.0 | 3.90 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 0.00 | 0.3 | 0.38 | 1.7 | 2.38 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 15.36 | 2.3 | 5.73 | 0.7 | 1.43 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 7.87 | 4.0 | 7.40 | 1.0 | 1.60 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | | |
| 16 | Untreated, handweeded | | | | | | 13.73 | 0.0 | 0.00 | 0.7 | 1.03 |
| LSD (P=.05) | | | | | | | 9.264 | 2.40 | 4.826 | 2.06 | 3.651 |
| Standard Deviation | | | | | | | 5.556 | 1.44 | 2.895 | 1.23 | 2.190 |
| CV | | | | | | | 60.05 | 125.67 | 127.56 | 116.17 | 123.15 |

# Weed Control in Cabbage and Chinese Cabbage – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHI CAB 7/Aug/14 HARVEST #/PLOT | CHI CAB 7/Aug/14 HARVEST KG/PLOT | CHI CAB TOTAL # #/PLOT | CHI CAB TOTAL WT KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | | | | |
| | Rating Type | | | | | | | | | |
| | Rating Unit | | | | | | | | | |
| 1 | pendimethalin | 3.8 | CS | 1 | lb ai/a | PRT | 0.3 | 0.56 | 10.0 | 16.59 |
| 2 | pendimethalin | 3.8 | CS | 1 | lb ai/a | POT | 0.7 | 0.74 | 10.0 | 17.08 |
| 3 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 0.7 | 1.25 | 12.0 | 24.15 |
| 4 | napropamide | 50 | DF | 2 | lb ai/a | POT | 0.0 | 0.00 | 10.0 | 19.04 |
| 5 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRT | 2.0 | 2.33 | 9.3 | 15.78 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | POT | 0.3 | 0.73 | 0.7 | 1.42 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 2.0 | 3.32 | 13.3 | 23.12 |
| 8 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRT | 0.7 | 0.89 | 7.0 | 13.40 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | 4.0 | 5.96 | 6.7 | 10.09 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRT | 2.0 | 2.10 | 11.7 | 23.82 |
| 11 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 1.0 | 1.08 | 6.0 | 10.38 |
| 12 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 0.0 | 0.00 | 0.0 | 0.00 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 13 | s-metolachlor | 7.62 | EC | 1.2 | lb ai/a | PRT | 3.0 | 4.05 | 5.0 | 6.81 |
| | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRT | | | | |
| 14 | acetochlor | 3 | CS | 0.75 | lb ai/a | PRT | 0.7 | 1.80 | 11.7 | 24.31 |
| 15 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 2.0 | 2.91 | 12.0 | 19.78 |
| | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.068 | lb ai/a | PO1 | | | | |
| 16 | Untreated, handweeded | | | | | | 0.0 | 0.00 | 7.0 | 14.76 |
| LSD (P=.05) | | | | | | | 1.82 | 3.077 | 4.62 | 10.202 |
| Standard Deviation | | | | | | | 1.09 | 1.846 | 2.77 | 6.119 |
| CV | | | | | | | 90.45 | 106.56 | 33.53 | 40.7 |

# Preemergence Weed Control in Carrot – Keilen - 2014

**Project Code: 107-14-01** **Location: East Lansing, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Carrot** **Variety: Finley**
**Planting Method: Seeded** **Planting Date: 5/8/14** **Harvest Date: 8/25/14**
**Spacing: 1 inch** **Row Spacing: 10 inch, 2 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3.3 ft wide x 30 ft long**

**Soil Type: Houghton Muck** **OM: 42.1%** **pH: 7.2**
**Sand: 36%** **Silt: 22%** **Clay: 0%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/16/14 | 12:50 pm | 47/51 | F | Moist | 5-8 W | 69 | 100% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/16 | CARROT | | Preemergence | |
| 5/16 | LATH = ladysthumb | <0.5″ | Veg | Many |
| | COPU = common purslane | | | |
| | RRPW = redroot pigweed | | | |
| | WIBW = wild buckwheat | | | |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 10 ft of 2 rows.

# Preemergence Weed Control in Carrot – Keilen - 2014

**Preemergence Weed Control in Carrot - Keilen - 2014**

Trial ID: 107-14-01 Location: East Lansing, MI
Protocol ID: 107-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CARROT | COPU | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | COPU | LATH | RRPW |
| | Crop Code | | | | | | CARROT | | | |
| | Rating Date | | | | | | 4/Jun/14 | 4/Jun/14 | 4/Jun/14 | 4/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 9.0 | 7.3 | 9.3 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 2.0 | 9.3 | 8.3 | 9.0 |
| 3 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.7 | 10.0 | 9.0 | 9.7 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 4 | linuron | 50 | DF | 1 | lb ai/a | PRE | 2.3 | 8.0 | 7.7 | 9.7 |
| 5 | linuron | 50 | DF | 2 | lb ai/a | PRE | 1.3 | 8.7 | 8.3 | 10.0 |
| 6 | prometryn | 4 | L | 1 | lb ai/a | PRE | 2.3 | 8.0 | 6.7 | 9.0 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PRE | 3.3 | 8.9 | 8.3 | 9.3 |
| 8 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 4.0 | 9.3 | 4.0 | 10.0 |
| 9 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 6.7 | 7.0 | 8.0 | 10.0 |
| 10 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 9.7 | 10.0 | 10.0 | 10.0 |
| 11 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 3.3 | 10.0 | 8.3 | 10.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 12 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.7 | 10.0 | 9.3 | 9.3 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 13 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 1.3 | 4.0 | 2.0 | 10.0 |
| 14 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 1.3 | 1.3 | 2.3 | 9.0 |
| 15 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 2.03 | 3.21 | 1.93 | 1.44 |
| Standard Deviation | | | | | | | 1.21 | 1.92 | 1.15 | 0.86 |
| CV | | | | | | | 40.78 | 25.1 | 17.16 | 9.53 |

# Preemergence Weed Control in Carrot – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | COPU | LATH | RRPW |
| Crop Code | | | | | | | CARROT | | | |
| Rating Date | | | | | | | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 | 9/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 7.0 | 6.7 | 8.0 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.7 | 8.7 | 8.3 | 9.0 |
| 3 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.0 | 9.7 | 8.3 | 9.7 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 4 | linuron | 50 | DF | 1 | lb ai/a | PRE | 1.7 | 8.7 | 7.0 | 9.3 |
| 5 | linuron | 50 | DF | 2 | lb ai/a | PRE | 2.0 | 9.0 | 8.7 | 10.0 |
| 6 | prometryn | 4 | L | 1 | lb ai/a | PRE | 1.7 | 7.0 | 6.3 | 9.3 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PRE | 2.3 | 8.0 | 8.3 | 10.0 |
| 8 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 3.3 | 8.0 | 4.3 | 9.7 |
| 9 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 8.0 | 7.3 | 7.0 | 10.0 |
| 10 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 10.0 | 10.0 | 9.7 | 10.0 |
| 11 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.3 | 8.7 | 7.0 | 10.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 12 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.7 | 9.3 | 9.3 | 10.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 13 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 1.0 | 1.7 | 1.7 | 9.3 |
| 14 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 1.3 | 1.0 | 1.0 | 6.0 |
| 15 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 3.0 |
| LSD (P=.05) | | | | | | | 1.91 | 1.87 | 1.62 | 2.80 |
| Standard Deviation | | | | | | | 1.14 | 1.12 | 0.97 | 1.68 |
| CV | | | | | | | 41.1 | 15.96 | 15.37 | 18.85 |

# Preemergence Weed Control in Carrot – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WIBW | CARROT | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WIBW | | LATH | RRPW |
| Crop Code | | | | | | | | CARROT | | |
| Rating Date | | | | | | | 9/Jun/14 | 16/Jun/14 | 16/Jun/14 | 16/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 9.0 | 1.7 | 10.0 | 10.0 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 10.0 | 1.7 | 10.0 | 10.0 |
| 3 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 10.0 | 2.3 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | |
| 4 | linuron | 50 | DF | 1 | lb ai/a | PRE | 7.0 | 2.0 | 10.0 | 10.0 |
| 5 | linuron | 50 | DF | 2 | lb ai/a | PRE | 7.0 | 2.0 | 10.0 | 10.0 |
| 6 | prometryn | 4 | L | 1 | lb ai/a | PRE | 4.0 | 1.3 | 10.0 | 10.0 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PRE | 10.0 | 3.3 | 9.7 | 10.0 |
| 8 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 10.0 | 2.3 | 10.0 | 10.0 |
| 9 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 6.0 | 7.3 | 10.0 | 9.7 |
| 10 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 10.0 |
| 11 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 7.3 | 2.0 | 10.0 | 10.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 12 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 6.7 | 2.0 | 10.0 | 10.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | |
| 13 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 4.0 | 1.3 | 10.0 | 10.0 |
| 14 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 4.0 | 1.7 | 9.0 | 10.0 |
| 15 | Untreated | | | | | | 6.0 | 1.7 | 8.3 | 10.0 |
| LSD (P=.05) | | | | | | | 6.34 | 1.29 | 1.01 | 0.25 |
| Standard Deviation | | | | | | | 3.79 | 0.77 | 0.60 | 0.15 |
| CV | | | | | | | 51.51 | 27.09 | 6.14 | 1.49 |

# Preemergence Weed Control in Carrot – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CARROT 7/Jul/14 RATING 1-10 | COPU 7/Jul/14 RATING 1-10 | LATH 7/Jul/14 RATING 1-10 | CARROT 17/Jul/14 RATING 1-10 | CARROT 25/Aug/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.3 | 7.3 | 8.3 | 2.3 | 9.44 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 2.3 | 9.0 | 9.7 | 1.3 | 8.47 |
| 3 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 9.0 | 9.3 | 1.3 | 7.82 |
| | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | | | | | |
| 4 | linuron | 50 | DF | 1 | lb ai/a | PRE | 2.3 | 8.7 | 7.7 | 1.3 | 8.31 |
| 5 | linuron | 50 | DF | 2 | lb ai/a | PRE | 2.3 | 7.7 | 8.3 | 1.3 | 8.87 |
| 6 | prometryn | 4 | L | 1 | lb ai/a | PRE | 2.3 | 8.0 | 8.3 | 2.3 | 7.41 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PRE | 2.7 | 7.3 | 8.0 | 1.7 | 8.08 |
| 8 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 2.7 | 9.3 | 6.0 | 1.7 | 8.06 |
| 9 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 6.7 | 10.0 | 8.7 | 6.0 | 5.20 |
| 10 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 9.7 | 10.0 | 9.3 | 10.0 | 0.04 |
| 11 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.3 | 9.7 | 9.0 | 1.7 | 9.35 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | | |
| 12 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.7 | 7.7 | 9.3 | 1.7 | 8.22 |
| | linuron | 50 | DF | 1 | lb ai/a | PRE | | | | | |
| 13 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 1.3 | 9.7 | 5.3 | 1.3 | 8.96 |
| 14 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 3.0 | 7.0 | 4.3 | 2.0 | 9.29 |
| 15 | Untreated | | | | | | 3.0 | 9.7 | 5.7 | 2.0 | 8.53 |
| LSD (P=.05) | | | | | | | 1.80 | 3.41 | 2.94 | 1.57 | 2.943 |
| Standard Deviation | | | | | | | 1.07 | 2.04 | 1.76 | 0.94 | 1.760 |
| CV | | | | | | | 34.8 | 23.51 | 22.47 | 37.15 | 22.75 |

# Postemergence Weed Control in Carrot – Keilen - 2014

**Project Code: 107-14-02** **Location: East Lansing, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Carrot** **Variety: Finley**
**Planting Method: Seeded** **Planting Date: 5/8/14** **Harvest Date: 8/25/14**
**Spacing: 1 inch** **Row Spacing: 10 inch, 2 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3.3 ft wide x 30 ft long**

**Soil Type: Houghton Muck** **OM: 42.1%** **pH: 7.2**
**Sand: 36%** **Silt: 22%** **Clay: 0%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PO1 | 6/9/14 | 1:30 pm | 83/69 | F | Damp | 4-6 NE | 21 | 30% Cloudy | N |
| PO2 | 7/7/14 | 1:20 pm | 79/75 | F | Wet | 6-9 SW | 78 | 70% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/9 | CARROT | | 2/3-leaf stage | |
| 6/9 | COPU = common purslane | 1-2″ | Veg | Moderate |
| 6/9 | LATH = ladysthumb | 3-4″ | Veg | Many |
| 6/9 | RRPW = redroot pigweed | 2-4″ | Veg | Many |
| 7/7 | CARROT | 12-15″ | Foliar | Good |
| 7/7 | COPU = common purslane | 4-6″ | Veg | Many |
| 7/7 | LATH = ladysthumb | 4-8″ | Veg | Many |
| 7/7 | RRPW = redroot pigweed | 4-12″ | Veg | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 10 feet of 2 rows.

# Postemergence Weed Control in Carrot – Keilen - 2014

**Postemergence Weed Control in Carrot – Keilen - 2014**

Trial ID: 107-14-02 Location: East Lansing, MI
Protocol ID: 107-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CARROT 16/Jun/14 RATING 1-10 | LATH 16/Jun/14 RATING 1-10 | RRPW 16/Jun/14 RATING 1-10 | CARROT 7/Jul/14 RATING 1-10 | COPU 7/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 1 | lb ai/a | PO1, 2 | 1.3 | 10.0 | 10.0 | 1.7 | 8.3 |
| 2 | linuron | 50 | DF | 1 | lb ai/a | PO1, 2 | 1.3 | 10.0 | 10.0 | 1.0 | 8.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | | |
| 3 | linuron | 50 | DF | 2 | lb ai/a | PO1, 2 | 2.0 | 10.0 | 10.0 | 2.0 | 7.7 |
| 4 | linuron | 50 | DF | 2 | lb ai/a | PO1, 2 | 1.7 | 10.0 | 10.0 | 2.3 | 9.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | | |
| 5 | metribuzin | 75 | DF | 0.25 | lb ai/a | PO1, 2 | 2.0 | 10.0 | 10.0 | 1.7 | 8.7 |
| 6 | metribuzin | 75 | DF | 0.5 | lb ai/a | PO1, 2 | 2.3 | 10.0 | 10.0 | 1.7 | 8.0 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PO1, 2 | 2.0 | 8.3 | 10.0 | 1.0 | 5.3 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1, 2 | 3.0 | 8.7 | 9.3 | 1.7 | 6.0 |
| 9 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | 4.3 | 7.3 | 9.3 | 2.3 | 7.0 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1, 2 | 6.0 | 9.7 | 10.0 | 3.3 | 7.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | | |
| 11 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | 6.0 | 8.7 | 9.7 | 2.7 | 5.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | | |
| 12 | Untreated | | | | | | 1.7 | 6.3 | 7.0 | 1.7 | 4.0 |
| LSD (P=.05) | | | | | | | 1.23 | 3.02 | 2.59 | 1.32 | 3.85 |
| Standard Deviation | | | | | | | 0.73 | 1.78 | 1.53 | 0.78 | 2.27 |
| CV | | | | | | | 25.89 | 19.61 | 15.88 | 40.62 | 32.07 |

# Postemergence Weed Control in Carrot – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LATH | RRPW | CARROT | CARROT |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | CARROT | CARROT |
| Rating Date | | | | | | | 7/Jul/14 | 7/Jul/14 | 17/Jul/14 | 25/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | KG/PLOT |
| 1 | linuron | 50 | DF | 1 | lb ai/a | PO1, 2 | 9.0 | 10.0 | 1.3 | 7.92 |
| 2 | linuron | 50 | DF | 1 | lb ai/a | PO1, 2 | 9.0 | 9.7 | 1.0 | 9.55 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | |
| 3 | linuron | 50 | DF | 2 | lb ai/a | PO1, 2 | 9.0 | 10.0 | 2.0 | 7.77 |
| 4 | linuron | 50 | DF | 2 | lb ai/a | PO1, 2 | 9.7 | 10.0 | 1.7 | 8.64 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | |
| 5 | metribuzin | 75 | DF | 0.25 | lb ai/a | PO1, 2 | 10.0 | 10.0 | 1.7 | 7.11 |
| 6 | metribuzin | 75 | DF | 0.5 | lb ai/a | PO1, 2 | 8.7 | 8.0 | 1.0 | 9.95 |
| 7 | prometryn | 4 | L | 2 | lb ai/a | PO1, 2 | 3.3 | 9.3 | 1.3 | 8.66 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1, 2 | 4.3 | 8.7 | 3.0 | 7.38 |
| 9 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | 2.0 | 7.7 | 4.3 | 7.53 |
| 10 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1, 2 | 5.3 | 8.7 | 5.3 | 4.45 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | |
| 11 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | 5.3 | 9.3 | 5.7 | 4.06 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, 2 | | | | |
| 12 | Untreated | | | | | | 2.3 | 4.3 | 2.0 | 6.43 |
| LSD (P=.05) | | | | | | | 3.79 | 2.92 | 1.09 | 2.833 |
| Standard Deviation | | | | | | | 2.24 | 1.73 | 0.64 | 1.673 |
| CV | | | | | | | 34.4 | 19.61 | 25.46 | 22.44 |

# Weed Control in Celery – Cnossen - 2014

**Project Code: 113-14-01** **Location: Wayland, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Celery** **Variety: Duchess**
**Planting Method: Transplant** **Planting Date: 6/30/14** **Harvest Date: 10/9/14**
**Spacing: 6 in** **Row Spacing: 20 in, 2 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3.3 ft wide x 40 ft long**

**Soil Type: Houghton Muck** **OM: 61.4%** **pH: 6.6**
**Sand: 19%** **Silt: 19%** **Clay: 1%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| POT | 7/3/14 | 12:45 pm | 74/70 | F | Moist | 4-6 NW | 49 | 0% Cloudy | N |
| PO1 | 7/29/14 | 3:15 pm | 77/68 | F | Damp | 3-5 NE | 46 | 95% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 7/3 | CELERY | 2-4″ | 3-leaf stage | Good |
| 7/3 | No weeds | | | |
| 7/29 | CELERY | 4-6″ | Foliar | Good |
| 7/29 | COPU = common purslane | 1-4″ | Foliar | Many |
| 7/29 | GRFT = green foxtail | 2-10″ | Foliar | Few |
| 7/29 | LATH = ladysthumb | 2-6″ | Foliar | Moderate |
| 7/29 | RRPW = redroot pigweed | 2-8″ | Foliar | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

# Weed Control in Celery – Cnossen - 2014

**Weed Control in Celery – Cnossen - 2014**

Trial ID: 113-14-01 Location: Wayland, MI
Protocol ID: 113-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | GRFT | COPU | LATH |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | GRFT | COPU | LATH |
| | Crop Code | | | | | | CELERY | | | |
| | Rating Date | | | | | | 29/Jul/14 | 29/Jul/14 | 29/Jul/14 | 29/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | prometryn | 4 | L | 2 | lb ai/a | POT | 1.0 | 9.0 | 2.0 | 9.7 |
| | prometryn | 4 | L | 2 | lb ai/a | PO1 | | | | |
| 2 | linuron | 50 | DF | 1 | lb ai/a | POT | 1.3 | 7.3 | 2.0 | 7.7 |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | POT | 1.0 | 8.7 | 7.7 | 9.0 |
| 4 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | POT | 1.3 | 9.0 | 8.3 | 9.7 |
| 5 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 1.3 | 10.0 | 8.7 | 8.3 |
| 6 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | POT | 2.0 | 9.7 | 9.0 | 9.0 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 3.7 | 5.3 | 3.3 | 5.7 |
| 8 | sulfentrazone | 4 | F | 0.25 | lb ai/a | POT | 2.0 | 6.0 | 3.7 | 7.3 |
| 9 | sulfentrazone | 4 | F | 0.375 | lb ai/a | POT | 2.3 | 7.7 | 5.3 | 7.0 |
| 10 | flumioxazin | 51 | WDG | 0.096 | lb ai/a | POT | 1.3 | 8.7 | 8.0 | 8.7 |
| 11 | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | POT | 1.0 | 9.3 | 2.3 | 4.7 |
| 12 | Untreated, handweeded | | | | | | 1.0 | 1.0 | 1.0 | 1.0 |
| | LSD (P=.05) | | | | | | 0.82 | 2.52 | 2.18 | 3.23 |
| | Standard Deviation | | | | | | 0.48 | 1.49 | 1.29 | 1.91 |
| | CV | | | | | | 29.92 | 19.46 | 25.24 | 26.09 |

# Weed Control in Celery – Cnossen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW 29/Jul/14 RATING 1-10 | CELERY 13/Aug/14 RATING 1-10 | GRFT 13/Aug/14 RATING 1-10 | COPU 13/Aug/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | prometryn | 4 | L | 2 | lb ai/a | POT | 6.7 | 1.3 | 8.3 | 2.3 |
| | prometryn | 4 | L | 2 | lb ai/a | PO1 | | | | |
| 2 | linuron | 50 | DF | 1 | lb ai/a | POT | 7.0 | 1.7 | 4.3 | 1.0 |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | | |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | POT | 5.7 | 1.0 | 10.0 | 9.0 |
| 4 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | POT | 6.3 | 1.3 | 10.0 | 9.7 |
| 5 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 8.3 | 3.3 | 10.0 | 9.7 |
| 6 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | POT | 10.0 | 5.3 | 10.0 | 9.7 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 3.7 | 4.7 | 8.0 | 7.3 |
| 8 | sulfentrazone | 4 | F | 0.25 | lb ai/a | POT | 6.0 | 2.0 | 9.0 | 8.7 |
| 9 | sulfentrazone | 4 | F | 0.375 | lb ai/a | POT | 7.3 | 2.7 | 10.0 | 9.3 |
| 10 | flumioxazin | 51 | WDG | 0.096 | lb ai/a | POT | 8.0 | 1.3 | 9.0 | 9.3 |
| 11 | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | POT | 5.7 | 1.0 | 10.0 | 8.0 |
| 12 | Untreated, handweeded | | | | | | 1.0 | 2.0 | 9.3 | 8.3 |
| LSD (P=.05) | | | | | | | 1.96 | 1.19 | 2.57 | 1.30 |
| Standard Deviation | | | | | | | 1.16 | 0.71 | 1.52 | 0.77 |
| CV | | | | | | | 18.4 | 30.59 | 16.89 | 9.97 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW 13/Aug/14 RATING 1-10 | CELERY 9/Oct/14 HARVEST #/PLOT | CELERY 9/Oct/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|
| 1 | prometryn | 4 | L | 2 | lb ai/a | POT | 9.3 | 33.0 | 27.26 |
| | prometryn | 4 | L | 2 | lb ai/a | PO1 | | | |
| 2 | linuron | 50 | DF | 1 | lb ai/a | POT | 10.0 | 36.0 | 26.94 |
| | linuron | 50 | DF | 1 | lb ai/a | PO1 | | | |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | POT | 8.0 | 35.3 | 31.58 |
| 4 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | POT | 8.3 | 34.7 | 27.59 |
| 5 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 9.3 | 34.0 | 27.28 |
| 6 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | POT | 9.3 | 27.7 | 17.13 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | POT | 6.3 | 29.0 | 23.05 |
| 8 | sulfentrazone | 4 | F | 0.25 | lb ai/a | POT | 8.3 | 37.0 | 29.73 |
| 9 | sulfentrazone | 4 | F | 0.375 | lb ai/a | POT | 9.7 | 34.7 | 28.84 |
| 10 | flumioxazin | 51 | WDG | 0.096 | lb ai/a | POT | 9.7 | 35.7 | 30.07 |
| 11 | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | POT | 6.0 | 34.7 | 32.96 |
| 12 | Untreated, handweeded | | | | | | 6.3 | 36.0 | 31.24 |
| LSD (P=.05) | | | | | | | 2.52 | 4.83 | 4.582 |
| Standard Deviation | | | | | | | 1.49 | 2.85 | 2.706 |
| CV | | | | | | | 17.72 | 8.4 | 9.73 |

# Weed Control in Sweet Corn – HTRC - 2014

Project Code: 106-14-01 Location: East Lansing, MI
Block 67/68

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Sweet Corn Variety: Protector, Obsession II
Planting Method: Seeded Planting Date: 5/19/14 Harvest Date: See data
Spacing: 10 in Row Spacing: 28 in
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Capac loam OM: 2.8% pH: 6.4
Sand: 48% Silt: 29% Clay: 23% CEC: 10.8

Herbicide Application Information

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/20/14 | 1:30 pm | 74/62 | F | Moist | 4-6 SW | 52 | 70% Cloudy | N |
| PO1 | 6/16/14 | 1:00 pm | 87/86 | F | Dry | 1-3 SW | 36 | 50% Cloudy | N |

Crop and Weed Information at Application

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/20 | SWEET CORN | | Preemergence | |
| 5/20 | No weeds | | | |
| 6/16 | SWEET CORN | 12-18″ | 3-collar | Good |
| 6/16 | COLQ = common lambsquarters | 4-6″ | Foliar | Moderate |
| 6/16 | COPU = common purslane | 4-6″ | Foliar | Moderate |
| 6/16 | CORW = common ragweed | 4-6″ | Foliar | Moderate |
| 6/16 | FAPA = fall panicum | 4-5″ | Foliar | Moderate |
| 6/16 | GRFT = green foxtail | 6-8″ | Foliar | Many |
| 6/16 | LATH = ladysthumb | 2-4″ | Foliar | Moderate |
| 6/16 | RRPW = redroot pigweed | 4-8″ | Foliar | Many |
| 6/16 | WIRA = wild radish | 6-8″ | Foliar | Many |
| 6/16 | YENS = yellow nutsedge | 4-6″ | Foliar | Many |

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Protector: yellow, 79 days LL; Obsession II: bicolor, 79 days RR. One row of each hybrid/plot.
4. Anthem ATZ = atrazine + pyroxasulfone + fluthiacet-methyl
   Anthem = pyroxasulfone + fluthiacet-methyl

**Weed Control in Sweet Corn – HTRC - 2014**

Trial ID: 106-14-01 Location: East Lansing, MI
Protocol ID: 106-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PROTCTR 13/Jun/14 RATING 1-10 | OBSSN II 13/Jun/14 RATING 1-10 | GRFT 13/Jun/14 RATING 1-10 | COLQ 13/Jun/14 RATING 1-10 | COPU 13/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 2 | Anthem ATZ | 4.5 | SE | 1.12 | lb ai/a | PRE | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 |
| 3 | Anthem | 2.15 | SE | 0.13 | lb ai/a | PRE | 1.0 | 1.0 | 10.0 | 9.0 | 10.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 4 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 2.0 | 1.7 | 10.0 | 8.0 | 9.7 |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 5 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 1.3 | 1.3 | 10.0 | 10.0 | 10.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PRE | | | | | |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 6 | UKU 48 | | | | | PO1 | 1.3 | 1.3 | 4.0 | 3.0 | 4.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 7 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | | |
| 8 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.7 | 1.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | | |
| 9 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | | |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PROTCTR 13/Jun/14 RATING 1-10 | OBSSN II 13/Jun/14 RATING 1-10 | GRFT 13/Jun/14 RATING 1-10 | COLQ 13/Jun/14 RATING 1-10 | COPU 13/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 13/Jun/14 | 13/Jun/14 | 13/Jun/14 | 13/Jun/14 | 13/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 10 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 1.7 | 1.3 | 9.7 | 9.0 | 9.7 |
| | UKU 48 | | | | | PO1 | | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | | |
| 11 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 1.3 | 1.0 | 10.0 | 9.0 | 10.0 |
| | UKU 48 | | | | | PO1 | | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | | |
| 12 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 2.3 | 1.7 | 10.0 | 8.0 | 10.0 |
| 13 | s-metolachlor | 7.64 | EC | 1.6 | lb ai/a | PRE | 2.0 | 1.3 | 9.7 | 8.0 | 9.7 |
| 14 | acetochlor | 3 | CS | 1.5 | lb ai/a | PRE | 2.0 | 1.7 | 9.3 | 6.7 | 9.3 |
| 15 | s-metolachlor | 7.64 | EC | 1.2 | lb ai/a | PRE | 1.3 | 1.3 | 9.7 | 7.3 | 9.7 |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | PO1 | | | | | |
| 16 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 2.0 | 2.3 | 9.3 | 7.3 | 9.7 |
| | glufosinate | 2.34 | L | 0.37 | lb ai/a | PO1 | | | | | |
| 17 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.7 | 1.7 | 10.0 | 6.3 | 10.0 |
| | mesotrione | 4 | SC | 0.09 | lb ai/a | PO1 | | | | | |
| 18 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.3 | 1.0 | 10.0 | 6.0 | 7.0 |
| | tembotrione | 3.5 | SC | 0.082 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 19 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.3 | 1.3 | 9.3 | 7.3 | 9.3 |
| | topramezone | 2.8 | L | 0.0164 | lb ai/a | PO1 | | | | | |
| 20 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.7 | 1.7 | 9.7 | 6.0 | 9.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| LSD (P=.05) | | | | | | | 0.93 | 0.82 | 2.04 | 2.70 | 2.89 |
| Standard Deviation | | | | | | | 0.57 | 0.50 | 1.24 | 1.64 | 1.75 |
| CV | | | | | | | 38.53 | 37.24 | 15.92 | 26.17 | 23.12 |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW 13/Jun/14 RATING 1-10 | LATH 13/Jun/14 RATING 1-10 | RRPW 13/Jun/14 RATING 1-10 | PROTCTR 2/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.3 |
| 2 | Anthem ATZ | 4.5 | SE | 1.12 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 1.0 |
| 3 | Anthem | 2.15 | SE | 0.13 | lb ai/a | PRE | 9.7 | 9.0 | 9.0 | 1.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 4 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 6.7 | 9.0 | 8.3 | 1.3 |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 5 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 1.3 |
| | atrazine | 4 | F | 1 | lb ai/a | PRE | | | | |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 6 | UKU 48 | | | | | PO1 | 4.0 | 1.7 | 2.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 7 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 8 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.0 | 1.3 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 9 | UKU 48 | | | | | PO1 | 1.0 | 1.0 | 1.0 | 1.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 10 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 9.7 | 9.0 | 10.0 | 1.0 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW | LATH | RRPW | PROTCTR |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 13/Jun/14 | 13/Jun/14 | 13/Jun/14 | 2/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 11 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 9.7 | 9.7 | 10.0 | 1.0 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 12 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 10.0 | 7.7 | 10.0 | 1.0 |
| 13 | s-metolachlor | 7.64 | EC | 1.6 | lb ai/a | PRE | 10.0 | 7.7 | 9.3 | 1.3 |
| 14 | acetochlor | 3 | CS | 1.5 | lb ai/a | PRE | 9.3 | 5.7 | 9.3 | 1.3 |
| 15 | s-metolachlor | 7.64 | EC | 1.2 | lb ai/a | PRE | 9.3 | 7.3 | 8.7 | 1.3 |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | PO1 | | | | |
| 16 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 8.7 | 5.3 | 8.0 | 1.7 |
| | glufosinate | 2.34 | L | 0.37 | lb ai/a | PO1 | | | | |
| 17 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 5.3 | 6.0 | 8.7 | 1.3 |
| | mesotrione | 4 | SC | 0.09 | lb ai/a | PO1 | | | | |
| 18 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 9.3 | 6.7 | 7.0 | 1.0 |
| | tembotrione | 3.5 | SC | 0.082 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 19 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 9.0 | 7.7 | 8.0 | 1.0 |
| | topramezone | 2.8 | L | 0.0164 | lb ai/a | PO1 | | | | |
| 20 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 7.7 | 3.7 | 6.3 | 1.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| LSD (P=.05) | | | | | | | 3.28 | 2.68 | 3.04 | 0.73 |
| Standard Deviation | | | | | | | 1.99 | 1.62 | 1.84 | 0.44 |
| CV | | | | | | | 28.06 | 27.03 | 26.54 | 37.99 |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | OBSSN II 2/Jul/14 RATING 1-10 | FAPA 2/Jul/14 RATING 1-10 | YENS 2/Jul/14 RATING 1-10 | COLQ 2/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated | | | | | | 1.3 | 1.0 | 1.0 | 1.0 |
| 2 | Anthem ATZ | 4.5 | SE | 1.12 | lb ai/a | PRE | 1.0 | 6.3 | 5.0 | 10.0 |
| 3 | Anthem | 2.15 | SE | 0.13 | lb ai/a | PRE | 1.0 | 7.0 | 4.7 | 10.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 4 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 1.7 | 4.0 | 7.7 | 5.3 |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 5 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 2.3 | 2.7 | 4.7 | 8.3 |
| | atrazine | 4 | F | 1 | lb ai/a | PRE | | | | |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 6 | UKU 48 | | | | | PO1 | 1.7 | 4.3 | 3.7 | 7.7 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 7 | UKU 48 | | | | | PO1 | 1.3 | 7.7 | 6.0 | 10.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 8 | UKU 48 | | | | | PO1 | 1.7 | 5.7 | 3.3 | 10.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 9 | UKU 48 | | | | | PO1 | 1.0 | 7.7 | 5.3 | 10.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 10 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 1.0 | 10.0 | 5.0 | 10.0 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | OBSSN II 2/Jul/14 RATING 1-10 | FAPA 2/Jul/14 RATING 1-10 | YENS 2/Jul/14 RATING 1-10 | COLQ 2/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | FAPA | YENS | COLQ |
| | Crop Code | | | | | | OBSSN II | | | |
| | Rating Date | | | | | | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 11 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 1.0 | 10.0 | 6.3 | 10.0 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 12 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 1.3 | 6.7 | 10.0 | 3.0 |
| 13 | s-metolachlor | 7.64 | EC | 1.6 | lb ai/a | PRE | 1.3 | 10.0 | 5.0 | 4.7 |
| 14 | acetochlor | 3 | CS | 1.5 | lb ai/a | PRE | 2.3 | 1.0 | 1.7 | 1.7 |
| 15 | s-metolachlor | 7.64 | EC | 1.2 | lb ai/a | PRE | 1.3 | 10.0 | 7.7 | 10.0 |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | PO1 | | | | |
| 16 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 8.0 | 8.3 | 8.7 | 10.0 |
| | glufosinate | 2.34 | L | 0.37 | lb ai/a | PO1 | | | | |
| 17 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.3 | 3.0 | 7.0 | 7.3 |
| | mesotrione | 4 | SC | 0.09 | lb ai/a | PO1 | | | | |
| 18 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.7 | 9.0 | 5.0 | 7.7 |
| | tembotrione | 3.5 | SC | 0.082 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 19 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.0 | 2.3 | 4.3 | 3.7 |
| | topramezone | 2.8 | L | 0.0164 | lb ai/a | PO1 | | | | |
| 20 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 1.0 | 1.7 | 5.0 | 5.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| LSD (P=.05) | | | | | | | 0.98 | 4.42 | 4.38 | 3.26 |
| Standard Deviation | | | | | | | 0.59 | 2.68 | 2.65 | 1.98 |
| CV | | | | | | | 34.55 | 45.22 | 49.59 | 27.06 |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COPU | CORW | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | COPU | CORW | LATH | RRPW |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 4.0 | 1.0 | 1.0 |
| 2 | Anthem ATZ | 4.5 | SE | 1.12 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 |
| 3 | Anthem | 2.15 | SE | 0.13 | lb ai/a | PRE | 10.0 | 9.7 | 9.7 | 10.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 4 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 9.0 | 4.3 | 1.0 | 6.7 |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 5 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 10.0 | 8.0 | 8.0 | 10.0 |
| | atrazine | 4 | F | 1 | lb ai/a | PRE | | | | |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 6 | UKU 48 | | | | | PO1 | 6.3 | 7.0 | 10.0 | 6.7 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 7 | UKU 48 | | | | | PO1 | 9.0 | 8.0 | 10.0 | 9.0 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 8 | UKU 48 | | | | | PO1 | 6.3 | 8.0 | 9.0 | 8.7 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 9 | UKU 48 | | | | | PO1 | 9.7 | 10.0 | 10.0 | 9.3 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 10 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 10.0 | 9.7 | 9.7 | 10.0 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COPU | CORW | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | COPU | CORW | LATH | RRPW |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 11 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 10.0 | 9.3 | 9.3 | 9.7 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 12 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 10.0 | 9.0 | 1.0 | 10.0 |
| 13 | s-metolachlor | 7.64 | EC | 1.6 | lb ai/a | PRE | 7.0 | 7.7 | 1.0 | 1.3 |
| 14 | acetochlor | 3 | CS | 1.5 | lb ai/a | PRE | 7.3 | 2.0 | 1.0 | 1.7 |
| 15 | s-metolachlor | 7.64 | EC | 1.2 | lb ai/a | PRE | 10.0 | 10.0 | 9.3 | 10.0 |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | PO1 | | | | |
| 16 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 |
| | glufosinate | 2.34 | L | 0.37 | lb ai/a | PO1 | | | | |
| 17 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 7.7 | 5.0 | 8.0 | 4.7 |
| | mesotrione | 4 | SC | 0.09 | lb ai/a | PO1 | | | | |
| 18 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 5.0 | 10.0 | 6.3 | 7.3 |
| | tembotrione | 3.5 | SC | 0.082 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 19 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 4.7 | 9.7 | 1.0 | 7.7 |
| | topramezone | 2.8 | L | 0.0164 | lb ai/a | PO1 | | | | |
| 20 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 5.0 | 10.0 | 1.3 | 8.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| LSD (P=.05) | | | | | | | 4.65 | 3.40 | 1.97 | 2.87 |
| Standard Deviation | | | | | | | 2.82 | 2.06 | 1.20 | 1.74 |
| CV | | | | | | | 35.7 | 25.51 | 18.87 | 22.9 |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PROTCTR 11/Aug/14 HARVEST #/PLOT | PROTCTR 11/Aug/14 HARVEST KG/PLOT | OBSSN II 13/Aug/14 HARVEST #/PLOT | OBSSN II 13/Aug/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 11/Aug/14 | 11/Aug/14 | 13/Aug/14 | 13/Aug/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | Untreated | | | | | | 49.7 | 14.82 | 41.0 | 13.37 |
| 2 | Anthem ATZ | 4.5 | SE | 1.12 | lb ai/a | PRE | 64.7 | 19.37 | 56.3 | 17.34 |
| 3 | Anthem | 2.15 | SE | 0.13 | lb ai/a | PRE | 60.3 | 18.37 | 49.3 | 15.82 |
| | atrazine | 4 | F | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 4 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 58.0 | 14.86 | 48.0 | 14.26 |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 5 | s-metolachlor | 7.64 | EC | 1.1 | lb ai/a | PRE | 58.0 | 16.49 | 47.7 | 14.72 |
| | atrazine | 4 | F | 1 | lb ai/a | PRE | | | | |
| | fluthiacet | 0.91 | EC | 0.0043 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 6 | UKU 48 | | | | | PO1 | 39.7 | 11.67 | 45.0 | 12.55 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 7 | UKU 48 | | | | | PO1 | 52.3 | 14.28 | 44.0 | 12.91 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 8 | UKU 48 | | | | | PO1 | 53.7 | 15.57 | 42.7 | 13.10 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 9 | UKU 48 | | | | | PO1 | 59.0 | 17.40 | 48.3 | 15.45 |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 10 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 64.0 | 19.44 | 54.0 | 17.59 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |

# Weed Control in Sweet Corn – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PROTCTR 11/Aug/14 HARVEST #/PLOT | PROTCTR 11/Aug/14 HARVEST KG/PLOT | OBSSN II 13/Aug/14 HARVEST #/PLOT | OBSSN II 13/Aug/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 11/Aug/14 | 11/Aug/14 | 13/Aug/14 | 13/Aug/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 11 | acetochlor | 6.4 | EC | 1.2 | lb ai/a | PRE | 59.3 | 17.79 | 48.7 | 15.06 |
| | UKU 48 | | | | | PO1 | | | | |
| | nicosulfuron | 75 | WDG | 0.031 | lb ai/a | PO1 | | | | |
| | mesotrione | 50 | WDG | 0.078 | lb ai/a | PO1 | | | | |
| | isoxadifen-ethyl | 50 | WDG | 0.0078 | lb ai/a | PO1 | | | | |
| | atrazine | 4 | F | 0.5 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | ammonium sulfate | 100 | SG | 2 | lb/a | PO1 | | | | |
| 12 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 44.7 | 12.50 | 39.0 | 11.17 |
| 13 | s-metolachlor | 7.64 | EC | 1.6 | lb ai/a | PRE | 49.3 | 14.35 | 43.3 | 13.45 |
| 14 | acetochlor | 3 | CS | 1.5 | lb ai/a | PRE | 36.0 | 8.87 | 31.7 | 8.39 |
| 15 | s-metolachlor | 7.64 | EC | 1.2 | lb ai/a | PRE | 59.3 | 17.48 | 53.3 | 16.98 |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | PO1 | | | | |
| 16 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 61.0 | 17.83 | 20.7 | 3.87 |
| | glufosinate | 2.34 | L | 0.37 | lb ai/a | PO1 | | | | |
| 17 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 43.0 | 12.42 | 37.0 | 11.44 |
| | mesotrione | 4 | SC | 0.09 | lb ai/a | PO1 | | | | |
| 18 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 48.0 | 14.60 | 41.0 | 12.96 |
| | tembotrione | 3.5 | SC | 0.082 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 19 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 55.7 | 15.83 | 45.3 | 13.74 |
| | topramezone | 2.8 | L | 0.0164 | lb ai/a | PO1 | | | | |
| 20 | s-metolachlor | 7.64 | EC | 1 | lb ai/a | PRE | 43.0 | 11.19 | 33.3 | 9.56 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| LSD (P=.05) | | | | | | | 18.77 | 6.324 | 14.03 | 5.723 |
| Standard Deviation | | | | | | | 11.37 | 3.832 | 8.51 | 3.468 |
| CV | | | | | | | 21.49 | 25.12 | 19.56 | 26.3 |

# Weed Control in Pickling Cucumber – HTRC - 2014

**Project Code: 108-14-01** **Location: East Lansing, MI**
**Block 88**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Cucumber** **Variety: Vlaspik**
**Planting Method: Seeded** **Planting Date: 6/2/14** **Harvest Date: 7/23/14**
**Spacing: 3 in** **Row Spacing: 14 in, 3 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 16 ft wide x 50 ft long**

**Soil Type: Marlette Fine Sandy Loam** **OM: 2.2%** **pH: 6.6**
**Sand: 56.6%** **Silt: 23.4%** **Clay: 20.0%** **CEC: 10.6**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 6/5/14 | 3:00 pm | 74/70 | F | Wet | 6-10 NW | 34 | 0% Cloudy | N |
| PO1 | 6/20/14 | 2:00 pm | 76/75 | F | Wet/moist | 0-2 NE | 70 | 100% Cloudy | N |
| PO2 | 6/30/14 | 1:15 pm | 86/80 | F | Dry | 2-5 SE | 68 | 75% Cloudy | N |
| PO3 | 7/7/14 | 11:30 am | 83/77 | F | Moist | 7-9 SW | 74 | 80% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/5 | CUCUMBER | | Preemergence | |
| 6/5 | No Weeds | | | |
| 6/20 | CUCUMBER | 1-3″ | 1-leaf | Good |
| 6/20 | CORW = common ragweed | 1-2″ | Veg | Moderate |
| 6/20 | WIRA = wild radish | 1-2″ | Veg | Many |
| 6/20 | YEFT = yellow foxtail | 1-2″ | Veg | Moderate |
| 6/20 | YENS = yellow nutsedge | 2-4″ | Veg | Many |
| 6/30 | CUCUMBER | 8-12″ | 4-5 leaves | Good |
| 6/30 | CORW = common ragweed | 4-8″ | Veg | Many |
| 6/30 | RRPW = redroot pigweed | 4-8″ | Veg | Moderate |
| 6/30 | WIRA = wild radish | 8-12″ | Veg | Many |
| 6/30 | YEFT = yellow foxtail | 8-12″ | Veg | Many |
| 6/30 | YENS = yellow nutsedge | 6-8″ | Veg | Many |
| 7/7 | CUCUMBER | 12-18″ | Bud/Flower | Good |
| 7/7 | COLQ = common lambsquarters | 8-12″ | Veg | Moderate |
| 7/7 | COPU = common purslane | 8-12″ | Veg | Many |
| 7/7 | CORW = common ragweed | 6-12″ | Veg | Many |
| 7/7 | RRPW = redroot pigweed | 12-14″ | Veg | Moderate |
| 7/7 | WIRA = wild radish | 10-18″ | Flower | Many |
| 7/7 | YENS = yellow nutsedge | 8-12″ | Veg | Many |

**Notes and Comments**
1. Spray applied with 16 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 tractor sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all plants/plot.

# Weed Control in Pickling Cucumber – HTRC - 2014

**Weed Control in Pickling Cucumber – HTRC - 2014**

Trial ID: 108-14-01 Location: East Lansing, MI
Protocol ID: 108-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CUKE 18/Jun/14 RATING 1-10 | YEFT 18/Jun/14 RATING 1-10 | COLQ 18/Jun/14 RATING 1-10 | CORW 18/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.3 | 7.0 | 10.0 | 5.0 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.7 | 10.0 | 10.0 | 9.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 1.7 | 10.0 | 10.0 | 9.0 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.0 | 10.0 | 10.0 | 9.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.0 | 10.0 | 10.0 | 8.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.3 | 8.7 | 10.0 | 7.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.0 | 10.0 | 10.0 | 5.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.7 | 9.0 | 7.0 | 5.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 1.3 | 7.7 | 10.0 | 6.7 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 4.3 | 9.7 | 10.0 | 9.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 5.7 | 10.0 | 10.0 | 8.3 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 12 | Untreated | | | | | | 1.3 | 1.0 | 4.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.49 | 1.77 | 3.75 | 3.67 |
| Standard Deviation | | | | | | | 0.88 | 1.04 | 2.22 | 2.17 |
| CV | | | | | | | 37.17 | 12.17 | 23.95 | 30.94 |

# Weed Control in Pickling Cucumber – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | EBNS | RRPW | WIRA | CUKE |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 18/Jun/14 | 18/Jun/14 | 18/Jun/14 | 8/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 8.7 | 8.7 | 8.0 | 1.3 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 10.0 | 10.0 | 9.0 | 1.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 10.0 | 10.0 | 8.7 | 1.3 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 10.0 | 10.0 | 9.7 | 1.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 10.0 | 10.0 | 8.3 | 1.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 7.3 | 7.7 | 8.3 | 1.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 10.0 | 10.0 | 9.3 | 1.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 6.0 | 7.0 | 5.3 | 1.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.7 | 9.7 | 7.3 | 1.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 9.7 | 10.0 | 9.0 | 2.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 10.0 | 10.0 | 9.7 | 3.7 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.7 | 3.3 | 1.7 |
| LSD (P=.05) | | | | | | | 3.47 | 3.41 | 3.59 | 1.01 |
| Standard Deviation | | | | | | | 2.05 | 2.01 | 2.12 | 0.60 |
| CV | | | | | | | 24.02 | 23.1 | 26.49 | 37.69 |

# Weed Control in Pickling Cucumber – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | YEFT | YENS | COLQ | COPU |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | YEFT | YENS | COLQ | COPU |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 8/Jul/14 | 8/Jul/14 | 8/Jul/14 | 8/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 7.0 | 4.0 | 10.0 | 3.0 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.0 | 4.0 | 9.7 | 9.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 9.7 | 3.0 | 10.0 | 10.0 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 8.3 | 10.0 | 9.7 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 8.7 | 9.7 | 8.3 | 9.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.3 | 6.7 | 9.7 | 9.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.0 | 7.0 | 9.0 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 5.0 | 4.3 | 10.0 | 9.7 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 1.3 | 1.3 | 2.3 | 1.7 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 10.0 | 7.0 | 6.7 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 7.0 | 9.0 | 1.0 | 9.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 4.16 | 5.21 | 3.02 | 1.65 |
| Standard Deviation | | | | | | | 2.46 | 3.08 | 1.78 | 0.97 |
| CV | | | | | | | 34.57 | 55.14 | 24.5 | 12.56 |

# Weed Control in Pickling Cucumber – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW 8/Jul/14 RATING 1-10 | RRPW 8/Jul/14 RATING 1-10 | WIRA 8/Jul/14 RATING 1-10 | CUKE 15/Jul/14 RATING 1-10 | YEFT 15/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.0 | 4.7 | 2.0 | 1.3 | 5.7 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 3.3 | 2.0 | 5.0 | 1.3 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 3.7 | 8.0 | 4.3 | 1.7 | 10.0 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 8.0 | 9.3 | 10.0 | 2.3 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.3 | 8.7 | 10.0 | 2.0 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.3 | 9.3 | 9.7 | 2.3 | 9.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 4.0 | 7.7 | 5.0 | 2.3 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.0 | 1.3 | 3.0 | 1.0 | 10.0 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 1.7 | 5.7 | 6.7 | 1.3 | 6.3 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 2.3 | 1.0 | 2.7 | 1.7 | 8.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 5.3 | 10.0 | 7.0 | 3.0 | 10.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 2.7 | 3.0 |
| LSD (P=.05) | | | | | | | 2.50 | 3.77 | 3.19 | 1.39 | 3.19 |
| Standard Deviation | | | | | | | 1.48 | 2.23 | 1.88 | 0.82 | 1.89 |
| CV | | | | | | | 34.76 | 38.92 | 34.05 | 42.84 | 22.12 |

# Weed Control in Pickling Cucumber – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW 15/Jul/14 RATING 1-10 | RRPW 15/Jul/14 RATING 1-10 | WIRA 15/Jul/14 RATING 1-10 | CUKE 23/Jul/14 FRUIT KG/PLOT | CUKE 23/Jul/14 PLANT KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.7 | 8.7 | 1.7 | 20.53 | 41.99 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 6.0 | 8.0 | 4.3 | 35.26 | 46.79 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 6.3 | 8.3 | 5.3 | 36.88 | 51.69 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.0 | 10.0 | 9.3 | 41.33 | 46.34 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 9.0 | 9.3 | 10.0 | 34.07 | 39.86 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 8.7 | 8.7 | 10.0 | 36.48 | 43.48 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 8.7 | 9.7 | 8.7 | 40.16 | 47.77 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 4.3 | 9.3 | 3.7 | 29.39 | 46.83 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 4.7 | 10.0 | 5.7 | 37.92 | 48.75 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 4.0 | 7.3 | 4.0 | 22.37 | 32.58 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 5.0 | 10.0 | 6.3 | 19.58 | 23.36 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | | |
| 12 | Untreated | | | | | | 3.0 | 5.7 | 4.0 | 21.83 | 30.51 |
| LSD (P=.05) | | | | | | | 3.83 | 3.50 | 3.99 | 12.836 | 16.611 |
| Standard Deviation | | | | | | | 2.26 | 2.07 | 2.36 | 7.580 | 9.809 |
| CV | | | | | | | 38.6 | 23.64 | 38.74 | 24.2 | 23.54 |

# Weed Control in Pickling Cucumber – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CUKE 24/Jul/14 GRADE 1 KG/PLOT | CUKE 24/Jul/14 GRADE 2 KG/PLOT | CUKE 24/Jul/14 GRADE 3 KG/PLOT | CUKE 24/Jul/14 GRADE 4 KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 24/Jul/14 | 24/Jul/14 | 24/Jul/14 | 24/Jul/14 |
| | Rating Type | | | | | | GRADE 1 | GRADE 2 | GRADE 3 | GRADE 4 |
| | Rating Unit | | | | | | KG/PLOT | KG/PLOT | KG/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.06 | 8.97 | 8.24 | 0.60 |
| 2 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.19 | 13.36 | 17.60 | 1.14 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 3 | Strategy | 2.1 | SE | 6 | pt/a | PRE | 2.57 | 13.52 | 18.52 | 1.25 |
| 4 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 1.86 | 11.97 | 23.93 | 2.69 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 5 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 1.78 | 9.76 | 20.24 | 1.58 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| 6 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.56 | 12.62 | 17.71 | 4.92 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO2 | | | | |
| 7 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.54 | 13.42 | 20.31 | 2.86 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO3 | | | | |
| 8 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.20 | 10.94 | 14.04 | 1.19 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PO1 | | | | |
| 9 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | PRE | 2.83 | 13.78 | 19.69 | 2.17 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 10 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 2.56 | 8.94 | 9.31 | 0.87 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | | | | |
| 11 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 2.45 | 9.05 | 6.99 | 0.47 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRE | | | | |
| 12 | Untreated | | | | | | 1.81 | 6.31 | 11.18 | 1.80 |
| LSD (P=.05) | | | | | | | 1.460 | 5.734 | 6.931 | 2.078 |
| Standard Deviation | | | | | | | 0.862 | 3.386 | 4.093 | 1.227 |
| CV | | | | | | | 37.75 | 30.64 | 26.16 | 68.38 |

# Weed Control in Edamame – HTRC - 2014

Project Code: 133-14-01 Location: East Lansing, MI
Block 59/69

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Edamame Variety: Besweet 2001
Planting Method: Seeded Planting Date: 5/21/14 Harvest Date: 9/9 – 9/15/14
Spacing: 6 in Row Spacing: 28 in, 2 rows/plot
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 5.33 ft wide x 35 ft long

Soil Type: Marlette Fine Sandy Loam OM: 2.1% pH: 6.3
Sand: 52.7% Silt: 27.3% Clay: 20.0% CEC: 7.4

Herbicide Application Information

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/22/14 | 9:00 am | 58/60 | F | Dry | 6-8 NW | 66 | 0% Cloudy | N |
| PO1 | 6/16/14 | 3:00 pm | 87/86 | F | Dry | 5-7 SW | 41 | 30% Cloudy | N |

Crop and Weed Information at Application

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/22 | EDAMAME | | Preemergence | |
| 5/22 | No weeds | | | |
| 6/16 | EDAMAME | 4-6″ | 3 trifoliate | Good |
| 6/16 | BYGR = barnyardgrass | 4-6″ | Veg | Many |
| 6/16 | COLQ = common lambsquarters | 3-6″ | Veg | Many |
| 6/16 | LACG = large crabgrass | 6-8″ | Veg | Many |
| 6/16 | LATH = ladysthumb | 6-8″ | Veg | Few |
| 6/16 | RRPW = redroot pigweed | 6-8″ | Veg | Many |

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all plants/plot.
4. Edamame is vegetable soybean.

# Weed Control in Edamame – HTRC - 2014

**Weed Control in Edamame – HTRC - 2014**

Trial ID: 133-14-01 Location: East Lansing, MI
Protocol ID: 133-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | EDAMAME 12/Jun/14 RATING 1-10 | BYGR 12/Jun/14 RATING 1-10 | LACG 12/Jun/14 RATING 1-10 | COLQ 12/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 1 | lb ai/a | PRE | 3.3 | 9.0 | 7.3 | 10.0 |
| 2 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 2.7 | 9.0 | 9.0 | 3.7 |
| 3 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 3.0 | 5.7 | 8.3 | 8.0 |
| 4 | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | 3.3 | 9.3 | 9.7 | 10.0 |
| 5 | pendimethalin | 3.3 | EC | 1.42 | lb ai/a | PRE | 4.3 | 9.0 | 9.3 | 10.0 |
| 6 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 2.0 | 8.7 | 9.7 | 10.0 |
| 7 | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PRE | 3.3 | 9.7 | 9.0 | 8.7 |
| 8 | prometryn | 4 | L | 1 | lb ai/a | PRE | 3.0 | 8.7 | 9.0 | 9.0 |
| 9 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 4.7 | 10.0 | 9.3 | 7.7 |
| 10 | pyroxasulfone | 85 | WDG | 0.266 | lb ai/a | PRE | 4.7 | 10.0 | 9.7 | 8.0 |
| 11 | pyroxasulfone | 85 | WDG | 0.53 | lb ai/a | PRE | 4.0 | 9.7 | 9.7 | 9.3 |
| 12 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 3.0 | 9.0 | 8.7 | 3.0 |
| | imazamox | 1 | AS | 0.04 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 13 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 3.0 | 8.3 | 8.7 | 5.7 |
| | bentazon | 4 | L | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 14 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 2.0 | 7.7 | 8.7 | 4.7 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | | | | |
| 15 | Untreated, handweeded | | | | | | 2.7 | 5.7 | 5.7 | 1.0 |
| LSD (P=.05) | | | | | | | 2.42 | 2.90 | 2.18 | 3.31 |
| Standard Deviation | | | | | | | 1.45 | 1.73 | 1.30 | 1.98 |
| CV | | | | | | | 44.36 | 20.08 | 14.83 | 27.35 |

# Weed Control in Edamame – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LATH | RRPW | EDAMAME | EDAMAME |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | EDAMAME | EDAMAME |
| Rating Date | | | | | | | 12/Jun/14 | 12/Jun/14 | 9/Sep/14 | 9/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | HARVEST | HARVEST |
| | | | | | | | | | PLANT | POD |
| Rating Unit | | | | | | | 1-10 | 1-10 | KG/PLOT | KG/PLOT |
| 1 | linuron | 50 | DF | 1 | lb ai/a | PRE | 10.0 | 10.0 | 9.03 | 9.18 |
| 2 | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PRE | 9.7 | 9.7 | 9.24 | 10.54 |
| 3 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 9.7 | 10.0 | 12.21 | 9.29 |
| 4 | sulfentrazone | 4 | F | 0.375 | lb ai/a | PRE | 10.0 | 10.0 | 16.10 | 11.41 |
| 5 | pendimethalin | 3.3 | EC | 1.42 | lb ai/a | PRE | 10.0 | 10.0 | 7.78 | 8.33 |
| 6 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 10.0 | 8.3 | 13.78 | 12.73 |
| 7 | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PRE | 10.0 | 10.0 | 12.31 | 12.54 |
| 8 | prometryn | 4 | L | 1 | lb ai/a | PRE | 10.0 | 9.0 | 10.63 | 10.58 |
| 9 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 9.7 | 10.0 | 7.73 | 8.30 |
| 10 | pyroxasulfone | 85 | WDG | 0.266 | lb ai/a | PRE | 10.0 | 9.7 | 12.56 | 11.15 |
| 11 | pyroxasulfone | 85 | WDG | 0.53 | lb ai/a | PRE | 10.0 | 10.0 | 10.75 | 12.32 |
| 12 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 9.3 | 9.7 | 9.71 | 10.22 |
| | imazamox | 1 | AS | 0.04 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 13 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 10.0 | 9.3 | 11.30 | 11.10 |
| | bentazon | 4 | L | 1 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 14 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 8.7 | 9.7 | 10.56 | 10.16 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | | | | |
| 15 | Untreated, handweeded | | | | | | 7.0 | 1.0 | 6.83 | 7.30 |
| LSD (P=.05) | | | | | | | 2.42 | 0.85 | 5.093 | 4.775 |
| Standard Deviation | | | | | | | 1.45 | 0.51 | 3.045 | 2.855 |
| CV | | | | | | | 15.06 | 5.56 | 28.46 | 27.61 |

# Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 - HTRC - 2014

**Project Code:** IR4-133-14-02 **Location:** East Lansing, MI Block 69/78

**Personnel:** Bernard H. Zandstra, Nicole Schroeder
**Crop:** Edamame **Variety:** Besweet 2001
**Planting Method:** Seeded **Planting Date:** 5/21/14 **Harvest Date:** 8/27/14
**Spacing:** 6 in **Row Spacing:** 28 in, 2 rows/plot
**Tillage Type:** Conventional **Study Design:** RCB **Replications:** 3
**Plot Size:** 5.33 ft wide x 35 ft long

**Soil Type:** Marlette Fine Sandy Loam **OM:** 2.1% **pH:** 6.3
**Sand:** 52.7% **Silt:** 27.3% **Clay:** 20.0% **CEC:** 7.4

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/22/14 | 2:15 pm | 73/66 | F | Dry | 6-8 W | 42 | 60% Cloudy | N |
| PO1 | 6/16/14 | 8:40 am | 78/69 | F | Dry | 2-5 SW | 67 | 0% Cloudy | N |
| PO2 | 7/10/14 | 11:50 am | 77/70 | F | Dry | 3-4 N | 64 | 60% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/22 | EDAMAME | | Preemergence | |
| 5/22 | No weeds | | | |
| 6/16 | EDAMAME | | 3-trifoliate leaf stage | |
| 6/16 | COLQ = common lambsquarters | | Foliar | Many |
| 6/16 | LACG = large crabgrass | | Foliar | Few |
| 6/16 | RRPW = redroot pigweed | | Foliar | Many |
| 6/16 | YEFT = yellow foxtail | | Foliar | Few |
| 7/10 | EDAMAME | | Foliar | |
| | COPU = common purslane | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all plants/plot.
4. Edamame is vegetable soybean.

# Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 - HTRC - 2014

**Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 – HTRC - 2014**

Trial ID: IR4-133-14-02 Location: East Lansing, MI
Protocol ID: IR4-133-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Nicole Schroeder

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | EDAMAME 10/Jun/14 STAND #/PLOT | EDAMAME 10/Jun/14 RATING 1-10 | LACG 10/Jun/14 RATING 1-10 | YEFT 10/Jun/14 RATING 1-10 | COLQ 10/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated, handweeded | | | | | | 18.3 | 2.0 | 1.7 | 4.3 | 1.3 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 18.3 | 1.7 | 3.3 | 3.3 | 1.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 19.0 | 1.7 | 4.3 | 1.3 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 23.7 | 1.7 | 2.7 | 2.7 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 19.3 | 2.3 | 7.7 | 8.7 | 4.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 27.7 | 2.0 | 9.7 | 9.7 | 5.3 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 23.3 | 2.3 | 6.0 | 8.0 | 6.3 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 19.3 | 2.0 | 8.0 | 8.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 22.7 | 2.0 | 7.7 | 9.0 | 9.7 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 20.7 | 2.0 | 8.3 | 9.7 | 9.7 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 18.3 | 2.7 | 8.0 | 10.0 | 10.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 27.0 | 1.7 | 2.0 | 1.7 | 1.0 |
| LSD (P=.05) | | | | | | | 9.70 | 0.90 | 3.57 | 3.32 | 1.69 |
| Standard Deviation | | | | | | | 5.73 | 0.53 | 2.11 | 1.96 | 1.00 |
| CV | | | | | | | 26.68 | 26.47 | 36.49 | 30.83 | 19.6 |

# Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 - HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW | EDAMAME | YEFT | COLQ | COPU |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | RRPW | | YEFT | COLQ | COPU |
| | Crop Code | | | | | | | EDAMAME | | | |
| | Rating Date | | | | | | 10/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated, handweeded | | | | | | 2.3 | 2.0 | 1.3 | 1.3 | 7.0 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 1.7 | 3.0 | 1.7 | 1.0 | 4.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 1.0 | 2.3 | 1.0 | 1.0 | 4.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 1.7 | 2.7 | 2.3 | 1.0 | 5.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 9.3 | 2.0 | 5.7 | 2.7 | 10.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 10.0 | 2.0 | 10.0 | 2.0 | 10.0 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 10.0 | 2.0 | 7.0 | 2.7 | 8.7 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.7 | 2.7 | 4.7 | 9.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.7 | 2.0 | 5.0 | 9.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.7 | 2.3 | 6.7 | 9.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 10.0 | 3.0 | 4.0 | 10.0 | 10.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 2.3 | 2.3 | 4.3 | 2.7 | 10.0 |
| LSD (P=.05) | | | | | | | 1.38 | 1.19 | 3.85 | 1.47 | 4.38 |
| Standard Deviation | | | | | | | 0.81 | 0.71 | 2.27 | 0.87 | 2.59 |
| CV | | | | | | | 12.65 | 29.87 | 50.81 | 20.31 | 31.45 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW | EDAMAME | LACG | YEFT | COLQ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | RRPW | | LACG | YEFT | COLQ |
| | Crop Code | | | | | | | EDAMAME | | | |
| | Rating Date | | | | | | 26/Jun/14 | 8/Jul/14 | 8/Jul/14 | 8/Jul/14 | 8/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated, handweeded | | | | | | 1.0 | 1.3 | 1.0 | 1.0 | 1.0 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 1.0 | 1.0 | 1.3 | 1.3 | 1.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 1.0 | 1.7 | 1.3 | 1.3 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 1.0 | 1.7 | 6.3 | 3.3 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 2.3 | 1.0 | 7.7 | 7.3 | 2.3 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 9.7 | 1.3 | 9.3 | 10.0 | 2.7 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 9.3 | 1.0 | 7.3 | 10.0 | 2.3 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.3 | 3.0 | 8.0 | 7.3 | 8.3 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.0 | 2.0 | 8.3 | 9.7 | 7.7 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.3 | 1.3 | 8.7 | 10.0 | 7.7 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 10.0 | 2.3 | 7.3 | 8.3 | 9.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 7.3 | 1.3 | 2.3 | 2.3 | 1.3 |
| LSD (P=.05) | | | | | | | 2.28 | 0.85 | 3.28 | 3.42 | 1.74 |
| Standard Deviation | | | | | | | 1.34 | 0.50 | 1.94 | 2.02 | 1.03 |
| CV | | | | | | | 22.94 | 31.58 | 33.71 | 33.68 | 26.87 |

# Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 - HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COPU 8/Jul/14 RATING 1-10 | RRPW 8/Jul/14 RATING 1-10 | EDAMAME 12/Aug/14 RATING 1-10 | LACG 12/Aug/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated, handweeded | | | | | | 1.0 | 1.0 | 2.0 | 7.0 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 4.0 | 1.0 | 2.3 | 2.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 4.7 | 1.0 | 2.0 | 1.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 7.0 | 1.0 | 2.3 | 1.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 10.0 | 5.3 | 2.0 | 9.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 10.0 | 9.3 | 2.0 | 10.0 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 10.0 | 10.0 | 2.0 | 9.7 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 10.0 | 9.7 | 2.0 | 9.3 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 10.0 | 9.3 | 2.0 | 7.3 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 10.0 | 9.7 | 2.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 9.0 | 9.0 | 2.0 | 10.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 10.0 | 7.3 | 2.0 | 5.0 |
| LSD (P=.05) | | | | | | | 4.09 | 2.56 | 0.38 | 2.80 |
| Standard Deviation | | | | | | | 2.42 | 1.51 | 0.22 | 1.66 |
| CV | | | | | | | 30.33 | 24.63 | 10.93 | 23.84 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ 12/Aug/14 RATING 1-10 | COPU 12/Aug/14 RATING 1-10 | RRPW 12/Aug/14 RATING 1-10 | EDAMAME 22/Aug/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Untreated, handweeded | | | | | | 3.7 | 3.7 | 4.3 | 2.3 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 1.7 | 5.0 | 3.0 | 2.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 1.3 | 7.0 | 1.0 | 2.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 1.7 | 2.3 | 2.7 | 2.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 2.3 | 10.0 | 4.0 | 2.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 3.3 | 10.0 | 7.3 | 2.0 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 3.7 | 10.0 | 8.7 | 2.0 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 5.7 | 7.7 | 5.3 | 2.0 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 6.3 | 10.0 | 7.0 | 2.0 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 10.0 | 10.0 | 9.7 | 2.0 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 9.7 | 8.0 | 4.7 | 2.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 1.7 | 9.7 | 4.0 | 2.0 |
| LSD (P=.05) | | | | | | | 2.89 | 3.52 | 3.88 | 0.41 |
| Standard Deviation | | | | | | | 1.71 | 2.08 | 2.29 | 0.24 |
| CV | | | | | | | 40.18 | 26.71 | 44.61 | 11.72 |

# Acifluorfen and Pyroxasulfone: Nature of Performance on Edamame – IR4 - HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LACG | YEFT | COLQ | COPU | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated, handweeded | | | | | | 8.7 | 8.0 | 3.0 | 3.7 | 3.3 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 4.3 | 4.7 | 1.7 | 6.3 | 4.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 5.7 | 3.0 | 2.3 | 8.0 | 2.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 6.0 | 6.0 | 1.7 | 8.0 | 5.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 7.0 | 9.3 | 3.3 | 9.3 | 7.3 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 10.0 | 9.3 | 5.0 | 10.0 | 9.0 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 10.0 | 10.0 | 5.7 | 10.0 | 9.7 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 8.3 | 8.7 | 6.0 | 7.7 | 5.3 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 8.3 | 9.3 | 6.7 | 9.7 | 7.0 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 9.3 | 10.0 | 8.7 | 10.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 9.7 | 10.0 | 7.0 | 8.0 | 8.0 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 7.3 | 8.0 | 2.7 | 8.3 | 6.7 |
| LSD (P=.05) | | | | | | | 4.04 | 2.90 | 3.24 | 3.29 | 3.99 |
| Standard Deviation | | | | | | | 2.38 | 1.71 | 1.91 | 1.94 | 2.35 |
| CV | | | | | | | 30.21 | 21.35 | 42.8 | 23.52 | 36.23 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | EDAMAME 27/Aug/14 PLANT KG/PLOT | EDAMAME 27/Aug/14 POD KG/PLOT | EDAMAME 27/Aug/14 POD KG/PLANT |
|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | |
| Crop Code | | | | | | | | | |
| Rating Date | | | | | | | | | |
| Rating Type | | | | | | | | | |
| Rating Unit | | | | | | | | | |
| 1 | Untreated, handweeded | | | | | | 6.43 | 4.03 | 0.23 |
| 2 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2 | 5.06 | 2.87 | 0.17 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PO2 | 4.28 | 2.16 | 0.11 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | |
| 4 | acifluorfen | 2 | L | 0.5 | lb ai/a | PO2 | 3.80 | 2.42 | 0.11 |
| | NIS | 100 | SL | 0.25 | % v/v | PO2 | | | |
| 5 | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PRE | 6.59 | 4.39 | 0.23 |
| 6 | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PRE | 9.56 | 6.09 | 0.22 |
| 7 | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PRE | 7.04 | 4.81 | 0.21 |
| 8 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 6.71 | 4.65 | 0.26 |
| | pyroxasulfone | 85 | WDG | 0.112 | lb ai/a | PO1 | | | |
| 9 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 6.64 | 4.74 | 0.21 |
| | pyroxasulfone | 85 | WDG | 0.186 | lb ai/a | PO1 | | | |
| 10 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 6.69 | 4.99 | 0.24 |
| | pyroxasulfone | 85 | WDG | 0.22 | lb ai/a | PO1 | | | |
| 11 | linuron | 50 | DF | 1 | lb ai/a | PRE | 7.58 | 4.92 | 0.27 |
| 12 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO1 | 6.84 | 4.29 | 0.16 |
| LSD (P=.05) | | | | | | | 2.659 | 1.632 | 0.071 |
| Standard Deviation | | | | | | | 1.570 | 0.964 | 0.042 |
| CV | | | | | | | 24.4 | 22.97 | 21.05 |

# Weed Control in Basil – Van Drunen - 2014

**Project Code: 117-14-03** **Location: Momence, IL**

**Personnel: Bernard H. Zandstra, Colin Phillippo, Alan DeYoung**
**Crop: Basil** **Variety: Eowyn, Genovese, Mozzarella, Superior**
**Planting Method: Seeded** **Planting Date: 7/2/14**
**Spacing: 2 in** **Row Spacing: 10 in**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 30 ft long**

**Soil Type: Jasper loam** **OM: 7.9%** **pH: 6.2**
**Sand: 25%** **Silt: 40%** **Clay: 35%** **CEC: 25.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 7/11/14 | 2:00 pm | 80/85 | F | Dry | 5-7 SW | 40 | 10% Cloudy | N |
| PO1 | 8/15/14 | 1:15 pm | 75/77 | F | Dry | 2-5 SE | 39 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 7/11 | No crop | | | |
| 7/11 | No weeds | | | |
| 8/15 | BASIL | 3-6″ | Foliar | Good |
| 8/15 | CAWE = carpetweed | 6-12″ | Flower | Many |
| 8/15 | COLQ = common lambsquarters | 4-18″ | Foliar | Moderate |
| 8/15 | COPU = common purslane | 6-24″ | Flower | Many |
| 8/15 | LACG = large crabgrass | 6-10″ | Foliar | Few |
| 8/15 | RRPW = redroot pigweed | 6-12″ | Foliar | Moderate |
| 8/15 | SPSP = spotted spurge | 6-10″ | Flower | Moderate |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. One row of each variety per plot.
4. Basil was not harvested due to poor stand.

# Weed Control in Basil – Van Drunen - 2014

**Weed Control in Basil – Van Drunen - 2014**

Trial ID: 117-14-03 Location: Momence, IL
Protocol ID: 117-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | Superior | Eowyn | Mozzarella | Genovese | LACG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Variety | | | | | | | | | | | |
| Rating Date | | | | | | | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 1 | lb ai/a | PRE | 1.0 | 1.7 | 1.0 | 1.3 | 10.0 |
| 2 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 3.0 | 1.3 | 1.0 | 1.3 | 1.0 |
| 3 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 1.3 | 1.7 | 1.0 | 1.7 | 9.0 |
| 4 | halosulfuron | 75 | WG | 0.012 | lb ai/a | PRE | 2.3 | 3.3 | 1.0 | 3.0 | 1.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 8.7 |
| 6 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 9.3 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 3.7 |
| 9 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 3.7 |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.92 | 1.18 | 0.00 | 1.22 | 3.34 |
| Standard Deviation | | | | | | | 1.12 | 0.69 | 0.00 | 0.71 | 1.95 |
| CV | | | | | | | 35.28 | 21.43 | 0.0 | 22.73 | 40.33 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CAWE | COLQ | COPU | RRPW | SPSP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Variety | | | | | | | | | | | |
| Rating Date | | | | | | | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 | 15/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 1 | lb ai/a | PRE | 5.3 | 3.7 | 1.0 | 2.3 | 7.0 |
| 2 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 1.0 | 2.3 | 1.7 | 2.7 | 1.3 |
| 3 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 1.0 | 7.0 | 6.0 | 7.0 | 1.0 |
| 4 | halosulfuron | 75 | WG | 0.012 | lb ai/a | PRE | 10.0 | 9.0 | 3.7 | 9.3 | 5.3 |
| 5 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 10.0 | 10.0 | 2.7 | 10.0 | 1.0 |
| 6 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 10.0 | 10.0 | 3.3 | 10.0 | 4.7 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 9 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 2.45 | 2.27 | 2.17 | 2.42 | 3.77 |
| Standard Deviation | | | | | | | 1.43 | 1.32 | 1.26 | 1.41 | 2.20 |
| CV | | | | | | | 34.5 | 28.77 | 56.64 | 31.08 | 90.42 |

# Weed Control in Basil – Van Drunen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | Superior 18/Sep/14 RATING 1-10 | Eowyn 18/Sep/14 RATING 1-10 | Mozzarella 18/Sep/14 RATING 1-10 | Genovese 18/Sep/14 RATING 1-10 | ALL BASIL 10/Oct/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Variety | | | | | | | | | | |
| | Rating Date | | | | | | 18/Sep/14 | 18/Sep/14 | 18/Sep/14 | 18/Sep/14 | 10/Oct/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 1 | lb ai/a | PRE | 4.0 | 7.0 | 1.3 | 5.7 | 3.3 |
| 2 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 3.0 | 5.3 | 2.3 | 6.3 | 4.7 |
| 3 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 1.0 | 1.3 | 1.0 | 1.3 | 1.0 |
| 4 | halosulfuron | 75 | WG | 0.012 | lb ai/a | PRE | 1.7 | 3.3 | 1.0 | 2.0 | 1.3 |
| 5 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 6 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 10.0 | 10.0 | 9.3 | 9.3 | 9.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | 5.7 | 8.3 | 5.3 | 8.3 | 6.3 |
| 9 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | 6.0 | 7.7 | 4.0 | 6.3 | 5.0 |
| 10 | Untreated | | | | | | 4.7 | 6.0 | 3.7 | 5.7 | 4.3 |
| LSD (P=.05) | | | | | | | 2.85 | 3.12 | 2.04 | 3.75 | 2.09 |
| Standard Deviation | | | | | | | 1.66 | 1.82 | 1.19 | 2.19 | 1.22 |
| CV | | | | | | | 29.7 | 26.36 | 24.81 | 33.64 | 21.89 |

# Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2014

**Project Code: 117-14-04** **Location: Momence, IL**

**Personnel: Bernard H. Zandstra, Colin Phillippo, Alan DeYoung**
**Crop: Cilantro, Dill, Fennel, Parsley** **Variety: Slowbolt, Hera, Zefa Fino, Laica (respectively)**
**Planting Method: Seeded** **Planting Date: 7/2/14** **Harvest Date: see note**
**Spacing: 2 in** **Row Spacing: 10 in**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 30 ft long**

**Soil Type: Jasper loam** **OM: 7.9%** **pH: 6.2**
**Sand: 25%** **Silt: 40%** **Clay: 35%** **CEC: 25.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 7/11/14 | 12:20 pm | 77/70 | F | Dry | 1-5 S | 45 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 7/11 | No crop | | | |
| 7/11 | No weeds | | | |
| 8/15 | COLQ = common lambsquarters | | | |
| 8/15 | COPU = common purslane | | | |
| 8/15 | RRPW = redroot pigweed | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest of Cilantro and Parsley took place on 18 September 2014. Harvest of Dill and Fennel took place on 10 October 2014.
4. One row of each crop per plot.

# Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2014

**Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2014**

Trial ID: 117-14-04 Location: Momence. IL
Protocol ID: 117-14-04 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CILANTRO 15/Aug/14 RATING 1-10 | DILL 15/Aug/14 RATING 1-10 | FENNEL 15/Aug/14 RATING 1-10 | PARSLEY 15/Aug/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 1.7 | 1.7 | 9.0 | 10.0 |
| 2 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 1.0 | 1.0 | 7.0 | 9.7 |
| 3 | prometryn | 4 | L | 1 | lb ai/a | PRE | 3.3 | 2.3 | 8.0 | 9.3 |
| 4 | s-metolachlor | 7.62 | EC | 0.67 | lb ai/a | PRE | 1.7 | 3.3 | 9.3 | 10.0 |
| 5 | pendimethalin | 3.8 | CS | 0.5 | lb ai/a | PRE | 2.3 | 2.3 | 8.0 | 9.7 |
| 6 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 2.3 | 1.3 | 9.3 | 7.0 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 1.7 | 1.0 | 9.0 | 10.0 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 5.7 | 9.3 | 9.7 | 9.7 |
| 9 | bensulide | 4 | EC | 6 | lb ai/a | PRE | 2.7 | 1.3 | 7.0 | 10.0 |
| 10 | Untreated | | | | | | 3.7 | 3.0 | 10.0 | 10.0 |
| LSD (P=.05) | | | | | | | 2.75 | 1.69 | 3.61 | 3.02 |
| Standard Deviation | | | | | | | 1.60 | 0.98 | 2.10 | 1.76 |
| CV | | | | | | | 61.62 | 36.87 | 24.35 | 18.47 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ 15/Aug/14 RATING 1-10 | COPU 15/Aug/14 RATING 1-10 | RRPW 15/Aug/14 RATING 1-10 | CILANTRO 18/Sep/14 RATING 1-10 | DILL 18/Sep/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 1.7 | 1.3 | 5.3 | 5.0 | 3.0 |
| 2 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 2.7 | 3.0 | 8.3 | 2.3 | 1.3 |
| 3 | prometryn | 4 | L | 1 | lb ai/a | PRE | 5.3 | 6.0 | 9.3 | 1.0 | 1.3 |
| 4 | s-metolachlor | 7.62 | EC | 0.67 | lb ai/a | PRE | 3.7 | 4.3 | 9.7 | 2.7 | 3.7 |
| 5 | pendimethalin | 3.8 | CS | 0.5 | lb ai/a | PRE | 4.0 | 3.3 | 7.3 | 3.3 | 1.0 |
| 6 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 3.3 | 2.7 | 1.0 | 5.7 | 2.7 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 7.0 | 2.7 | 1.3 | 4.0 | 2.3 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 8.7 | 4.0 | 10.0 | 3.0 | 7.0 |
| 9 | bensulide | 4 | EC | 6 | lb ai/a | PRE | 6.3 | 1.3 | 7.3 | 4.3 | 2.3 |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 8.0 | 6.3 |
| LSD (P=.05) | | | | | | | 4.40 | 2.50 | 4.17 | 3.93 | 3.31 |
| Standard Deviation | | | | | | | 2.56 | 1.46 | 2.43 | 2.29 | 1.93 |
| CV | | | | | | | 58.68 | 49.19 | 40.08 | 58.24 | 62.17 |

# Weed Control in Cilantro, Dill, Fennel, and Parsley – Van Drunen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | FENNEL 18/Sep/14 RATING 1-10 | PARSLEY 18/Sep/14 RATING 1-10 | FENNEL 10/Oct/14 STAND #/PLOT | FENNEL 10/Oct/14 RATING 1-10 | PARSLEY 10/Oct/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 5.0 | 6.7 | 4.3 | 4.7 | 7.0 |
| 2 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 5.3 | 4.0 | 3.7 | 4.7 | 3.3 |
| 3 | prometryn | 4 | L | 1 | lb ai/a | PRE | 1.7 | 5.0 | 8.3 | 1.3 | 3.7 |
| 4 | s-metolachlor | 7.62 | EC | 0.67 | lb ai/a | PRE | 5.3 | 5.3 | 4.3 | 3.0 | 4.7 |
| 5 | pendimethalin | 3.8 | CS | 0.5 | lb ai/a | PRE | 2.3 | 6.0 | 10.0 | 2.0 | 5.0 |
| 6 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 6.3 | 7.7 | 3.0 | 7.0 | 5.0 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 4.7 | 8.7 | 4.7 | 3.0 | 8.3 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 9.0 | 7.3 | 1.0 | 8.0 | 7.0 |
| 9 | bensulide | 4 | EC | 6 | lb ai/a | PRE | 6.7 | 8.3 | 6.0 | 5.0 | 7.7 |
| 10 | Untreated | | | | | | 9.3 | 10.0 | 1.3 | 7.7 | 9.7 |
| LSD (P=.05) | | | | | | | 4.54 | 5.78 | 7.48 | 4.88 | 5.73 |
| Standard Deviation | | | | | | | 2.65 | 3.37 | 4.36 | 2.84 | 3.34 |
| CV | | | | | | | 47.54 | 48.81 | 93.4 | 61.34 | 54.45 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CILANTRO 18/Sep/14 HARVEST KG/PLOT | DILL 18/Sep/14 HARVEST KG/PLOT | FENNEL 10/Oct/14 HARVEST KG/PLOT | PARSLEY 10/Oct/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | linuron | 50 | DF | 0.25 | lb ai/a | PRE | 1.79 | 6.98 | 0.98 | 0.21 |
| 2 | linuron | 50 | DF | 0.5 | lb ai/a | PRE | 3.80 | 11.73 | 0.80 | 0.89 |
| 3 | prometryn | 4 | L | 1 | lb ai/a | PRE | 5.38 | 17.47 | 2.77 | 0.73 |
| 4 | s-metolachlor | 7.62 | EC | 0.67 | lb ai/a | PRE | 5.60 | 6.63 | 1.73 | 0.97 |
| 5 | pendimethalin | 3.8 | CS | 0.5 | lb ai/a | PRE | 4.24 | 15.41 | 2.86 | 0.43 |
| 6 | clomazone | 3 | ME | 0.25 | lb ai/a | PRE | 1.97 | 9.81 | 0.54 | 0.23 |
| 7 | clomazone | 3 | ME | 0.5 | lb ai/a | PRE | 2.87 | 10.37 | 0.94 | 0.07 |
| 8 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 4.38 | 1.09 | 0.10 | 0.27 |
| 9 | bensulide | 4 | EC | 6 | lb ai/a | PRE | 2.63 | 7.58 | 1.30 | 0.14 |
| 10 | Untreated | | | | | | 0.51 | 2.67 | 0.17 | 0.02 |
| LSD (P=.05) | | | | | | | 2.779 | 5.626 | 2.264 | 1.173 |
| Standard Deviation | | | | | | | 1.620 | 3.280 | 1.320 | 0.684 |
| CV | | | | | | | 48.85 | 36.55 | 108.2 | 173.21 |

# S-metolachlor: Nature of Performance on Rosemary

**Project Code: IR4-117-14-04** **Location: East Lansing, MI**
**Block 137**

**Personnel: Bernard H. Zandstra, Nicole Schroeder**
**Crop: Rosemary** **Variety: Arp**
**Planting Method: Transplant** **Planting Date: 6/5/14** **Harvest Date: 9/24/14**
**Spacing: 18 in** **Row Spacing: 6 ft, 1 row/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 4**
**Plot Size: 5.33 ft wide x 30 ft long**

**Soil Type: Capac loam** **OM: 2.8%** **pH: 6.0**
**Sand: 50%** **Silt: 31%** **Clay: 19%** **CEC: 9.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRT | 6/4/14 | 9:30 am | 64/64 | F | Wet | 1-3 SE | 68 | 100% Cloudy | N |
| PO1 | 7/3/14 | 5:00 pm | 72/76 | F | Moist | 2-4 SW | 57 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/4 | ROSEMARY | | Pre-transplant | |
| 6/4 | No weeds | | | |
| 7/3 | ROSEMARY | | Vegetative | Good |
| 7/3 | COPU = common purslane | | | Many |
| 7/3 | COLQ = common lambsquarters | | | Many |
| 7/3 | RRPW = redroot pigweed | | | Many |
| 7/3 | YEFT = yellow foxtail | | | Many |
| | DAND = dandelion | | | |
| | LACG = large crabgrass | | | |
| | LATH = ladysthumb | | | |
| | VELE = velvetleaf | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all plants/plot.

# S-metolachlor: Nature of Performance on Rosemary

**S-metolachlor: Nature of Performance on Rosemary**

| | | | |
|---|---|---|---|
| Trial ID: | IR4-117-14-04 | Location: | East Lansing, MI |
| Protocol ID: | IR4-117-14-04 | Investigator: | Dr. Bernard Zandstra |
| Study Director: | Nicole Schroeder | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | YEFT | COLQ |
| Crop Code | | | | | | | ROSEMARY | ROSEMARY | | |
| Rating Date | | | | | | | 10/Jun/14 | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 2.0 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.0 | 1.0 | 7.0 | 9.0 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 1.0 | 1.0 | 9.8 | 9.8 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 10.0 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | 1.0 | 1.0 | 1.3 | 1.8 |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | 1.0 | 1.0 | 1.0 | 2.8 |
| LSD (P=.05) | | | | | | | 0.00 | 0.00 | 1.32 | 2.08 |
| Standard Deviation | | | | | | | 0.00 | 0.00 | 0.88 | 1.38 |
| CV | | | | | | | 0.0 | 0.0 | 17.51 | 23.45 |

| Trt No. | Treatment Name | 1-10 Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | COPU | RRPW | | | YEFT |
| Crop Code | | | | | | | | | VELE | ROSEMARY | |
| Rating Date | | | | | | | 17/Jun/14 | 17/Jun/14 | | 2/Jul/14 | 2/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | 17/Jun/14 | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | RATING | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 3.5 | 8.0 | 1.0 | 1.0 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 6.8 | 4.8 | 7.0 | 1.0 | 3.5 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 10.0 | 10.0 | 8.8 | 1.0 | 10.0 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 10.0 | 10.0 | 6.0 | 1.0 | 10.0 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | 1.0 | 3.5 | 8.3 | 1.0 | |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | 1.0 | 1.3 | 6.3 | 1.0 | |
| LSD (P=.05) | | | | | | | 1.69 | 4.59 | 4.23 | 0.00 | 0.46 |
| Standard Deviation | | | | | | | 1.12 | 3.05 | 2.81 | 0.00 | 0.29 |
| CV | | | | | | | 22.67 | 55.38 | 38.05 | 0.0 | 4.71 |

# S-metolachlor: Nature of Performance on Rosemary

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | COPU | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 | 2/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.3 | 1.0 | 2.3 | 1.8 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 3.3 | 3.0 | 3.3 | 3.8 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 7.8 | 8.8 | 8.8 | 10.0 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 9.3 | 9.8 | 10.0 | 10.0 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | | | | |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | | | | |
| LSD (P=.05) | | | | | | | 1.16 | 1.10 | 1.07 | 1.33 |
| Standard Deviation | | | | | | | 0.73 | 0.69 | 0.67 | 0.83 |
| CV | | | | | | | 13.52 | 12.22 | 11.08 | 13.07 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ROSEMARY | ROSEMARY | YEFT | COPU |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | YEFT | COPU |
| Crop Code | | | | | | | ROSEMARY | ROSEMARY | | |
| Rating Date | | | | | | | 17/Jul/14 | 5/Aug/14 | 5/Aug/14 | 5/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 1.0 | 2.3 | 2.0 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.8 | 2.0 | 7.0 | 3.3 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 1.0 | 1.0 | 9.3 | 9.3 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 1.8 | 1.0 | 10.0 | 9.5 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | 1.0 | 1.8 | 3.3 | 2.3 |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | 1.0 | 2.0 | 4.3 | 2.3 |
| LSD (P=.05) | | | | | | | 0.45 | 0.31 | 2.40 | 1.52 |
| Standard Deviation | | | | | | | 0.30 | 0.20 | 1.59 | 1.01 |
| CV | | | | | | | 23.85 | 14.0 | 26.53 | 21.17 |

# S-metolachlor: Nature of Performance on Rosemary

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LATH | | LACG | YEFT |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | ROSEMARY | | |
| Rating Date | | | | | | | 5/Aug/14 | 23/Sep/14 | 23/Sep/14 | 23/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 3.0 | 1.8 | 6.8 | 7.3 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 4.8 | 1.8 | 6.0 | 6.3 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 7.8 | 1.0 | 8.0 | 9.5 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 8.5 | 1.5 | 8.3 | 9.5 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | 8.5 | 1.5 | 6.3 | 8.3 |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | 6.0 | 1.5 | 6.8 | 7.0 |
| LSD (P=.05) | | | | | | | 3.49 | 0.86 | 1.92 | 1.99 |
| Standard Deviation | | | | | | | 2.32 | 0.57 | 1.27 | 1.32 |
| CV | | | | | | | 36.14 | 37.84 | 18.2 | 16.58 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | COPU | DAND | ROSEMARY |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 23/Sep/14 | 23/Sep/14 | 23/Sep/14 | 24/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | KG/PLOT |
| 1 | Untreated | | | | | | 7.8 | 6.3 | 8.3 | 2.03 |
| 2 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 6.5 | 4.3 | 8.5 | 2.22 |
| 3 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PRT | 6.5 | 5.0 | 8.3 | 2.88 |
| 4 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PRT | 7.5 | 5.8 | 8.5 | 2.57 |
| 5 | s-metolachlor | 7.62 | EC | 1.27 | lb ai/a | PO1 | 7.5 | 4.8 | 8.0 | 1.90 |
| 6 | s-metolachlor | 7.62 | EC | 2.54 | lb ai/a | PO1 | 8.0 | 5.8 | 8.0 | 1.90 |
| LSD (P=.05) | | | | | | | 1.88 | 1.94 | 2.08 | 0.552 |
| Standard Deviation | | | | | | | 1.25 | 1.29 | 1.38 | 0.366 |
| CV | | | | | | | 17.09 | 24.38 | 16.76 | 16.29 |

# Weed Control in Lettuce - Van Dyk - 2014

**Project Code: 116-14-01** **Location: Imlay City, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Romaine Lettuce** **Variety: Sunbelt**
**Planting Method: Seeded** **Planting Date: 6/9/14** **Harvest Date: 8/12/14**
**Spacing: 3 inch** **Row Spacing: 1 ft, 2 rows/bed**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3 ft wide x 30 ft long**

**Soil Type: Carlisle Muck** **OM: 61.6%** **pH: 6.8**
**Sand: 30%** **Silt: 8%** **Clay: 0%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 6/11/14 | 11:15 am | 69/91 | F | Moist | 5-7 SW | 81 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/11 | LETTUCE | | Preemergence | |
| 6/11 | No weeds | | | |

COLQ = common lambsquarters
COPU = common purslane
LATH = ladysthumb
RRPW = redroot pigweed
TUPW = tumble pigweed

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

# Weed Control in Lettuce - Van Dyk - 2014

**Weed Control in Lettuce – Van Dyk - 2014**

Trial ID: 116-14-01 Location: Imlay City, MI
Protocol ID: 116-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | COPU | | COPU | COLQ |
| Crop Code | | | | | | | LETTUCE | | LETTUCE | | |
| Rating Date | | | | | | | 24/Jun/14 | 24/Jun/14 | 21/Jul/14 | 21/Jul/14 | 21/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pronamide | 3.3 | SC | 4 | lb ai/a | PRE | 2.0 | 7.0 | 2.0 | 1.0 | 9.0 |
| 2 | pronamide | 3.3 | SC | 6 | lb ai/a | PRE | 1.7 | 8.7 | 1.0 | 1.3 | 6.0 |
| 3 | sulfentrazone | 4 | F | 0.125 | lb ai/a | PRE | 1.7 | 8.7 | 1.7 | 3.7 | 10.0 |
| 4 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRE | 2.7 | 8.3 | 1.7 | 2.0 | 9.3 |
| 5 | imazosulfuron | 75 | WDG | 0.19 | lb ai/a | PRE | 2.3 | 8.3 | 3.3 | 1.7 | 10.0 |
| 6 | acetochlor | 3 | CS | 0.25 | lb ai/a | PRE | 1.3 | 1.3 | 1.0 | 1.0 | 10.0 |
| 7 | halosulfuron | 75 | WG | 0.012 | lb ai/a | PRE | 3.3 | 3.0 | 4.7 | 1.0 | 7.7 |
| 8 | Untreated | | | | | | 1.3 | 2.3 | 1.3 | 1.0 | 4.7 |
| LSD (P=.05) | | | | | | | 1.73 | 2.79 | 1.53 | 1.98 | 4.77 |
| Standard Deviation | | | | | | | 0.99 | 1.59 | 0.88 | 1.13 | 2.72 |
| CV | | | | | | | 48.25 | 26.69 | 42.06 | 71.45 | 32.65 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | LATH | RRPW | TUPW | | |
| Crop Code | | | | | | | | | | LETTUCE | LETTUCE |
| Rating Date | | | | | | | 21/Jul/14 | 21/Jul/14 | 21/Jul/14 | 12/Aug/14 | 12/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | HARVEST | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | #/PLOT | KG/PLOT |
| 1 | pronamide | 3.3 | SC | 4 | lb ai/a | PRE | 10.0 | 3.0 | 1.3 | 22.0 | 14.35 |
| 2 | pronamide | 3.3 | SC | 6 | lb ai/a | PRE | 10.0 | 5.3 | 3.0 | 22.0 | 14.29 |
| 3 | sulfentrazone | 4 | F | 0.125 | lb ai/a | PRE | 7.0 | 7.7 | 2.3 | 22.3 | 15.90 |
| 4 | sulfentrazone | 4 | F | 0.188 | lb ai/a | PRE | 8.7 | 7.7 | 7.0 | 20.0 | 17.35 |
| 5 | imazosulfuron | 75 | WDG | 0.19 | lb ai/a | PRE | 9.0 | 7.0 | 8.0 | 20.7 | 17.02 |
| 6 | acetochlor | 3 | CS | 0.25 | lb ai/a | PRE | 10.0 | 4.7 | 2.0 | 22.3 | 11.86 |
| 7 | halosulfuron | 75 | WG | 0.012 | lb ai/a | PRE | 10.0 | 1.3 | 1.3 | 16.3 | 7.75 |
| 8 | Untreated | | | | | | 10.0 | 4.7 | 3.3 | 23.0 | 12.48 |
| LSD (P=.05) | | | | | | | 3.29 | 4.67 | 3.35 | 5.81 | 4.296 |
| Standard Deviation | | | | | | | 1.88 | 2.67 | 1.91 | 3.32 | 2.453 |
| CV | | | | | | | 20.11 | 51.64 | 53.93 | 15.75 | 17.68 |

# Weed Control in Native Spearmint – Irrer - 2014

**Project Code:121-14-01** **Location: St Johns, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Mint** **Variety: Native Spearmint**
**Planting Method: Roots** **Planting Date: 2013**
**Spacing: 1 ft** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 50 ft long**

**Soil Type: Capac loam** **OM: 2.6%** **pH: 6.5**
**Sand: 81%** **Silt: 11%** **Clay: 8%** **CEC: 5.4**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/21/14 | 2:15 pm | 81/58 | F | Dry/moist | 8-9 SW | 24 | 90% Cloudy | N |
| PO1 | 6/5/14 | 2:00 pm | 72/70 | F | Dry | 2-3 NW | 30 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/21 | MINT | 0″ | Dormant | |
| 4/21 | BARLEY | 2″ | Foliar | Many |
| 6/5 | MINT | 4-6″ | Foliar | Good |
| 6/5 | BARLEY | 6-10″ | Foliar | Good |

COLQ = common lambsquarters
CORW = common ragweed
PRPW = prostrate pigweed
RRPW = redroot pigweed

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

# Weed Control in Native Spearmint – Irrer - 2014

**Weed Control in Native Spearmint - Irrer - 2014**

Trial ID: 121-14-01 Location: St Johns, MI
Protocol ID: 121-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MINT 5/Jun/14 RATING 1-10 | BARLEY 5/Jun/14 RATING 1-10 | MINT 17/Jun/14 RATING 1-10 | CORW 17/Jun/14 RATING 1-10 | PRPW 17/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 0.8 | lb ai/a | PRE | 1.0 | 9.0 | 1.0 | 10.0 | 6.3 |
| 2 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRE | 6.3 | 3.7 | 3.3 | 7.0 | 10.0 |
| 3 | pyroxasulfone | 85 | WDG | 0.11 | lb ai/a | PRE | 3.7 | 1.3 | 3.3 | 10.0 | 10.0 |
| 4 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 7.0 | 2.0 | 5.0 | 10.0 | 10.0 |
| 5 | sulfentrazone | 4 | F | 0.31 | lb ai/a | PRE | 2.7 | 3.7 | 2.7 | 7.7 | 10.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.43 | lb ai/a | PRE | 8.3 | 3.0 | 5.3 | 10.0 | 10.0 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 4.7 | 1.0 | 3.7 | 10.0 | 8.3 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 7.0 | 2.0 | 3.7 | 10.0 | 6.7 |
| 9 | sulfentrazone | 4 | F | 0.063 | lb ai/a | PO1 | 4.3 | 1.0 | 5.7 | 10.0 | 10.0 |
| | bentazon | 4 | L | 1 | lb ai/a | PO1 | | | | | |
| | terbacil | 80 | WDG | 0.2 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 10 | bicyclopyrone | 1.67 | SL | 0.02 | lb ai/a | PO1 | 2.0 | 1.0 | 6.0 | 10.0 | 10.0 |
| | terbacil | 80 | WDG | 0.2 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 11 | Untreated | | | | | | 1.7 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 2.67 | 1.51 | 2.48 | 3.21 | 2.57 |
| Standard Deviation | | | | | | | 1.56 | 0.89 | 1.45 | 1.89 | 1.51 |
| CV | | | | | | | 35.37 | 34.06 | 39.31 | 21.69 | 17.98 |

# Weed Control in Native Spearmint – Irrer - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | COLQ | CORW | PRPW | RRPW |
| Crop Code | | | | | | | MINT | | | | |
| Rating Date | | | | | | | 17/Jul/14 | 17/Jul/14 | 17/Jul/14 | 17/Jul/14 | 17/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 0.8 | lb ai/a | PRE | 1.0 | 9.3 | 9.7 | 4.3 | 6.3 |
| 2 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRE | 3.0 | 10.0 | 5.7 | 9.0 | 10.0 |
| 3 | pyroxasulfone | 85 | WDG | 0.11 | lb ai/a | PRE | 4.0 | 7.3 | 9.0 | 10.0 | 10.0 |
| 4 | pyroxasulfone | 85 | WDG | 0.21 | lb ai/a | PRE | 4.7 | 9.7 | 10.0 | 10.0 | 10.0 |
| 5 | sulfentrazone | 4 | F | 0.31 | lb ai/a | PRE | 2.3 | 10.0 | 4.0 | 9.0 | 10.0 |
| 6 | pyroxasulfone | 85 | WDG | 0.43 | lb ai/a | PRE | 4.3 | 9.0 | 9.7 | 10.0 | 10.0 |
| 7 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PRE | 3.0 | 6.7 | 8.7 | 5.3 | 6.7 |
| 8 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 3.7 | 9.0 | 10.0 | 6.0 | 5.0 |
| 9 | sulfentrazone | 4 | F | 0.063 | lb ai/a | PO1 | 3.7 | 10.0 | 9.7 | 10.0 | 10.0 |
| | bentazon | 4 | L | 1 | lb ai/a | PO1 | | | | | |
| | terbacil | 80 | WDG | 0.2 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 10 | bicyclopyrone | 1.67 | SL | 0.02 | lb ai/a | PO1 | 5.0 | 10.0 | 10.0 | 9.3 | 10.0 |
| | terbacil | 80 | WDG | 0.2 | lb ai/a | PO1 | | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | | |
| 11 | Untreated | | | | | | 3.7 | 4.0 | 1.0 | 2.7 | 4.0 |
| LSD (P=.05) | | | | | | | 1.49 | 3.99 | 2.80 | 3.92 | 4.20 |
| Standard Deviation | | | | | | | 0.88 | 2.34 | 1.65 | 2.30 | 2.47 |
| CV | | | | | | | 25.18 | 27.13 | 20.73 | 29.52 | 29.49 |

# Weed Control in Melons after Planting on Plastic – SWMREC - 2014

**Project Code:** 108-14-03 **Location:** Benton Harbor, MI

**Personnel:** Bernard H. Zandstra, Colin Phillippo
**Crop:** Muskmelon **Variety:** Minerva
**Planting Method:** Transplant **Planting Date:** 6/6/14 **Harvest Date:** see data
**Spacing:** 3 ft **Row Spacing:** 5.5 ft
**Tillage Type:** Conventional **Study Design:** RCB **Replications:** 3
**Plot Size:** 5.3 ft wide x 50 ft long

**Soil Type:** Oakville fine sand **OM:** 2.3% **pH:** 5.6
**Sand:** 87% **Silt:** 6% **Clay:** 7% **CEC:** 3.6

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| POT | 6/13/14 | 11:10 am | 63/71 | F | Moist | 8-10 N | 58 | 20% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/13 | CAWE = carpetweed | 1-2″ | Veg | Moderate |
| 6/13 | EBNS = eastern black nightshade | 3-4″ | Veg | Few |
| 6/13 | HAVE = hairy vetch | 1-2″ | Veg | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Herbicide treatments were applied over the top after transplanting melons.

# Weed Control in Melons after Planting on Plastic – SWMREC - 2014

**Weed Control in Melons after Planting on Plastic – SWMREC – 2014**

Trial ID: 108-14-03 Location: Benton Harbor, MI
Protocol ID: 108-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON | LACG | CAWE | EBNS | HAVE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | LACG | CAWE | EBNS | HAVE |
| Crop Code | | | | | | | MELON | | | | |
| Rating Date | | | | | | | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 1.0 | 6.7 | 6.7 | 9.7 | 1.3 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 1.3 | 6.7 | 5.7 | 10.0 | 4.0 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 2.0 | 7.0 | 8.0 | 6.7 | 2.3 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 1.7 | 6.7 | 2.7 | 9.7 | 8.0 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 1.0 | 3.7 | 1.0 | 10.0 | 8.7 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 1.7 | 7.7 | 4.0 | 10.0 | 5.7 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 3.0 | 4.7 | 10.0 | 7.0 | 4.0 |
| 8 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 10.0 | 1.7 |
| LSD (P=.05) | | | | | | | 0.80 | 5.25 | 3.47 | 4.21 | 4.03 |
| Standard Deviation | | | | | | | 0.46 | 3.00 | 1.98 | 2.40 | 2.30 |
| CV | | | | | | | 28.83 | 54.49 | 40.66 | 26.32 | 51.65 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON | CAWE | HAVE | MELON | MELON |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | CAWE | HAVE | | |
| Crop Code | | | | | | | MELON | | | MELON | MELON |
| Rating Date | | | | | | | 30/Jul/14 | 30/Jul/14 | 30/Jul/14 | 21/Aug/14 | 21/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | HARVEST | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 2.3 | 8.0 | 4.7 | 0.0 | 0.00 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 2.0 | 6.3 | 3.3 | 0.3 | 1.00 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 2.7 | 8.7 | 3.3 | 0.0 | 0.00 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 2.3 | 6.3 | 7.3 | 0.3 | 1.21 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 2.3 | 4.3 | 4.0 | 3.0 | 6.98 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 2.3 | 6.0 | 7.0 | 0.7 | 0.99 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 4.0 | 7.0 | 8.3 | 0.3 | 1.20 |
| 8 | Untreated | | | | | | 1.3 | 5.0 | 2.3 | 0.3 | 0.64 |
| LSD (P=.05) | | | | | | | 1.40 | 5.78 | 4.51 | 2.17 | 4.548 |
| Standard Deviation | | | | | | | 0.80 | 3.30 | 2.57 | 1.24 | 2.597 |
| CV | | | | | | | 33.02 | 51.12 | 51.03 | 198.66 | 172.83 |

# Weed Control in Melons after Planting on Plastic - SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON 28/Aug/14 HARVEST #/PLOT | MELON 28/Aug/14 HARVEST KG/PLOT | MELON 3/Sep/14 HARVEST #/PLOT | MELON 3/Sep/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | MELON | MELON | MELON | MELON |
| | Rating Date | | | | | | 28/Aug/14 | 28/Aug/14 | 3/Sep/14 | 3/Sep/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 3.3 | 8.66 | 11.7 | 30.23 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 3.0 | 8.66 | 5.0 | 13.98 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 5.3 | 20.86 | 9.3 | 28.45 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 3.0 | 7.73 | 9.0 | 26.11 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 7.7 | 21.12 | 11.7 | 34.74 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 6.7 | 20.57 | 5.3 | 12.96 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 6.0 | 16.62 | 4.3 | 11.41 |
| 8 | Untreated | | | | | | 12.7 | 33.59 | 6.0 | 15.96 |
| LSD (P=.05) | | | | | | | 8.67 | 24.843 | 6.29 | 17.250 |
| Standard Deviation | | | | | | | 4.95 | 14.185 | 3.59 | 9.850 |
| CV | | | | | | | 83.04 | 82.34 | 46.12 | 45.33 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON 5/Sep/14 HARVEST #/PLOT | MELON 5/Sep/14 HARVEST KG/PLOT | MELON 9/Sep/14 HARVEST #/PLOT | MELON 9/Sep/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | MELON | MELON | MELON | MELON |
| | Rating Date | | | | | | 5/Sep/14 | 5/Sep/14 | 9/Sep/14 | 9/Sep/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 5.7 | 15.43 | 5.3 | 14.50 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 5.0 | 12.57 | 6.0 | 15.63 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 2.0 | 6.15 | 4.7 | 12.23 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 4.7 | 11.80 | 3.3 | 9.16 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 3.0 | 10.20 | 2.0 | 5.40 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 2.3 | 6.95 | 4.0 | 10.43 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 0.7 | 1.69 | 3.7 | 8.65 |
| 8 | Untreated | | | | | | 4.3 | 12.09 | 7.0 | 19.68 |
| LSD (P=.05) | | | | | | | 4.02 | 9.986 | 5.08 | 12.634 |
| Standard Deviation | | | | | | | 2.30 | 5.702 | 2.90 | 7.214 |
| CV | | | | | | | 66.37 | 59.33 | 64.42 | 60.32 |

# Weed Control in Melons after Planting on Plastic - SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON 15/Sep/14 HARVEST #/PLOT | MELON 15/Sep/14 HARVEST KG/PLOT | MELON 19/Sep/14 HARVEST #/PLOT | MELON 19/Sep/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | MELON | MELON | MELON | MELON |
| | Rating Date | | | | | | 15/Sep/14 | 15/Sep/14 | 19/Sep/14 | 19/Sep/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 11.0 | 26.24 | 5.7 | 13.24 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 7.7 | 16.57 | 7.0 | 17.76 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 7.7 | 20.15 | 6.0 | 15.22 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 8.3 | 18.69 | 7.7 | 20.61 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 7.3 | 47.31 | 2.7 | 8.42 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 5.0 | 13.14 | 6.3 | 15.63 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 5.7 | 12.20 | 2.0 | 5.16 |
| 8 | Untreated | | | | | | 7.3 | 16.26 | 3.0 | 6.06 |
| LSD (P=.05) | | | | | | | 5.08 | 29.180 | 4.25 | 11.198 |
| Standard Deviation | | | | | | | 2.90 | 16.661 | 2.43 | 6.394 |
| CV | | | | | | | 38.67 | 78.15 | 48.1 | 50.1 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | MELON 22/Sep/14 HARVEST #/PLOT | MELON 22/Sep/14 HARVEST KG/PLOT | MELON TOTAL #/PLOT | MELON TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | MELON | MELON | MELON | MELON |
| | Rating Date | | | | | | 22/Sep/14 | 22/Sep/14 | | |
| | Rating Type | | | | | | HARVEST | HARVEST | TOTAL | TOTAL |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 4.3 | 9.57 | 47.0 | 117.86 |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | POT | 5.0 | 13.27 | 39.0 | 99.44 |
| 3 | ethalfluralin | 3 | EC | 0.75 | lb ai/a | POT | 6.0 | 15.63 | 41.0 | 118.69 |
| | clomazone | 3 | ME | 0.25 | lb ai/a | POT | | | | |
| 4 | halosulfuron | 75 | WG | 0.023 | lb ai/a | POT | 3.7 | 8.92 | 40.0 | 104.23 |
| 5 | halosulfuron | 75 | WG | 0.047 | lb ai/a | POT | 5.3 | 11.52 | 42.7 | 145.70 |
| 6 | s-metolachlor | 7.62 | EC | 0.75 | lb ai/a | POT | 5.3 | 14.11 | 35.7 | 94.79 |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | POT | 4.7 | 10.82 | 27.3 | 67.75 |
| 8 | Untreated | | | | | | 3.3 | 8.86 | 44.0 | 113.12 |
| LSD (P=.05) | | | | | | | 4.98 | 10.618 | 13.13 | 46.298 |
| Standard Deviation | | | | | | | 2.85 | 6.062 | 7.50 | 26.435 |
| CV | | | | | | | 60.45 | 52.32 | 18.95 | 24.55 |

# Preemergence Weed Control in Onion – Muck Soil – Keilen - 2014

**Project Code: 112-14-01** **Location: East Lansing, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Onion** **Variety: Livingston**
**Planting Method: Seeded** **Planting Date: 4/23/14** **Harvest Date: 9/5/14**
**Spacing: 1 inch** **Row Spacing: 10 in, 2 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3.3 ft wide x 30 ft long**

**Soil Type: Houghton Muck** **OM: 77.5%** **pH: 5.3**
**Sand: 12%** **Silt: 11%** **Clay: 0%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/30/14 | 2:00 pm | 62/54 | F | Damp | 6-7 SE | 60 | 100% Cloudy | N |
| PO1 | 5/28/14 | 2:30 pm | 63/65 | F | Dry | 3-5 NE | 76 | 100% Cloudy | N |
| PO2 | 6/19/14 | 11:30 am | 69/69 | F | Wet | 3-5 NE | 84 | 100% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/30 | ONION | | Preemergence | |
| 4/30 | No weeds | | | |
| 5/28 | ONION | 3-4″ | 1-leaf stage | Good |
| 5/28 | COPU = common purslane | 0.25-0.5″ | cotyl. - 1 LS | Moderate |
| 5/28 | LATH = ladysthumb | 0.5-2″ | cotyl. – 4 LS | Very many |
| 5/28 | RRPW = redroot pigweed | 0.5-1″ | cotyl. – 2 LS | Moderate |
| 6/19 | ONION | | 3-leaf stage | Good |
| 6/19 | No weeds – handweeded prior to application | | | |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested all onions in plots.

# Preemergence Weed Control in Onion – Muck Soil – Keilen - 2014

**Preemergence Weed Control in Onion – Muck Soil – Keilen - 2014**

Trial ID: 112-14-01 Location: East Lansing, MI
Protocol ID: 112-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ONION 28/May/14 RATING 1-10 | COPU 28/May/14 RATING 1-10 | LATH 28/May/14 RATING 1-10 | RRPW 28/May/14 RATING 1-10 | ONION 16/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 1.3 | 9.3 | 6.3 | 8.7 | 1.3 |
| 2 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE, PO1, 2 | 1.3 | 9.7 | 8.3 | 9.3 | 1.7 |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 2.3 | 10.0 | 8.0 | 9.3 | 2.0 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PRE, PO1, 2 | | | | | |
| 4 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 1.3 | 9.7 | 6.7 | 9.0 | 2.0 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | | | |
| 5 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 1.0 | 9.7 | 6.3 | 8.3 | 1.0 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PO1, 2 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| 6 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.0 | 9.3 | 6.0 | 8.0 | 1.3 |
| | pyroxasulfone | 85 | WDG | 0.4 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| 7 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 2.0 | 10.0 | 8.0 | 9.3 | 1.7 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE, PO1, 2 | | | | | |
| 8 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 1.0 | 9.3 | 8.0 | 9.3 | 2.0 |
| | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PO1 | | | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | | | |
| 9 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 1.3 | 10.0 | 1.0 | 1.3 | 2.7 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PO1, 2 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | | | |
| 10 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 1.3 | 8.7 | 6.0 | 7.7 | 2.0 |
| | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | | | | | |
| 11 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 1.7 | 10.0 | 8.3 | 9.3 | 2.3 |
| | s-metolachlor | 7.62 | EC | 2.6 | lb ai/a | PO1 | | | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | | | |
| 12 | Handweeded Control | | | | | | 1.0 | 8.3 | 1.0 | 2.7 | 1.3 |
| LSD (P=.05) | | | | | | | 1.12 | 1.29 | 1.92 | 1.95 | 1.19 |
| Standard Deviation | | | | | | | 0.66 | 0.76 | 1.13 | 1.15 | 0.71 |
| CV | | | | | | | 47.59 | 8.04 | 18.35 | 14.99 | 39.67 |

# Preemergence Weed Control in Onion – Muck Soil – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LATH | RRPW | ONION | COPU | LATH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | LATH | RRPW | | COPU | LATH |
| Crop Code | | | | | | | | | ONION | | |
| Rating Date | | | | | | | 16/Jun/14 | 16/Jun/14 | 7/Jul/14 | 7/Jul/14 | 7/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 6.0 | 6.3 | 1.0 | 9.3 | 6.7 |
| 2 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE, PO1, 2 | 9.3 | 9.3 | 1.0 | 10.0 | 9.3 |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 7.7 | 9.3 | 1.7 | 10.0 | 8.7 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PRE, PO1, 2 | | | | | |
| 4 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 9.3 | 8.3 | 2.3 | 9.7 | 9.0 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | | | |
| 5 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 8.3 | 9.7 | 2.7 | 10.0 | 10.0 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PO1, 2 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| 6 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 8.3 | 9.7 | 2.7 | 10.0 | 9.3 |
| | pyroxasulfone | 85 | WDG | 0.4 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| 7 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 8.3 | 10.0 | 1.7 | 10.0 | 9.0 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE, PO1, 2 | | | | | |
| 8 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 8.7 | 9.7 | 1.7 | 9.0 | 6.3 |
| | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PO1 | | | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | | | |
| 9 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 6.7 | 8.7 | 2.3 | 10.0 | 8.3 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PO1, 2 | | | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | | | |
| 10 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 9.3 | 9.3 | 3.0 | 10.0 | 9.7 |
| | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | | | | | |
| 11 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 9.0 | 10.0 | 1.3 | 9.0 | 8.3 |
| | s-metolachlor | 7.62 | EC | 2.6 | lb ai/a | PO1 | | | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | | | |
| 12 | Handweeded Control | | | | | | 1.0 | 2.3 | 1.3 | 3.7 | 3.3 |
| LSD (P=.05) | | | | | | | 2.44 | 1.83 | 1.54 | 2.37 | 3.78 |
| Standard Deviation | | | | | | | 1.44 | 1.08 | 0.91 | 1.40 | 2.23 |
| CV | | | | | | | 18.83 | 12.65 | 48.26 | 15.15 | 27.3 |

# Preemergence Weed Control in Onion – Muck Soil – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW | ONION | ONION |
|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | |
| Crop Code | | | | | | | | ONION | ONION |
| Rating Date | | | | | | | 7/Jul/14 | 17/Jul/14 | 5/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | KG/PLOT |
| 1 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 8.3 | 1.7 | 50.66 |
| 2 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE, PO1, 2 | 9.7 | 1.0 | 51.16 |
| 3 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 10.0 | 1.3 | 51.55 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PRE, PO1, 2 | | | |
| 4 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 10.0 | 1.3 | 53.74 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | |
| 5 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 10.0 | 1.3 | 62.20 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PO1, 2 | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | |
| 6 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 10.0 | 1.7 | 68.42 |
| | pyroxasulfone | 85 | WDG | 0.4 | lb ai/a | PO1 | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | |
| 7 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 10.0 | 1.7 | 69.33 |
| | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE, PO1, 2 | | | |
| 8 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 9.3 | 1.3 | 64.45 |
| | s-metolachlor | 7.62 | EC | 1.3 | lb ai/a | PO1 | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | |
| 9 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PRE | 10.0 | 3.0 | 64.46 |
| | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PO1, 2 | | | |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO1 | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2 | | | |
| 10 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 9.3 | 2.0 | 47.10 |
| | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1, 2 | | | |
| 11 | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | PRE | 9.7 | 2.0 | 60.62 |
| | s-metolachlor | 7.62 | EC | 2.6 | lb ai/a | PO1 | | | |
| | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PO2 | | | |
| 12 | Handweeded Control | | | | | | 4.0 | 1.7 | 61.00 |
| LSD (P=.05) | | | | | | | 2.89 | 1.21 | 22.298 |
| Standard Deviation | | | | | | | 1.70 | 0.71 | 13.167 |
| CV | | | | | | | 18.54 | 42.75 | 22.42 |

# Postemergence Weed Control in Onion – Muck Soil – Keilen - 2014

**Project Code: 112-14-02** **Location: East Lansing, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Onion** **Variety: Livingston**
**Planting Method: Seeded** **Planting Date: 4/23/14** **Harvest Date: 9/5/14**
**Spacing: 1 inch** **Row Spacing: 10 in, 2 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 3.3 ft wide x 30 ft long**

**Soil Type: Houghton Muck** **OM: 77.5%** **pH: 5.3**
**Sand: 12%** **Silt: 11%** **Clay: 0%** **CEC: -**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PO1 | 5/27/14 | 10:30 am | 74/64 | F | Damp | 5-6 SW | 73 | 50% Cloudy | Y |
| PO2 | 6/5/14 | 3:30 pm | 77/69 | F | Dry | 2-5 NW | 23 | 0% Cloudy | N |
| PO3 | 6/26/14 | 12:00 pm | 77/70 | F | Moist | 0-2 N | 65 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/27 | ONION | 3-4″ | 1-leaf stage | Good |
| 5/27 | COPU = common purslane | 0.5-1″ | Foliar | Moderate |
| 5/27 | HANS = hairy nightshade | 1-2″ | 2-4 leaf stage | Moderate |
| 5/27 | LATH = ladysthumb | 0.5-3″ | 2-6 leaf stage | Many |
| 5/27 | RRPW = redroot pigweed | 0.5-2″ | cotyl. – 2 LS | Many |
| 6/5 | ONION | 4-7″ | 2-3 leaf stage | Good |
| 6/5 | LATH = ladysthumb | 0.5-3″ | Foliar | Many |
| 6/5 | RRPW = redroot pigweed | 1-4″ | 4-8 leaf stage | Many |
| 6/5 | HANS = hairy nightshade | 1-2″ | Foliar | Moderate |
| 6/26 | ONION | 12-18″ | 4-6 leaf stage | Good |
| 6/26 | LATH = ladysthumb | 4-8″ | Flower | Many |
| 6/26 | RRPW = redroot pigweed | 4-8″ | Foliar | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Postemergence sprays:
PO1 = onion 1 leaf stage
PO2 = onion 2 leaf stage
PO3 = onion 4-6 leaf stage
4. Harvested all onions in plot.

# Postemergence Weed Control in Onion – Muck Soil – Keilen - 2014

**Postemergence Weed control in Onion – Muck Soil – Keilen - 2014**

Trial ID: 112-14-02 Location: East Lansing, MI
Protocol ID: 112-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ONION | LATH | RRPW | ONION | HANS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | LATH | RRPW | | HANS |
| | Crop Code | | | | | | ONION | | | ONION | |
| | Rating Date | | | | | | 4/Jun/14 | 4/Jun/14 | 4/Jun/14 | 5/Jun/14 | 5/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.0 | 7.3 | 6.3 | 2.0 | 7.7 |
| 2 | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1, 2, 3 | 2.3 | 7.3 | 7.7 | 2.0 | 8.0 |
| 3 | oxyfluorfen | 4 | SC | 0.25 | lb ai/a | PO1, 2, 3 | 2.3 | 7.3 | 8.0 | 2.0 | 8.7 |
| 4 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.0 | 8.0 | 8.0 | 2.0 | 8.3 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1, 2, 3 | | | | | |
| 5 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 1.3 | 2.3 | 2.3 | 1.0 | 1.0 |
| 6 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 1.0 | 3.0 | 2.0 | 1.7 | 1.3 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO3 | | | | | |
| 7 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO1, 2, 3 | 1.7 | 8.7 | 8.7 | 1.3 | 6.3 |
| 8 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 9 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 10 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 1.0 | 1.3 | 4.0 |
| 11 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.0 | 6.7 | 7.0 | 2.3 | 5.0 |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 12 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.3 | 8.0 | 7.7 | 2.0 | 7.0 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2, 3 | | | | | |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 13 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.3 | 7.0 | 6.3 | 2.3 | 8.7 |
| | bromoxynil | 2 | EC | 0.12 | lb ai/a | PO2, 3 | | | | | |
| 14 | Handweeded Control | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.65 | 2.13 | 1.88 | 0.95 | 3.10 |
| Standard Deviation | | | | | | | 0.39 | 1.27 | 1.12 | 0.57 | 1.85 |
| CV | | | | | | | 23.39 | 25.48 | 23.09 | 34.46 | 37.48 |

# Postemergence Weed Control in Onion – Muck Soil – Keilen - 2014

| Pest Code | | | | | | LATH | RRPW | | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|
| Crop Code | | | | | | | | ONION | | |
| Rating Date | | | | | | 5/Jun/14 | 5/Jun/14 | 16/Jun/14 | 16/Jun/14 | 16/Jun/14 |
| Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
| 1 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 7.7 | 6.7 | 1.7 | 7.3 | 4.0 |
| 2 | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1, 2, 3 | 7.7 | 7.3 | 2.0 | 9.0 | 6.0 |
| 3 | oxyfluorfen | 4 | SC | 0.25 | lb ai/a | PO1, 2, 3 | 8.0 | 8.7 | 2.7 | 7.7 | 9.3 |
| 4 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 7.3 | 7.7 | 1.7 | 7.3 | 8.3 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1, 2, 3 | | | | | |
| 5 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 2.0 | 5.3 | 4.3 |
| 6 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 3.3 | 1.3 | 2.0 | 8.0 | 5.3 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO3 | | | | | |
| 7 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO1, 2, 3 | 9.0 | 8.7 | 3.0 | 9.7 | 8.0 |
| 8 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 2.7 | 9.3 | 5.0 |
| 9 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO2, 3 | 1.0 | 1.0 | 3.0 | 8.7 | 6.3 |
| 10 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2, 3 | 3.3 | 2.3 | 1.7 | 9.3 | 2.7 |
| 11 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 7.3 | 8.0 | 2.3 | 7.0 | 9.7 |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 12 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 8.7 | 7.3 | 3.0 | 9.3 | 10.0 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2, 3 | | | | | |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 13 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 8.3 | 6.7 | 2.3 | 9.3 | 8.7 |
| | bromoxynil | 2 | EC | 0.12 | lb ai/a | PO2, 3 | | | | | |
| 14 | Handweeded Control | | | | | | 1.0 | 1.0 | 1.7 | 7.0 | 3.3 |
| LSD (P=.05) | | | | | | | 2.76 | 1.84 | 0.96 | 3.13 | 2.95 |
| Standard Deviation | | | | | | | 1.65 | 1.10 | 0.57 | 1.87 | 1.76 |
| CV | | | | | | | 30.86 | 22.4 | 25.17 | 22.86 | 27.03 |

# Postemergence Weed Control in Onion – Muck Soil – Keilen - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | LATH | RRPW | | |
| Crop Code | | | | | | | ONION | | | ONION | ONION |
| Rating Date | | | | | | | 7/Jul/14 | 7/Jul/14 | 7/Jul/14 | 17/Jul/14 | 5/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | KG/PLOT |
| 1 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.0 | 7.7 | 6.0 | 3.1 | 55.60 |
| 2 | oxyfluorfen | 4 | SC | 0.125 | lb ai/a | PO1, 2, 3 | 2.3 | 9.3 | 9.0 | 2.3 | 55.98 |
| 3 | oxyfluorfen | 4 | SC | 0.25 | lb ai/a | PO1, 2, 3 | 2.7 | 7.3 | 9.7 | 2.0 | 52.43 |
| 4 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 1.3 | 9.3 | 8.3 | 1.7 | 61.15 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1, 2, 3 | | | | | |
| 5 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 1.7 | 9.3 | 8.7 | 2.3 | 49.07 |
| 6 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2, 3 | 3.0 | 9.0 | 8.0 | 2.7 | 49.77 |
| | flumioxazin | 51 | WDG | 0.064 | lb ai/a | PO2 | | | | | |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO3 | | | | | |
| 7 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO1, 2, 3 | 2.3 | 9.3 | 8.0 | 2.3 | 57.71 |
| 8 | fomesafen | 2 | SL | 0.125 | lb ai/a | PO2, 3 | 2.0 | 10.0 | 6.0 | 1.7 | 62.44 |
| 9 | fomesafen | 2 | SL | 0.25 | lb ai/a | PO2, 3 | 3.0 | 8.3 | 8.0 | 3.0 | 47.92 |
| 10 | acifluorfen | 2 | L | 0.25 | lb ai/a | PO2, 3 | 4.0 | 10.0 | 8.0 | 4.3 | 50.52 |
| 11 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 2.7 | 9.7 | 9.0 | 2.0 | 58.44 |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 12 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 3.0 | 10.0 | 9.7 | 1.6 | 58.15 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO2, 3 | | | | | |
| | fluroxypyr | 2.8 | L | 0.123 | lb ai/a | PO2, 3 | | | | | |
| 13 | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2, 3 | 1.3 | 10.0 | 7.7 | 1.0 | 68.16 |
| | bromoxynil | 2 | EC | 0.12 | lb ai/a | PO2, 3 | | | | | |
| 14 | Handweeded Control | | | | | | 2.7 | 9.0 | 8.3 | 2.3 | 58.02 |
| LSD (P=.05) | | | | | | | 1.95 | 2.62 | 2.63 | 1.97 | 17.036 |
| Standard Deviation | | | | | | | 1.16 | 1.56 | 1.57 | 1.16 | 10.148 |
| CV | | | | | | | 47.9 | 17.02 | 19.18 | 50.48 | 18.09 |

# Preemergence Weed Control in Onion on Mineral Soil – Vogel - 2014

**Project Code: 112-14-03** **Location: Fremont, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Onion** **Variety: Prince**
**Planting Method: Seeded** **Planting Date: 5/1/14**
**Spacing: 1 in** **Row Spacing: 1 ft, 3 rows/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 30 ft long**

**Soil Type: Pipestone sand** **OM: 2.0%** **pH: 7.2**
**Sand: 94%** **Silt: 5%** **Clay: 1%** **CEC: 6.0**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 5/2/14 | 2:00 pm | 48/50 | F | Damp | 8-10 SW | 80 | 100% Cloudy | N |
| PO1 | 5/27/14 | 1:30 pm | 77/71 | F | Dry | 4-6 NW | 60 | 100% Cloudy | N |
| PO2 | 6/23/14 | 11:30 am | 67/66 | F | Damp | 3-4 NE | 81 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/2 | ONION | | Preemergence | |
| 5/2 | No weeds | | | |
| 5/27 | ONION | 2-4″ | 1-leaf stage | Good |
| 5/27 | No weeds | | | |
| 6/25 | ONION | 6-12″ | 4-6 leaves | Good |
| 6/25 | RRPW = redroot pigweed | 2-12″ | Foliar | Moderate |
| 6/25 | HANS = hairy nightshade | 2-10″ | Foliar | Few |
| 6/25 | LACG = large crabgrass | 1-3″ | Foliar | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Crop destroyed by hail, 25 June 2014; no yields taken.

# Preemergence Weed Control in Onion on Mineral Soil – Vogel - 2014

**Preemergence Weed Control in Onion – Mineral Soil – Vogel - 2014**

Trial ID: 112-14-03 Location: Fremont, MI
Protocol ID: 112-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ONION 27/May/14 RATING 1-10 | ONION 6/Jun/14 RATING 1-10 | RRPW 6/Jun/14 RATING 1-10 | ONION 23/Jun/14 RATING 1-10 | COPU 23/Jun/14 RATING 1-10 | RRPW 23/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.75 | lb ai/a | PRE, PO1, 2 | 1.0 | 1.3 | 5.7 | 1.7 | 9.7 | 4.7 |
| 2 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE, PO1, 2 | 1.7 | 2.0 | 7.3 | 1.7 | 10.0 | 6.0 |
| 3 | pendimethalin | 3.8 | CS | 1.5 | lb ai/a | PRE, PO1, 2 | 1.3 | 3.0 | 6.0 | 2.0 | 10.0 | 4.0 |
| 4 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE, PO1, 2 | 2.0 | 4.3 | 8.0 | 3.0 | 10.0 | 5.3 |
| 5 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 2.3 | 9.7 | 2.0 | 10.0 | 8.0 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1, 2 | | | | | | |
| 6 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 1.7 | 10.0 | 2.3 | 10.0 | 5.7 |
| | pyroxasulfone | 85 | WDG | 0.134 | lb ai/a | PO1, 2 | | | | | | |
| 7 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE, PO1 | 1.3 | 1.7 | 6.0 | 1.0 | 10.0 | 3.0 |
| | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PO2 | | | | | | |
| 8 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.3 | 1.7 | 7.7 | 1.3 | 5.0 | 4.3 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PO1, 2 | | | | | | |
| 9 | ethofumesate | 4 | SC | 1 | lb ai/a | PRE, PO1, 2 | 1.0 | 1.7 | 10.0 | 2.7 | 10.0 | 5.7 |
| 10 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 2.0 | 2.0 | 10.0 | 2.7 | 10.0 | 9.0 |
| | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO1, 2 | | | | | | |
| | fluazifop-p-butyl | 2 | EC | 0.16 | lb ai/a | PO1, 2 | | | | | | |
| 11 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE, PO1 | 1.3 | 2.0 | 10.0 | 2.0 | 10.0 | 8.0 |
| | flumioxazin | 51 | WDG | 0.032 | lb ai/a | PO1 | | | | | | |
| | oxyfluorfen | 4 | SC | 0.063 | lb ai/a | PO2 | | | | | | |
| | fluazifop-p-butyl | 2 | EC | 0.16 | lb ai/a | PO2 | | | | | | |
| 12 | Handweeded Control | | | | | | 1.0 | 1.0 | 1.3 | 1.0 | 9.3 | 7.3 |
| LSD (P=.05) | | | | | | | 0.93 | 1.61 | 3.20 | 1.33 | 2.19 | 2.38 |
| Standard Deviation | | | | | | | 0.55 | 0.95 | 1.89 | 0.79 | 1.29 | 1.40 |
| CV | | | | | | | 37.95 | 46.32 | 24.75 | 40.45 | 13.59 | 23.72 |

# Preemergence Weed Control in Established Chives – Van Drunen - 2014

**Project Code: 117-14-01** **Location: Momence, IL**

**Personnel: Bernard H. Zandstra, Colin Phillippo, Alan DeYoung**
**Crop: Chives** **Variety: Purly**
**Planting Method: Root divisions** **Planting Date: 2011** **Harvest Date: See notes**
**Spacing: 1 in** **Row Spacing: 2 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 30 ft long**

**Soil Type: Jasper loam** **OM: 5.3%** **pH: 4.9**
**Sand: 28%** **Silt: 40%** **Clay: 32%** **CEC: 22.3**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 7/11/14 | 11:30 am | 77/70 | F | Dry | 1-5 S | 45 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 7/11 | CHIVES | | | |
| 7/11 | No weeds | | | |
| 8/15 | COLQ = common lambsquarters | | | |
| 8/15 | COPU = common purslane | | | |
| 8/15 | FAPA = fall panicum | | | |
| 8/15 | RRPW = redroot pigweed | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, $CO_2$ backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvest dates: 15 August, 18 September, and 10 October 2014.

# Preemergence Weed Control in Established Chives – Van Drunen - 2014

**Preemergence Weed Control in Established Chives – Van Drunen - 2014**

Trial ID: 117-14-01 Location: Momence. IL
Protocol ID: 117-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHIVES 15/Aug/14 RATING 1-10 | FAPA 15/Aug/14 RATING 1-10 | COLQ 15/Aug/14 RATING 1-10 | COPU 15/Aug/14 RATING 1-10 | RRPW 15/Aug/14 RATING 1-10 | CHIVES 18/Sep/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 9.7 | 8.3 | 9.7 | 10.0 | 2.0 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.7 | 8.7 | 8.7 | 10.0 | 10.0 | 2.0 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 1.7 | 10.0 | 7.7 | 10.0 | 9.3 | 2.3 |
| 4 | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | 1.7 | 10.0 | 6.7 | 9.7 | 9.7 | 2.0 |
| 5 | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PRE | 1.7 | 9.3 | 8.0 | 9.7 | 9.0 | 1.7 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 2.0 | 10.0 | 8.3 | 10.0 | 9.3 | 1.7 |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 2.3 | 10.0 | 6.0 | 9.7 | 9.3 | 2.0 |
| 8 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 2.0 | 10.0 | 8.0 | 9.0 | 10.0 | 1.7 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRE | 1.0 | 10.0 | 9.0 | 10.0 | 10.0 | 1.3 |
| 10 | Untreated | | | | | | 2.0 | 10.0 | 7.3 | 10.0 | 10.0 | 1.7 |
| LSD (P=.05) | | | | | | | 1.47 | 0.97 | 2.69 | 1.13 | 1.13 | 1.37 |
| Standard Deviation | | | | | | | 0.85 | 0.56 | 1.57 | 0.66 | 0.66 | 0.80 |
| CV | | | | | | | 48.35 | 5.78 | 20.14 | 6.74 | 6.81 | 43.66 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHIVES 10/Oct/14 RATING 1-10 | CHIVES 15/Aug/14 HARVEST1 KG/PLOT | CHIVES 18/Sep/14 HARVEST2 KG/PLOT | CHIVES 10/Oct/14 HARVEST3 KG/PLOT | CHIVES TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.3 | 12.83 | 10.96 | 4.36 | 28.15 |
| 2 | pendimethalin | 3.8 | CS | 1.9 | lb ai/a | PRE | 1.0 | 10.37 | 11.65 | 4.93 | 26.95 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 2.3 | 11.16 | 11.43 | 4.71 | 27.30 |
| 4 | s-metolachlor | 7.62 | EC | 1.9 | lb ai/a | PRE | 2.0 | 11.36 | 12.12 | 5.38 | 28.87 |
| 5 | dimethenamid-p | 6 | EC | 0.98 | lb ai/a | PRE | 1.3 | 11.84 | 11.68 | 4.96 | 28.48 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 2.0 | 13.33 | 14.26 | 5.26 | 32.84 |
| 7 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 1.3 | 9.05 | 10.74 | 4.62 | 24.40 |
| 8 | pyroxasulfone | 85 | WDG | 0.803 | lb ai/a | PRE | 1.7 | 10.78 | 14.45 | 5.17 | 30.41 |
| 9 | oxyfluorfen | 4 | SC | 0.5 | lb ai/a | PRE | 1.3 | 11.35 | 15.92 | 4.79 | 32.06 |
| 10 | Untreated | | | | | | 1.0 | 9.31 | 11.76 | 4.40 | 25.47 |
| LSD (P=.05) | | | | | | | 0.92 | 4.435 | 3.749 | 0.964 | 7.824 |
| Standard Deviation | | | | | | | 0.53 | 2.585 | 2.185 | 0.562 | 4.561 |
| CV | | | | | | | 34.83 | 23.21 | 17.49 | 11.57 | 16.01 |

# Preemergence Weed Control in Seeded Chives and Green Onions – Van Drunen - 2014

**Project Code: 117-14-02** **Location: Momence, IL**

**Personnel: Bernard H. Zandstra, Colin Phillippo, Alan DeYoung**
**Crop: Chives, Green Onions** **Variety: Purly, Tokyo Go**
**Planting Method: Seeded** **Planting Date: 7/2/14** **Harvest Date: 10/10/14**
**Spacing: 1 in** **Row Spacing: 10 in**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 30 ft long**

**Soil Type: Jasper loam** **OM: 7.9%** **pH: 6.2**
**Sand: 25%** **Silt: 40%** **Clay: 35%** **CEC: 25.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 7/11/14 | 1:20 pm | 80/85 | F | Dry | 5-7 SW | 40 | 10% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 7/11 | No crop | | | |
| 7/11 | No weeds | | | |
| 8/15 | COLQ = common lambsquarters | | | |
| 8/15 | COPU = common purslane | | | |
| 8/15 | RRPW = redroot pigweed | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Two rows of each crop per plot.

# Preemergence Weed Control in Seeded Chives and Green Onions – Van Drunen - 2014

**Preemergence Weed Control in Seeded Chives and Green Onions – Van Drunen - 2014**

Trial ID: 117-14-02 Location: Momence, IL
Protocol ID: 117-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHIVES 15/Aug/14 RATING 1-10 | GRONION 15/Aug/14 RATING 1-10 | COLQ 15/Aug/14 RATING 1-10 | COPU 15/Aug/14 RATING 1-10 | RRPW 15/Aug/14 RATING 1-10 | CHIVES 18/Sep/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 4.0 | 1.0 | 6.7 | 5.3 | 6.0 | 4.3 |
| 2 | pendimethalin | 3.8 | CS | 1.43 | lb ai/a | PRE | 2.7 | 1.0 | 7.3 | 6.7 | 7.0 | 3.7 |
| 3 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 4.7 | 1.7 | 1.0 | 3.0 | 6.0 | 8.0 |
| 4 | flumioxazin | 51 | WDG | 0.016 | lb ai/a | PRE | 1.7 | 1.0 | 5.7 | 4.7 | 9.0 | 2.3 |
| 5 | pyroxasulfone | 85 | WDG | 0.067 | lb ai/a | PRE | 5.3 | 1.3 | 5.3 | 7.0 | 10.0 | 5.7 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 7.7 | 3.0 | 8.7 | 7.0 | 9.7 | 7.3 |
| 7 | DCPA | 75 | WP | 6 | lb ai/a | PRE | 1.7 | 1.0 | 5.3 | 3.7 | 5.0 | 3.7 |
| 8 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 1.7 | 1.0 | 1.7 | 1.3 | 9.0 | 5.3 |
| 9 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 6.7 | 1.3 | 6.3 | 6.7 | 10.0 | 5.0 |
| 10 | Untreated | | | | | | 3.7 | 1.0 | 1.0 | 1.0 | 3.0 | 9.7 |
| LSD (P=.05) | | | | | | | 5.27 | 1.35 | 3.02 | 2.70 | 4.41 | 4.49 |
| Standard Deviation | | | | | | | 3.07 | 0.79 | 1.76 | 1.58 | 2.57 | 2.62 |
| CV | | | | | | | 77.46 | 58.98 | 35.98 | 34.02 | 34.41 | 47.55 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRONION 18/Sep/14 RATING 1-10 | CHIVES 10/Oct/14 RATING 1-10 | GRONION 10/Oct/14 RATING 1-10 | CHIVES 10/Oct/14 HARVEST KG/PLOT | GRONION 10/Oct/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pendimethalin | 3.8 | CS | 0.95 | lb ai/a | PRE | 1.7 | 3.3 | 1.3 | 0.41 | 16.19 |
| 2 | pendimethalin | 3.8 | CS | 1.43 | lb ai/a | PRE | 1.0 | 3.0 | 1.0 | 0.53 | 21.25 |
| 3 | s-metolachlor | 7.62 | EC | 0.5 | lb ai/a | PRE | 3.3 | 6.7 | 2.0 | 0.10 | 11.94 |
| 4 | flumioxazin | 51 | WDG | 0.016 | lb ai/a | PRE | 2.0 | 2.3 | 2.0 | 0.57 | 16.63 |
| 5 | pyroxasulfone | 85 | WDG | 0.067 | lb ai/a | PRE | 1.3 | 4.0 | 1.7 | 0.28 | 16.91 |
| 6 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | PRE | 1.7 | 7.0 | 1.3 | 0.05 | 19.59 |
| 7 | DCPA | 75 | WP | 6 | lb ai/a | PRE | 1.7 | 2.7 | 1.7 | 0.46 | 18.26 |
| 8 | acetochlor | 3 | CS | 0.5 | lb ai/a | PRE | 3.7 | 4.3 | 2.3 | 0.38 | 15.35 |
| 9 | dimethenamid-p | 6 | EC | 0.5 | lb ai/a | PRE | 1.7 | 4.7 | 1.3 | 0.28 | 20.62 |
| 10 | Untreated | | | | | | 4.3 | 9.3 | 4.0 | 0.00 | 7.72 |
| LSD (P=.05) | | | | | | | 1.03 | 4.33 | 1.31 | 0.489 | 5.166 |
| Standard Deviation | | | | | | | 0.60 | 2.53 | 0.76 | 0.285 | 3.011 |
| CV | | | | | | | 26.84 | 53.35 | 40.98 | 93.12 | 18.31 |

# Weed Control in Processing Pepper – HTRC - 2014

Project Code: 101-14-01 Location: East Lansing, MI
Block 143

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Banana and Cherry Peppers Variety: Yellow Sweet Banana, Cherry Sweet
Planting Method: Transplant Planting Date: 5/28/14 Harvest Date: See data
Spacing: 22 in Row Spacing: 3 ft
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Capac loam OM: 2.6% pH: 6.4
Sand: 55% Silt: 29% Clay: 16% CEC: 8.1

Herbicide Application Information

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRT | 5/28/14 | 2:00 pm | 66/67 | F | Dry | 4-5 NW | 75 | 100% Cloudy | N |
| POT | 5/29/14 | 1:00 pm | 73/71 | F | Dry | 3-5 NE | 46 | 15% Cloudy | N |
| PO1 | 6/19/14 | 9:45 am | 71/66 | F | Wet | 5-7 NE | 86 | 100% Cloudy | Y |

Crop and Weed Information at Application

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/28 | No crop | | Pre-transplant | |
| 5/28 | No weeds | | | |
| 5/29 | BANANA PEPPER | 4-6″ | Veg | Good |
| 5/29 | CHERRY PEPPER | 4-6″ | Veg | Good |
| 5/29 | No weeds | | | |
| 6/19 | BANANA PEPPER | | Veg | Good |
| 6/19 | CHERRY PEPPER | | Veg | Good |
| 6/19 | BYGR = barnyardgrass | 2-3″ | Veg | Few |
| 6/19 | COLQ = common lambsquarters | 1-2″ | Veg | Moderate |
| 6/19 | COPU = common purslane | 1-3″ | Veg | Many |
| 6/19 | CORW = common ragweed | 2-4″ | Veg | Moderate |
| 6/19 | EBNS = eastern black nightshade | 1-2″ | Veg | Moderate |
| 6/19 | LACG = large crabgrass | 1-3″ | Veg | Few |
| 6/19 | PEST = perennial sowthistle | 1-3″ | Veg | Few |
| 6/19 | YENS = yellow nutsedge | 2-4″ | Veg | Moderate |

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

# Weed Control in Processing Pepper – HTRC - 2014

**Weed Control in Processing Pepper – HTRC - 2014**

| | | | |
|---|---|---|---|
| Trial ID: | 101-14-01 | Location: | East Lansing. MI |
| Protocol ID: | 101-14-01 | Investigator: | Dr. Bernard Zandstra |
| Study Director: | Colin Phillippo | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BANANA 18/Jun/14 STAND #/PLOT | CHERRY 18/Jun/14 STAND #/PLOT | BANANA 15/Jul/14 STAND #/PLOT | CHERRY 15/Jul/14 STAND #/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 22.7 | 21.7 | 22.3 | 20.3 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 22.3 | 20.7 | 22.7 | 20.7 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 22.7 | 20.7 | 22.7 | 20.3 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 23.7 | 20.7 | 23.3 | 20.7 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 23.0 | 21.0 | 20.0 | 21.3 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 21.7 | 21.7 | 21.3 | 16.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 23.0 | 22.0 | 22.7 | 21.7 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 23.0 | 21.3 | 22.0 | 21.0 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 23.3 | 22.0 | 23.0 | 21.7 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 17.3 | 7.7 | 18.0 | 10.7 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 22.7 | 21.0 | 23.0 | 21.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | |
| 12 | Untreated | | | | | | 22.3 | 21.0 | 21.0 | 20.7 |
| LSD (P=.05) | | | | | | | 2.16 | 1.96 | 3.29 | 3.37 |
| Standard Deviation | | | | | | | 1.28 | 1.16 | 1.94 | 1.99 |
| CV | | | | | | | 5.73 | 5.77 | 8.89 | 10.13 |

# Weed Control in Processing Pepper – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BANANA | CHERRY | BYGR | COLQ | CORW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | BANANA | CHERRY | | | |
| Rating Date | | | | | | | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.0 | 1.0 | 9.3 | 9.0 | 8.3 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 10.0 | 6.7 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 1.3 | 1.3 | 10.0 | 9.7 | 9.3 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 2.7 | 3.3 | 9.0 | 10.0 | 10.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 10.0 | 10.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 1.0 | 2.0 | 10.0 | 10.0 | 10.0 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 1.3 | 1.3 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 5.3 | 5.3 | 10.0 | 10.0 | 10.0 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 1.0 | 1.0 | 10.0 | 10.0 | 7.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 4.0 |
| LSD (P=.05) | | | | | | | 0.90 | 0.90 | 0.92 | 0.56 | 4.12 |
| Standard Deviation | | | | | | | 0.53 | 0.53 | 0.54 | 0.33 | 2.43 |
| CV | | | | | | | 34.34 | 31.53 | 5.94 | 3.65 | 27.67 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | EBNS | RRPW | BANANA | CHERRY | BYGR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | BANANA | CHERRY | |
| Rating Date | | | | | | | 17/Jun/14 | 17/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 8.0 | 10.0 | 1.0 | 1.0 | 9.3 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 9.7 | 10.0 | 1.0 | 1.0 | 9.7 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.3 | 10.0 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 9.3 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.3 | 10.0 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 9.3 | 10.0 | 2.3 | 3.7 | 9.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.3 | 10.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 2.0 | 10.0 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 1.3 | 1.3 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 10.0 | 10.0 | 4.3 | 6.7 | 10.0 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 10.0 | 10.0 | 2.0 | 2.3 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.82 | 0.00 | 0.85 | 1.02 | 1.21 |
| Standard Deviation | | | | | | | 0.48 | 0.00 | 0.50 | 0.60 | 0.72 |
| CV | | | | | | | 5.38 | 0.0 | 33.33 | 30.15 | 7.93 |

# Weed Control in Processing Pepper – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRFT | COLQ | CORW | EBNS | LATH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 9.7 | 4.3 | 6.0 | 1.0 | 7.0 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 9.0 | 10.0 | 3.0 | 9.7 | 10.0 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 9.7 | 7.7 | 6.0 | 10.0 | 9.0 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 9.7 | 7.0 | 10.0 | 8.0 | 9.3 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 10.0 | 8.3 | 10.0 | 10.0 | 10.0 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 9.7 | 10.0 | 8.7 | 1.0 | 10.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.0 | 8.3 | 10.0 | 10.0 | 9.7 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 9.7 | 10.0 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 9.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 10.0 | 10.0 | 9.7 | 10.0 | 10.0 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 10.0 | 8.3 | 10.0 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 2.3 |
| LSD (P=.05) | | | | | | | 0.75 | 1.80 | 2.89 | 1.06 | 1.88 |
| Standard Deviation | | | | | | | 0.44 | 1.06 | 1.71 | 0.63 | 1.11 |
| CV | | | | | | | 4.87 | 13.42 | 21.98 | 8.31 | 12.41 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RRPW | VELE | BANANA | CHERRY | BYGR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 26/Jun/14 | 26/Jun/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 8.0 | 4.0 | 1.3 | 1.7 | 9.3 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 10.0 | 10.0 | 1.7 | 1.7 | 7.7 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 2.0 | 9.3 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 7.7 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 1.3 | 2.3 | 7.7 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 10.0 | 10.0 | 3.3 | 5.0 | 8.3 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 8.3 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 9.3 | 10.0 | 1.0 | 1.0 | 9.7 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 10.0 | 10.0 | 5.7 | 6.7 | 10.0 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 10.0 | 10.0 | 1.7 | 2.7 | 9.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | | |
| 12 | Untreated | | | | | | 1.0 | 10.0 | 2.0 | 2.7 | 3.0 |
| LSD (P=.05) | | | | | | | 0.56 | 2.54 | 2.30 | 2.20 | 2.24 |
| Standard Deviation | | | | | | | 0.33 | 1.50 | 1.36 | 1.30 | 1.32 |
| CV | | | | | | | 3.69 | 15.79 | 74.01 | 54.49 | 15.79 |

# Weed Control in Processing Pepper – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CORW | EBNS | LATH | VELE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 4.0 | 8.3 | 1.0 | 6.0 | 4.0 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 10.0 | 1.0 | 7.7 | 9.0 | 10.0 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 2.0 | 4.3 | 10.0 | 8.7 | 10.0 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 4.3 | 10.0 | 5.0 | 10.0 | 7.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 7.0 | 10.0 | 9.0 | 10.0 | 7.0 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 10.0 | 8.7 | 1.0 | 10.0 | 10.0 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 6.7 | 9.3 | 9.3 | 9.7 | 10.0 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 9.7 | 9.3 | 8.0 | 10.0 | 10.0 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 9.3 | 9.0 | 9.7 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 8.7 | 9.3 | 10.0 | 10.0 | 10.0 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 4.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | | |
| 12 | Untreated | | | | | | 3.0 | 4.0 | 1.0 | 1.0 | 6.3 |
| LSD (P=.05) | | | | | | | 3.85 | 3.83 | 2.58 | 2.31 | 4.72 |
| Standard Deviation | | | | | | | 2.28 | 2.26 | 1.52 | 1.36 | 2.79 |
| CV | | | | | | | 34.72 | 29.05 | 22.36 | 15.69 | 32.06 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BANANA 12/Aug/14 HARVEST KG/PLOT | BANANA 2/Sep/14 HARVEST KG/PLOT | BANANA 2/Oct/14 HARVEST KG/PLOT | BANANA TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | | | | |
| Rating Type | | | | | | | | | | |
| Rating Unit | | | | | | | | | | |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 7.99 | 7.38 | 1.76 | 17.13 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 9.46 | 10.39 | 2.28 | 22.13 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 10.49 | 10.44 | 2.26 | 23.19 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 10.35 | 9.03 | 2.03 | 21.40 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 9.08 | 8.21 | 3.49 | 20.78 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 3.16 | 3.78 | 1.79 | 8.73 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 12.19 | 9.68 | 2.54 | 24.41 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 13.56 | 12.12 | 2.87 | 28.54 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 13.04 | 15.34 | 2.86 | 31.25 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 3.34 | 5.79 | 2.85 | 11.97 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 7.07 | 15.54 | 4.33 | 26.93 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | |
| 12 | Untreated | | | | | | 7.57 | 6.99 | 2.64 | 17.20 |
| LSD (P=.05) | | | | | | | 4.473 | 5.360 | 1.840 | 10.559 |
| Standard Deviation | | | | | | | 2.641 | 3.165 | 1.087 | 6.235 |
| CV | | | | | | | 29.54 | 33.13 | 41.13 | 29.5 |

# Weed Control in Processing Pepper – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHERRY 14/Aug/14 HARVEST KG/PLOT | CHERRY 8/Sep/14 HARVEST KG/PLOT | CHERRY 2/Oct/14 HARVEST KG/PLOT | CHERRY TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 14/Aug/14 | 8/Sep/14 | 2/Oct/14 | |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | TOTAL |
| | Rating Unit | | | | | | KG/PLOT | KG/PLOT | KG/PLOT | KG/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 2.61 | 4.36 | 1.46 | 8.43 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 4.74 | 6.71 | 2.03 | 13.48 |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 2.96 | 4.46 | 0.95 | 8.36 |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 4.45 | 6.35 | 1.01 | 11.81 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRT | 3.53 | 6.58 | 1.24 | 11.35 |
| 6 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRT | 0.81 | 0.48 | 0.36 | 1.65 |
| 7 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | 5.09 | 8.81 | 0.83 | 14.72 |
| | fomesafen | 2 | SL | 0.125 | lb ai/a | PRT | | | | |
| 8 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 4.54 | 13.02 | 2.58 | 20.15 |
| 9 | clomazone | 3 | ME | 0.5 | lb ai/a | PRT | 4.97 | 9.66 | 2.03 | 16.66 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | |
| 10 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | POT | 0.40 | 2.96 | 1.33 | 4.69 |
| 11 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | POT | 2.30 | 9.88 | 1.14 | 13.32 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PO1 | | | | |
| | sethoxydim | 1.53 | EC | 0.19 | lb ai/a | PO1 | | | | |
| 12 | Untreated | | | | | | 2.53 | 5.23 | 1.63 | 9.38 |
| LSD (P=.05) | | | | | | | 2.229 | 4.946 | 1.236 | 7.020 |
| Standard Deviation | | | | | | | 1.316 | 2.920 | 0.730 | 4.146 |
| CV | | | | | | | 40.58 | 44.65 | 52.83 | 37.13 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

**Project Code: 101-14-02** **Location: East Lansing, MI**
**Block 137/143**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Bell pepper, Tomato** **Variety: Aristotle, Sunbrite (respectively)**
**Planting Method: Transplant** **Planting Date: 5/28/14** **Harvest Date: See data**
**Spacing: 22 in** **Row Spacing: 3 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.5 ft wide x 15 ft long**

**Soil Type: Capac loam** **OM: 2.6%** **pH: 6.4**
**Sand: 55%** **Silt: 29%** **Clay: 16%** **CEC: 8.1**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRT | 5/28/14 | 3:00 pm | 66/67 | F | Dry | 4-5 NW | 75 | 100% Cloudy | N |
| PO1 | 6/19/14 | 10:10 am | 71/66 | F | Wet | 5-7 NE | 56 | 100% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/28 | PEPPER | | Pre-transplant | |
| 5/28 | TOMATO | | Pre-transplant | |
| 5/28 | No weeds | | | |
| 6/19 | PEPPER | 4-6″ | Veg | Good |
| 6/19 | TOMATO | 4-8″ | Veg | Good |
| 6/19 | BYGR = barnyardgrass | 2-5″ | Veg | Many |
| 6/19 | COLQ = common lambsquarters | 1-3″ | Veg | Many |
| 6/19 | COPU = common purslane | 1-3″ | Veg | Many |
| 6/19 | CORW = common ragweed | 1-2″ | Veg | Few |
| 6/19 | EBNS = eastern black nightshade | 1-2″ | Veg | Few |
| 6/19 | LATH = ladysthumb | 1-3″ | Veg | Few |
| 6/19 | RRPW = redroot pigweed | 2-3″ | Veg | Few |
| 6/19 | VELE = velvetleaf | 2-3″ | Veg | Moderate |

**Notes and Comments**
**1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

**Weed Control in Bell Pepper and Tomato – HTRC - 2014**

Trial ID: 101-14-02 Location: East Lansing, MI
Protocol ID: 101-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PEPPER 18/Jun/14 STAND #/PLOT | TOMATO 18/Jun/14 STAND #/PLOT | PEPPER 15/Jul/14 STAND #/PLOT | TOMATO 15/Jul/14 STAND #/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 18/Jun/14 | 18/Jun/14 | 15/Jul/14 | 15/Jul/14 |
| | Rating Type | | | | | | STAND | STAND | STAND | STAND |
| | Rating Unit | | | | | | #/PLOT | #/PLOT | #/PLOT | #/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 22.0 | 20.0 | 21.3 | 19.3 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 21.3 | 23.0 | 21.3 | 19.3 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 23.3 | 22.3 | 23.3 | 21.7 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 20.3 | 23.0 | 20.3 | 20.7 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 22.3 | 22.0 | 21.7 | 21.3 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 20.7 | 21.7 | 20.3 | 22.3 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 20.7 | 21.0 | 21.0 | 21.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 21.3 | 22.3 | 4.3 | 23.3 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 21.3 | 22.3 | 8.0 | 22.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 21.0 | 22.7 | 21.0 | 22.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 22.3 | 21.0 | 22.0 | 20.7 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | |
| 12 | Untreated | | | | | | 22.7 | 22.3 | 21.7 | 21.7 |
| LSD (P=.05) | | | | | | | 3.04 | 2.08 | 4.76 | 3.87 |
| Standard Deviation | | | | | | | 1.80 | 1.23 | 2.81 | 2.28 |
| CV | | | | | | | 8.32 | 5.6 | 14.91 | 10.73 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PEPPER 17/Jun/14 RATING 1-10 | TOMATO 17/Jun/14 RATING 1-10 | BYGR 17/Jun/14 RATING 1-10 | COLQ 17/Jun/14 RATING 1-10 | CORW 17/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 1.7 | 1.3 | 7.7 | 9.3 | 8.7 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 1.0 | 1.3 | 10.0 | 10.0 | 10.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 1.0 | 4.7 | 10.0 | 10.0 | 10.0 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 1.7 | 2.3 | 10.0 | 9.7 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 1.3 | 1.0 | 9.3 | 10.0 | 10.0 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 2.3 | 1.3 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 3.0 | 2.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 8.3 | 6.3 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 1.0 | 1.0 | 10.0 | 8.3 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 2.3 | 1.7 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 1.3 | 1.0 | 10.0 | 9.3 | 10.0 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 |
| LSD (P=.05) | | | | | | | 0.93 | 1.00 | 0.64 | 1.13 | 2.42 |
| Standard Deviation | | | | | | | 0.55 | 0.59 | 0.38 | 0.67 | 1.43 |
| CV | | | | | | | 35.24 | 35.89 | 4.22 | 7.57 | 16.15 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LATH | RRPW | PEPPER | TOMATO | BYGR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | LATH | RRPW | | | BYGR |
| Crop Code | | | | | | | | | PEPPER | TOMATO | |
| Rating Date | | | | | | | 17/Jun/14 | 17/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 8.0 | 9.7 | 1.3 | 1.3 | 6.7 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 9.7 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 5.3 | 10.0 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 10.0 | 10.0 | 1.7 | 1.7 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 7.0 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 10.0 | 2.7 | 1.3 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 10.0 | 2.3 | 1.7 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 10.0 | 10.0 | 8.0 | 1.0 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 9.7 | 10.0 | 7.3 | 1.7 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 10.0 | 10.0 | 1.7 | 1.3 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 10.0 | 10.0 | 1.0 | 1.0 | 10.0 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 2.7 |
| LSD (P=.05) | | | | | | | 0.28 | 0.28 | 0.71 | 0.70 | 2.82 |
| Standard Deviation | | | | | | | 0.17 | 0.17 | 0.42 | 0.41 | 1.66 |
| CV | | | | | | | 1.84 | 1.81 | 16.7 | 25.72 | 18.82 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CORW | EBNS | LATH | RRPW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 | 26/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 9.0 | 8.3 | 1.3 | 6.3 | 9.0 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 10.0 | 8.0 | 10.0 | 9.3 | 10.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 8.3 | 9.0 | 10.0 | 10.0 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 9.0 | 10.0 | 10.0 | 9.7 | 9.3 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 7.0 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 9.7 | 10.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 10.0 | 9.3 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 9.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.31 | 1.49 | 0.28 | 1.65 | 2.60 |
| Standard Deviation | | | | | | | 0.77 | 0.88 | 0.17 | 0.98 | 1.53 |
| CV | | | | | | | 8.76 | 10.02 | 1.95 | 11.01 | 17.31 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | VELE | PEPPER | TOMATO | BYGR | COLQ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | VELE | | | BYGR | COLQ |
| Crop Code | | | | | | | | PEPPER | TOMATO | | |
| Rating Date | | | | | | | 26/Jun/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 10.0 | 2.3 | 1.3 | 4.7 | 4.0 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 10.0 | 1.3 | 1.3 | 8.0 | 9.7 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 1.0 | 4.3 | 9.7 | 9.3 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 7.0 | 1.7 | 2.0 | 9.3 | 5.7 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 4.0 | 1.0 | 1.0 | 2.0 | 5.3 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 3.3 | 1.7 | 10.0 | 9.7 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 3.3 | 1.3 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 10.0 | 8.7 | 1.3 | 9.7 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 10.0 | 8.0 | 1.3 | 9.7 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 10.0 | 1.7 | 1.3 | 9.7 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 4.7 | 1.0 | 1.7 | 9.3 | 8.3 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.0 | 2.3 | 2.3 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 4.04 | 1.32 | 1.11 | 2.85 | 3.29 |
| Standard Deviation | | | | | | | 2.38 | 0.78 | 0.66 | 1.68 | 1.94 |
| CV | | | | | | | 29.58 | 26.14 | 37.55 | 21.69 | 25.04 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CORW | EBNS | LATH | VELE | PEPPER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 | 14/Jul/14 | 31/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | #/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 8.7 | 1.0 | 3.0 | 10.0 | 1.7 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 5.3 | 10.0 | 8.3 | 7.7 | 11.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 10.0 | 9.0 | 10.0 | 10.0 | 20.0 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 8.7 | 7.7 | 9.0 | 7.0 | 15.0 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 9.3 | 10.0 | 10.0 | 4.0 | 8.3 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 2.7 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 9.7 | 10.0 | 10.0 | 10.0 | 3.0 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 0.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 10.0 | 10.0 | 10.0 | 10.0 | 0.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 8.7 | 10.0 | 10.0 | 9.3 | 12.7 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 10.0 | 10.0 | 8.0 | 4.0 | 18.3 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 4.0 | 7.3 |
| LSD (P=.05) | | | | | | | 2.60 | 2.18 | 1.90 | 5.27 | 5.43 |
| Standard Deviation | | | | | | | 1.54 | 1.29 | 1.12 | 3.11 | 3.20 |
| CV | | | | | | | 18.2 | 15.69 | 13.57 | 38.91 | 38.45 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PEPPER 31/Jul/14 HARVEST KG/PLOT | PEPPER 8/Aug/14 HARVEST #/PLOT | PEPPER 8/Aug/14 HARVEST KG/PLOT | PEPPER 15/Aug/14 HARVEST #/PLOT | PEPPER 15/Aug/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 31/Jul/14 | 8/Aug/14 | 8/Aug/14 | 15/Aug/14 | 15/Aug/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST | HARVEST |
| | Rating Unit | | | | | | KG/PLOT | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 0.23 | 3.3 | 0.61 | 28.0 | 5.09 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 2.11 | 14.7 | 2.98 | 49.3 | 9.09 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 3.90 | 30.0 | 5.82 | 47.7 | 8.93 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 2.91 | 12.7 | 2.50 | 40.0 | 7.37 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 1.43 | 19.7 | 3.75 | 36.3 | 6.47 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 0.50 | 2.7 | 0.48 | 7.3 | 1.26 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 0.51 | 1.7 | 0.29 | 8.3 | 1.26 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 0.00 | 1.0 | 0.23 | 0.0 | 0.00 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 2.36 | 13.3 | 2.50 | 30.7 | 5.17 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 3.69 | 16.7 | 3.29 | 39.0 | 7.20 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 1.19 | 10.3 | 1.93 | 29.0 | 5.19 |
| LSD (P=.05) | | | | | | | 1.014 | 9.73 | 1.870 | 21.34 | 3.955 |
| Standard Deviation | | | | | | | 0.599 | 5.75 | 1.104 | 12.60 | 2.335 |
| CV | | | | | | | 38.17 | 54.74 | 54.37 | 47.91 | 49.14 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | PEPPER | PEPPER | PEPPER | PEPPER | PEPPER |
| Rating Date | | | | | | | 25/Aug/14 | 25/Aug/14 | 29/Aug/14 | 29/Aug/14 | 16/Sep/14 |
| Rating Type | | | | | | | HARVEST | HARVEST | HARVEST | HARVEST | HARVEST |
| Rating Unit | | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT | #/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 14.7 | 3.04 | 25.7 | 5.41 | 22.7 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 21.3 | 4.90 | 11.7 | 5.60 | 39.3 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 16.7 | 3.70 | 49.0 | 8.89 | 46.3 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 14.3 | 3.09 | 14.3 | 3.04 | 36.3 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 8.7 | 1.88 | 23.0 | 4.79 | 18.0 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 23.3 | 4.56 | 50.7 | 9.92 | 37.0 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 18.3 | 3.56 | 48.7 | 9.46 | 45.7 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 0.0 | 0.00 | 4.7 | 0.86 | 10.0 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 1.0 | 0.18 | 10.0 | 1.82 | 17.7 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 10.7 | 2.07 | 17.7 | 3.66 | 54.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 15.0 | 3.13 | 23.7 | 4.91 | 26.7 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 8.7 | 1.71 | 17.7 | 3.43 | 29.7 |
| LSD (P=.05) | | | | | | | 11.08 | 2.405 | 16.23 | 3.574 | 22.55 |
| Standard Deviation | | | | | | | 6.54 | 1.420 | 9.58 | 2.111 | 13.32 |
| CV | | | | | | | 51.44 | 53.55 | 38.76 | 40.99 | 41.69 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PEPPER 16/Sep/14 HARVEST KG/PLOT | PEPPER 2/Oct/14 HARVEST #/PLOT | PEPPER 2/Oct/14 HARVEST KG/PLOT | PEPPER TOTAL #/PLOT | PEPPER TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 4.56 | 10.0 | 1.71 | 106.0 | 20.65 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 7.35 | 13.3 | 2.19 | 160.7 | 34.22 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 9.13 | 17.3 | 3.15 | 227.0 | 43.51 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 7.22 | 14.7 | 2.33 | 147.3 | 28.46 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 3.44 | 9.3 | 1.52 | 123.3 | 23.28 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 7.57 | 12.7 | 2.07 | 136.3 | 26.35 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 8.50 | 20.7 | 2.97 | 146.3 | 26.54 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 1.61 | 2.3 | 0.37 | 17.0 | 2.84 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 3.36 | 7.7 | 1.44 | 37.3 | 7.03 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 9.97 | 19.0 | 3.11 | 158.0 | 28.85 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 5.02 | 12.3 | 2.11 | 151.7 | 29.33 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 4.63 | 15.7 | 2.60 | 118.3 | 20.68 |
| LSD (P=.05) | | | | | | | 4.476 | 13.17 | 2.071 | 39.78 | 6.655 |
| Standard Deviation | | | | | | | 2.643 | 7.78 | 1.223 | 23.49 | 3.930 |
| CV | | | | | | | 43.84 | 60.21 | 57.47 | 18.43 | 16.17 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | TOMATO 21/Aug/14 HARVEST KG/PLOT | TOMATO 29/Aug/14 HARVEST KG/PLOT | TOMATO 4/Sep/14 HARVEST KG/PLOT | TOMATO 12/Sep/14 HARVEST KG/PLOT | TOMATO 19/Sep/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 21/Aug/14 | 29/Aug/14 | 4/Sep/14 | 12/Sep/14 | 19/Sep/14 |
| Rating Type | | | | | | | HARVEST | HARVEST | HARVEST | HARVEST | HARVEST |
| Rating Unit | | | | | | | KG/PLOT | KG/PLOT | KG/PLOT | KG/PLOT | KG/PLOT |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 4.49 | 21.34 | 21.64 | 13.90 | 4.10 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 4.42 | 25.02 | 29.39 | 17.65 | 4.11 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 0.20 | 1.61 | 12.72 | 23.66 | 13.60 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 2.36 | 19.96 | 26.37 | 28.35 | 7.54 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 5.13 | 33.83 | 29.09 | 14.68 | 4.94 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 4.11 | 22.81 | 37.71 | 33.69 | 5.11 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 4.22 | 24.71 | 35.92 | 30.27 | 7.21 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 2.28 | 21.68 | 47.61 | 39.25 | 6.06 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 3.26 | 22.93 | 42.30 | 29.33 | 6.79 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 3.03 | 30.77 | 49.35 | 35.05 | 8.82 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 2.68 | 30.28 | 39.42 | 31.51 | 7.18 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | | |
| 12 | Untreated | | | | | | 7.59 | 32.46 | 22.17 | 8.38 | 2.24 |
| LSD (P=.05) | | | | | | | 2.816 | 9.213 | 11.326 | 14.567 | 4.605 |
| Standard Deviation | | | | | | | 1.663 | 5.441 | 6.688 | 8.602 | 2.719 |
| CV | | | | | | | 45.6 | 22.72 | 20.39 | 33.77 | 41.99 |

# Weed Control in Bell Pepper and Tomato – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | TOMATO 25/Sep/14 HARVEST KG/PLOT | TOMATO 2/Oct/14 HARVEST KG/PLOT | TOMATO 10/Oct/14 HARVEST KG/PLOT | TOMATO TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | | | | |
| | Rating Type | | | | | | | | | |
| | Rating Unit | | | | | | | | | |
| 1 | napropamide | 50 | DF | 2 | lb ai/a | PRT | 7.68 | 6.30 | 3.93 | 83.36 |
| 2 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRT | 6.01 | 4.27 | 5.10 | 95.97 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRT | 20.90 | 11.84 | 19.85 | 104.39 |
| 4 | s-metolachlor | 7.62 | EC | 1.5 | lb ai/a | PRT | 11.46 | 9.07 | 8.05 | 113.16 |
| 5 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | 4.74 | 5.02 | 5.65 | 103.08 |
| 6 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 8.34 | 7.58 | 7.92 | 127.27 |
| | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | Authority MTZ | 45 | DF | 0.338 | lb ai/a | PRT | 7.95 | 7.78 | 9.19 | 127.25 |
| | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 8 | s-metolachlor | 7.62 | EC | 0.71 | lb ai/a | PRT | 9.45 | 8.75 | 15.45 | 150.53 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 9 | s-metolachlor | 7.62 | EC | 0.48 | lb ai/a | PRT | 6.71 | 8.24 | 14.05 | 133.62 |
| | metribuzin | 75 | DF | 0.375 | lb ai/a | PO1 | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | PO1 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 10 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRT | 7.04 | 7.22 | 12.32 | 153.60 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRT | | | | |
| 11 | s-metolachlor | 7.62 | EC | 1.33 | lb ai/a | PRT | 4.28 | 5.96 | 9.01 | 130.31 |
| | fomesafen | 2 | SL | 0.25 | lb ai/a | PRT | | | | |
| 12 | Untreated | | | | | | 3.40 | 5.34 | 1.86 | 83.43 |
| LSD (P=.05) | | | | | | | 4.880 | 3.852 | 4.503 | 28.630 |
| Standard Deviation | | | | | | | 2.882 | 2.275 | 2.659 | 16.907 |
| CV | | | | | | | 35.31 | 31.24 | 28.39 | 14.43 |

# Weed Control in Pumpkin and Squash – HTRC - 2014

**Project Code: 108-14-02** **Location: East Lansing, MI**
**Block 85/86/87**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Pumpkin, Squash** **Variety: Howden pumpkin, Ultra butternut, Golden Hubbard**
**Planting Method: Seeded** **Planting Date: 6/6/14** **Harvest Date: See data**
**Spacing: 1 ft** **Row Spacing: 5 ft; 1 row each/plot**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 16 ft wide x 50 ft long**

**Soil Type: Marlette fine sandy loam** **OM: 2.2%** **pH: 6.1**
**Sand: 58%** **Silt: 27%** **Clay: 15%** **CEC: 6.4**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 6/6/14 | 3:00 pm | 75/70 | F | Damp | 3-5 NW | 35 | 0% Cloudy | N |
| PO1 | 6/30/14 | 2:00 pm | 86/80 | F | Dry | 2-5 SE | 68 | 75% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/6 | PUMPKIN & SQUASH | | Preemergence | |
| 6/6 | No weeds | | | |
| 6/30 | GOLDEN HUBBARD | 8-12″ | 4/5-leaf stage | Good |
| 6/30 | HOWDEN PUMPKIN | 8-12″ | 4/5-leaf stage | Good |
| 6/30 | ULTRA BUTTERNUT | 8-12″ | 4/5-leaf stage | Good |
| 6/30 | COLQ = common lambsquarters | 6-8″ | Veg | Many |
| 6/30 | CORW = common ragweed | 3-5″ | Veg | Many |
| 6/30 | EBNS – eastern black nightshade | 3-4″ | Veg | Moderate |
| 6/30 | LACG = large crabgrass | 4-6″ | Veg | Many |
| 6/30 | RRPW = redroot pigweed | 4-6″ | Veg | Moderate |
| 6/30 | WIRA = wild radish | 10-12″ | Veg | Good |
| 6/30 | YEFT = yellow foxtail | 4-6″ | Veg | Many |

**Notes and Comments**
**1. Spray applied with 16 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, tractor sprayer.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**
**3. Plots on 30 ft centers.**

# Weed Control in Pumpkin and Squash – HTRC - 2014

**Weed Control in Pumpkin and Squash – HTRC - 2014**

Trial ID: 108-14-02 Location: East Lansing, MI
Protocol ID: 108-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HUBBARD 24/Jun/14 RATING 1-10 | PUMPKIN 24/Jun/14 RATING 1-10 | BUTTERNUT 24/Jun/14 RATING 1-10 | YEFT 24/Jun/14 RATING 1-10 | LACG 24/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | | | | | |
| | Rating Type | | | | | | | | | | |
| | Rating Unit | | | | | | | | | | |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.0 | 1.0 | 1.0 | 10.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.0 | 2.0 | 1.3 | 10.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 2.0 | 2.0 | 1.0 | 10.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 1.7 | 5.3 | 7.0 | 10.0 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 3.0 | 6.0 | 7.7 | 9.7 | 10.0 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 2.3 | 5.7 | 5.3 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.3 | 2.7 | 2.0 | 9.7 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 3.3 | 5.0 | 4.0 | 9.3 | 8.7 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.0 | 3.0 | 1.7 | 9.7 | 10.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | Untreated | | | | | | 1.7 | 1.3 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.23 | 2.08 | 1.98 | 0.60 | 1.25 |
| Standard Deviation | | | | | | | 0.72 | 1.21 | 1.16 | 0.35 | 0.73 |
| CV | | | | | | | 35.29 | 35.66 | 36.13 | 3.91 | 8.14 |

# Weed Control in Pumpkin and Squash – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CORW | EBNS | RRPW | WIRA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 24/Jun/14 | 24/Jun/14 | 24/Jun/14 | 24/Jun/14 | 24/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 10.0 | 9.0 | 10.0 | 10.0 | 8.7 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 10.0 | 9.7 | 10.0 | 10.0 | 9.7 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 10.0 | 9.0 | 10.0 | 10.0 | 8.7 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 9.7 | 10.0 | 10.0 | 10.0 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 9.7 | 9.7 | 7.3 | 8.7 | 10.0 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 9.7 | 6.3 | 10.0 | 10.0 | 8.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.65 | 0.98 | 1.37 | 1.25 | 1.74 |
| Standard Deviation | | | | | | | 0.38 | 0.57 | 0.80 | 0.73 | 1.02 |
| CV | | | | | | | 4.25 | 6.78 | 9.01 | 8.14 | 11.82 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HUBBARD | PUMPKIN | BUTTERNUT | YEFT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 15/Jul/14 | 15/Jul/14 | 15/Jul/14 | 15/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.3 | 1.0 | 1.3 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 1.7 | 2.0 | 3.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 1.7 | 1.7 | 2.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 2.0 | 2.7 | 4.7 | 9.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 2.7 | 4.3 | 6.3 | 9.3 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 2.7 | 4.3 | 5.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.7 | 2.3 | 2.0 | 9.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 4.0 | 5.7 | 4.3 | 8.0 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 2.0 | 3.0 | 2.3 | 9.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 1.0 | 4.0 |
| LSD (P=.05) | | | | | | | 1.85 | 1.84 | 2.83 | 2.75 |
| Standard Deviation | | | | | | | 1.08 | 1.07 | 1.65 | 1.60 |
| CV | | | | | | | 49.77 | 38.21 | 51.63 | 18.03 |

# Weed Control in Pumpkin and Squash – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CORW | EBNS | RRPW | WIRA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 15/Jul/14 | 15/Jul/14 | 15/Jul/14 | 15/Jul/14 | 15/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 9.7 | 8.0 | 9.0 | 9.3 | 8.7 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 10.0 | 9.3 | 9.0 | 10.0 | 10.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 10.0 | 7.3 | 10.0 | 10.0 | 9.0 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 7.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 7.3 | 9.7 | 10.0 | 10.0 | 10.0 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 9.3 | 10.0 | 10.0 | 10.0 | 10.0 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 9.3 | 10.0 | 7.0 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 10.0 | 8.0 | 4.0 | 10.0 | 10.0 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 7.3 | 8.3 | 7.7 | 10.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | | |
| 10 | Untreated | | | | | | 1.7 | 4.0 | 3.3 | 4.0 | 3.0 |
| LSD (P=.05) | | | | | | | 2.04 | 3.57 | 3.56 | 2.85 | 2.17 |
| Standard Deviation | | | | | | | 1.19 | 2.08 | 2.08 | 1.66 | 1.26 |
| CV | | | | | | | 14.58 | 24.56 | 25.94 | 17.82 | 13.95 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HUBBARD | HUBBARD | PUMPKIN | PUMPKIN |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | HUBBARD | HUBBARD | PUMPKIN | PUMPKIN |
| | Rating Date | | | | | | 24/Sep/14 | 24/Sep/14 | 24/Sep/14 | 24/Sep/14 |
| | Rating Type | | | | | | HARVEST | HARVEST | HARVEST | HARVEST |
| | | | | | | | | | ORANGE | ORANGE |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 42.3 | 70.61 | 33.3 | 172.10 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 46.7 | 84.95 | 33.0 | 184.48 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 40.7 | 70.36 | 38.7 | 164.02 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 49.0 | 91.34 | 20.0 | 132.36 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 45.7 | 86.50 | 14.7 | 111.70 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 60.3 | 91.70 | 20.7 | 136.12 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 41.7 | 69.59 | 25.0 | 134.29 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 38.3 | 57.90 | 11.7 | 61.37 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 55.0 | 93.51 | 27.7 | 153.25 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated | | | | | | 22.7 | 23.07 | 13.0 | 60.52 |
| LSD (P=.05) | | | | | | | 9.57 | 18.324 | 10.70 | 46.560 |
| Standard Deviation | | | | | | | 5.58 | 10.682 | 6.23 | 27.142 |
| CV | | | | | | | 12.61 | 14.44 | 26.23 | 20.72 |

# Weed Control in Pumpkin and Squash – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PUMPKIN 24/Sep/14 HARVEST GREEN #/PLOT | PUMPKIN 24/Sep/14 HARVEST GREEN KG/PLOT | BUTTERNUT 24/Sep/14 HARVEST #/PLOT | BUTTERNUT 24/Sep/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | PUMPKIN | PUMPKIN | BUTTERNUT | BUTTERNUT |
| | Rating Date | | | | | | 24/Sep/14 | 24/Sep/14 | 24/Sep/14 | 24/Sep/14 |
| | Rating Type | | | | | | HARVEST GREEN | HARVEST GREEN | HARVEST | HARVEST |
| | Rating Unit | | | | | | #/PLOT | KG/PLOT | #/PLOT | KG/PLOT |
| 1 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 4.7 | 22.29 | 100.0 | 127.09 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 2 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 4.3 | 16.89 | 123.3 | 176.07 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 3 | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | 6.0 | 29.98 | 98.3 | 120.93 |
| | clomazone | 3 | ME | 0.375 | lb ai/a | PRE | | | | |
| 4 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 3.0 | 9.50 | 48.3 | 60.62 |
| 5 | fomesafen | 2 | SL | 0.5 | lb ai/a | PRE | 6.3 | 35.78 | 39.0 | 55.34 |
| 6 | fomesafen | 2 | SL | 0.25 | lb ai/a | PRE | 3.3 | 19.86 | 73.7 | 103.18 |
| | s-metolachlor | 7.62 | EC | 0.95 | lb ai/a | PRE | | | | |
| 7 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 9.0 | 36.32 | 103.7 | 154.34 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | PRE | | | | |
| 8 | imazosulfuron | 75 | WDG | 0.3 | lb ai/a | PRE | 3.7 | 14.18 | 52.7 | 65.40 |
| 9 | ethalfluralin | 3 | EC | 1.13 | lb ai/a | PRE | 5.3 | 22.48 | 108.7 | 131.08 |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | PO1 | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | PO1 | | | | |
| 10 | Untreated | | | | | | 5.0 | 14.64 | 56.3 | 62.87 |
| LSD (P=.05) | | | | | | | 4.59 | 19.257 | 23.59 | 30.443 |
| Standard Deviation | | | | | | | 2.67 | 11.226 | 13.75 | 17.746 |
| CV | | | | | | | 52.78 | 50.58 | 17.1 | 16.79 |

# Weed Control in Rhubarb – HTRC - 2014

Project Code: 102-14-01 Location: East Lansing, MI
Block 125/126

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Rhubarb Variety: German Wine
Planting Method: Root division Planting Date: 5/21/07 Harvest Date: 6/10/14
Spacing: 4 ft, 6 plants/plot Row Spacing: 6 ft
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 5.33 ft wide x 24 ft long

Soil Type: Marlette fine sandy loam OM: 3.6% pH: 4.9
Sand: 70% Silt: 21% Clay: 9% CEC: 9.1

Herbicide Application Information

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/11/14 | 5:00 pm | 68/61 | F | Dry | 5-8 NW | 15 | 5% Cloudy | N |
| PO1 | 5/14/14 | 10:10 am | 57/58 | F | Wet | 0-1 S | 71 | 100% Cloudy | Y |

Crop and Weed Information at Application

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/11 | RHUBARB | | Emergence | |
| 4/11 | BHPL = buckhorn plantain | 8″ | Veg | Few |
| 4/11 | CUDO = curly dock | 2″ | Veg | Few |
| 4/11 | DAND = dandelion | 5″ | Veg | Many |
| 4/11 | WHCL = white clover | 1″ | Veg | Many |
| 4/11 | WICA = wild carrot | 3″ | Veg | Many |
| 5/14 | RHUBARB | | Veg | |
| 5/14 | CATH = Canada thistle | | | |
| 5/14 | CEPR = common evening primrose | | | |
| 5/14 | DAND = dandelion | | | |
| 5/14 | WHCA = white campion | | | |
| 5/14 | WHCL = white clover | | | |
| 5/14 | QUGR = quackgrass | | | |

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. 10 June 2014 harvest: 5 (of 6) best plants were harvested per plot.

**Weed Control in Rhubarb – HTRC - 2014**

Trial ID: 102-14-01 Location: East Lansing, MI
Protocol ID: 102-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RHUBARB 14/May/14 RATING 1-10 | QUGR 14/May/14 RATING 1-10 | CEPR 14/May/14 RATING 1-10 | DAND 14/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pronamide | 3.3 | SC | 2 | lb ai/a | PRE | 1.0 | 10.0 | 1.0 | 3.3 |
| 2 | prometryn | 4 | L | 2 | lb ai/a | PRE | 1.7 | 9.0 | 5.7 | 3.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRE | 3.3 | 9.7 | 9.0 | 8.0 |
| 4 | s-metolachlor | 7.62 | EC | 1.26 | lb ai/a | PRE | 2.7 | 8.3 | 4.0 | 1.0 |
| 5 | mesotrione | 4 | SC | 0.188 | lb ai/a | PRE | 1.7 | 6.7 | 6.3 | 7.7 |
| 6 | sulfentrazone | 4 | F | 1 | lb ai/a | PRE | 1.0 | 8.7 | 5.3 | 3.0 |
| 7 | linuron | 50 | DF | 1.5 | lb ai/a | PRE | 1.7 | 5.3 | 4.3 | 7.3 |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 1.3 | 6.3 | 3.0 | 3.3 |
| 9 | quinclorac | 3.8 | L | 0.394 | lb ai/a | PO1 | 1.7 | 5.7 | 2.3 | 4.7 |
| | sethoxydim | 1.53 | EC | 0.28 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 10 | Untreated | | | | | | 2.0 | 7.0 | 3.3 | 1.0 |
| LSD (P=.05) | | | | | | | 1.47 | 4.63 | 5.85 | 4.52 |
| Standard Deviation | | | | | | | 0.86 | 2.70 | 3.41 | 2.63 |
| CV | | | | | | | 47.69 | 35.24 | 76.96 | 62.22 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WHCA 14/May/14 RATING 1-10 | WHCL 14/May/14 RATING 1-10 | RHUBARB 29/May/14 RATING 1-10 | QUGR 29/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | pronamide | 3.3 | SC | 2 | lb ai/a | PRE | 4.0 | 1.0 | 1.0 | 8.7 |
| 2 | prometryn | 4 | L | 2 | lb ai/a | PRE | 4.0 | 10.0 | 2.0 | 9.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRE | 9.7 | 9.7 | 2.3 | 9.3 |
| 4 | s-metolachlor | 7.62 | EC | 1.26 | lb ai/a | PRE | 4.0 | 1.0 | 2.7 | 10.0 |
| 5 | mesotrione | 4 | SC | 0.188 | lb ai/a | PRE | 4.0 | 9.3 | 1.3 | 4.7 |
| 6 | sulfentrazone | 4 | F | 1 | lb ai/a | PRE | 3.3 | 8.3 | 2.0 | 7.3 |
| 7 | linuron | 50 | DF | 1.5 | lb ai/a | PRE | 4.0 | 7.7 | 1.7 | 6.7 |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 1.7 | 3.3 | 1.7 | 4.0 |
| 9 | quinclorac | 3.8 | L | 0.394 | lb ai/a | PO1 | 3.3 | 7.0 | 2.3 | 6.3 |
| | sethoxydim | 1.53 | EC | 0.28 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 10 | Untreated | | | | | | 1.0 | 1.0 | 3.0 | 7.0 |
| LSD (P=.05) | | | | | | | 6.71 | 3.77 | 2.01 | 5.18 |
| Standard Deviation | | | | | | | 3.91 | 2.20 | 1.17 | 3.02 |
| CV | | | | | | | 100.31 | 37.7 | 58.45 | 41.4 |

# Weed Control in Rhubarb – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BHPL | CATH | CEPR | CUDO |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 29/May/14 | 29/May/14 | 29/May/14 | 29/May/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | pronamide | 3.3 | SC | 2 | lb ai/a | PRE | 4.7 | 3.0 | 1.0 | 7.0 |
| 2 | prometryn | 4 | L | 2 | lb ai/a | PRE | 4.3 | 1.3 | 2.3 | 3.0 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRE | 4.7 | 7.7 | 9.0 | 6.3 |
| 4 | s-metolachlor | 7.62 | EC | 1.26 | lb ai/a | PRE | 7.0 | 4.0 | 4.7 | 7.0 |
| 5 | mesotrione | 4 | SC | 0.188 | lb ai/a | PRE | 8.3 | 9.0 | 6.7 | 3.0 |
| 6 | sulfentrazone | 4 | F | 1 | lb ai/a | PRE | 10.0 | 7.0 | 5.0 | 6.0 |
| 7 | linuron | 50 | DF | 1.5 | lb ai/a | PRE | 4.3 | 4.0 | 2.7 | 4.0 |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 4.0 | 7.0 | 4.3 | 6.0 |
| 9 | quinclorac | 3.8 | L | 0.394 | lb ai/a | PO1 | 7.3 | 8.3 | 9.3 | 7.3 |
| | sethoxydim | 1.53 | EC | 0.28 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 10 | Untreated | | | | | | 7.0 | 10.0 | 4.0 | 4.3 |
| LSD (P=.05) | | | | | | | 6.99 | 6.64 | 6.02 | 6.98 |
| Standard Deviation | | | | | | | 4.07 | 3.87 | 3.51 | 4.07 |
| CV | | | | | | | 66.04 | 63.07 | 71.64 | 75.37 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | DAND | WHCA | WHCL | RHUBARB |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 29/May/14 | 29/May/14 | 29/May/14 | 10/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | HARVEST |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | KG/PLOT |
| 1 | pronamide | 3.3 | SC | 2 | lb ai/a | PRE | 4.7 | 1.0 | 1.0 | 3.74 |
| 2 | prometryn | 4 | L | 2 | lb ai/a | PRE | 1.3 | 5.3 | 10.0 | 4.53 |
| 3 | clomazone | 3 | ME | 1 | lb ai/a | PRE | 9.3 | 10.0 | 9.3 | 3.99 |
| 4 | s-metolachlor | 7.62 | EC | 1.26 | lb ai/a | PRE | 4.3 | 4.0 | 1.3 | 2.91 |
| 5 | mesotrione | 4 | SC | 0.188 | lb ai/a | PRE | 8.0 | 3.0 | 10.0 | 3.64 |
| 6 | sulfentrazone | 4 | F | 1 | lb ai/a | PRE | 3.0 | 7.0 | 4.3 | 5.17 |
| 7 | linuron | 50 | DF | 1.5 | lb ai/a | PRE | 2.3 | 6.7 | 7.7 | 5.01 |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 5.0 | 1.0 | 4.0 | 3.37 |
| 9 | quinclorac | 3.8 | L | 0.394 | lb ai/a | PO1 | 7.3 | 2.7 | 5.7 | 3.52 |
| | sethoxydim | 1.53 | EC | 0.28 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| 10 | Untreated | | | | | | 3.3 | 3.0 | 1.0 | 2.38 |
| LSD (P=.05) | | | | | | | 5.04 | 4.92 | 4.61 | 3.831 |
| Standard Deviation | | | | | | | 2.94 | 2.87 | 2.69 | 2.233 |
| CV | | | | | | | 60.34 | 65.7 | 49.44 | 58.37 |

# Spring Weed Control in Strawberry – HTRC – 2014

**Project Code: 126-14-01** **Location: East Lansing, MI**
**Block SH4**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Strawberry** **Variety: Jewel**
**Planting Method: Transplant** **Planting Date: 2012** **Harvest Date: 6/9 - 6/27/14**
**Spacing: Solid row** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 5.33 ft wide x 30 ft long**

**Soil Type: Riddles sandy loam** **OM: 0.8%** **pH: 6.9**
**Sand: 89%** **Silt: 6%** **Clay: 5%** **CEC: 2.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| SPRING | 4/11/14 | 3:40 pm | 68/62 | F | Dry | 5-8 NW | 14 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/11 | COCW = common chickweed | 1″ | | Many |
| 4/11 | PUDN = purple deadnettle | 0.5″ | | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Experiment conducted at Sandhill.

# Spring Weed Control in Strawberry – HTRC – 2014

**Spring Weed Control in Strawberry – HTRC - 2014**

Trial ID: 126-14-01 Location: East Lansing, MI
Protocol ID: 126-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | STBE 14/May/14 RATING 1-10 | HOWE 14/May/14 RATING 1-10 | SHPU 14/May/14 RATING 1-10 | STBE 29/May/14 RATING 1-10 | HOWE 29/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 0.4 | lb ai/a | PRE | 1.3 | 10.0 | 10.0 | 1.3 | 9.0 |
| 2 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRE | 2.0 | 8.3 | 5.7 | 2.3 | 5.0 |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PRE | 3.3 | 3.7 | 9.0 | 2.7 | 1.7 |
| 4 | napropamide | 50 | DF | 4 | lb ai/a | PRE | 1.7 | 3.7 | 3.7 | 2.0 | 2.3 |
| 5 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRE | 1.3 | 3.7 | 3.7 | 2.0 | 3.0 |
| 6 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 1.3 | 2.7 | 10.0 | 2.0 | 1.7 |
| 7 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 2.0 | 4.7 | 10.0 | 2.0 | 5.0 |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.7 | 1.0 | 8.0 | 1.3 | 1.3 |
| 9 | fomesafen | 2 | SL | 0.375 | lb ai/a | PRE | 1.3 | 9.0 | 10.0 | 1.3 | 3.7 |
| 10 | Untreated | | | | | | 2.3 | 1.7 | 1.0 | 3.0 | 1.0 |
| LSD (P=.05) | | | | | | | 1.43 | 3.84 | 4.27 | 1.43 | 3.07 |
| Standard Deviation | | | | | | | 0.83 | 2.24 | 2.49 | 0.83 | 1.79 |
| CV | | | | | | | 45.39 | 46.37 | 35.07 | 41.72 | 53.17 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | STBE 9/Jun/14 HARVEST KG/PLOT | STBE 11/Jun/14 HARVEST KG/PLOT | STBE 13/Jun/14 HARVEST KG/PLOT | STBE 16/Jun/14 HARVEST KG/PLOT | STBE 18/Jun/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | terbacil | 80 | WDG | 0.4 | lb ai/a | PRE | 0.13 | 0.94 | 1.46 | 4.95 | 4.69 |
| 2 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRE | 0.62 | 1.49 | 1.78 | 3.84 | 2.23 |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PRE | 0.43 | 1.17 | 1.56 | 4.07 | 2.21 |
| 4 | napropamide | 50 | DF | 4 | lb ai/a | PRE | 0.31 | 1.41 | 1.56 | 4.00 | 3.18 |
| 5 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRE | 0.42 | 1.37 | 2.34 | 4.28 | 2.56 |
| 6 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 0.19 | 1.35 | 1.81 | 4.82 | 2.79 |
| 7 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 0.54 | 1.28 | 2.00 | 4.04 | 3.09 |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 0.19 | 0.94 | 1.46 | 4.04 | 1.93 |
| 9 | fomesafen | 2 | SL | 0.375 | lb ai/a | PRE | 0.29 | 1.51 | 2.04 | 4.47 | 2.99 |
| 10 | Untreated | | | | | | 0.62 | 1.39 | 2.17 | 3.49 | 3.67 |
| LSD (P=.05) | | | | | | | 0.326 | 0.628 | 0.717 | 2.388 | 1.705 |
| Standard Deviation | | | | | | | 0.190 | 0.366 | 0.418 | 1.392 | 0.994 |
| CV | | | | | | | 50.59 | 28.5 | 23.0 | 33.15 | 33.88 |

# Spring Weed Control in Strawberry – HTRC – 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | STBE 20/Jun/14 HARVEST KG/PLOT | STBE 23/Jun/14 HARVEST KG/PLOT | STBE 25/Jun/14 HARVEST KG/PLOT | STBE 27/Jun/14 HARVEST KG/PLOT | STBE TOTAL KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | | | | | |
| | Rating Type | | | | | | | | | | |
| | Rating Unit | | | | | | | | | | |
| 1 | terbacil | 80 | WDG | 0.4 | lb ai/a | PRE | 2.89 | 3.07 | 1.71 | 1.29 | 21.15 |
| 2 | sulfentrazone | 4 | F | 0.25 | lb ai/a | PRE | 2.08 | 2.30 | 1.14 | 1.19 | 16.66 |
| 3 | acifluorfen | 2 | L | 0.375 | lb ai/a | PRE | 2.55 | 1.72 | 0.77 | 1.02 | 15.50 |
| 4 | napropamide | 50 | DF | 4 | lb ai/a | PRE | 2.97 | 2.39 | 1.30 | 1.29 | 18.40 |
| 5 | pendimethalin | 3.8 | CS | 1.4 | lb ai/a | PRE | 1.60 | 2.21 | 0.88 | 1.02 | 16.68 |
| 6 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 3.03 | 2.12 | 1.10 | 1.06 | 18.28 |
| 7 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 2.33 | 2.20 | 1.20 | 0.99 | 17.67 |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 3.07 | 2.44 | 0.96 | 0.87 | 15.89 |
| 9 | fomesafen | 2 | SL | 0.375 | lb ai/a | PRE | 1.93 | 2.03 | 1.35 | 0.95 | 17.57 |
| 10 | Untreated | | | | | | 1.66 | 1.90 | 1.00 | 0.94 | 16.84 |
| LSD (P=.05) | | | | | | | 1.544 | 1.224 | 0.676 | 0.408 | 4.789 |
| Standard Deviation | | | | | | | 0.900 | 0.714 | 0.394 | 0.238 | 2.792 |
| CV | | | | | | | 37.32 | 31.9 | 34.56 | 22.4 | 15.99 |

# Fall Weed Control in Apple - CRC 2013-2014

**Project Code: 128-14-01** **Location: Clarksville, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Apple** **Variety: Fuji, Gala, Red Delicious**
**Planting Method: Transplant** **Planting Date: 2005**
**Spacing: 12 ft** **Row Spacing: 18 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 11 ft wide x 50 ft long**

**Soil Type: Lapeer Sandy Loam** **OM: 2.0%** **pH: 6.7**
**Sand: 39%** **Silt: 45%** **Clay: 16%** **CEC: 5.6**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| FALL | 11/4/13 | 1:00 pm | 48/44 | F | Damp | 3-4 SE | 48 | 80% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 11/4/13 | APPLE | | | |
| 11/4/13 | DAND = dandelion | 4-6″ | Rosette | Many |
| 11/4/13 | PERG = perennial ryegrass | 5-6″ | Foliar | Many |
| 11/4/13 | WHCL = white clover | 2-3″ | Foliar | Many |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

# Fall Weed Control in Apple - CRC 2013-2014

**Fall Weed Control in Apple – CRC – 2013-2014**

Trial ID: 128-14-01 Location: Clarksville, MI
Protocol ID: 128-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 7/May/14 RATING 1-10 | ANBG 7/May/14 RATING 1-10 | DAND 7/May/14 RATING 1-10 | WHCL 7/May/14 RATING 1-10 | APPLE 10/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 1.0 | 9.0 | 8.0 | 9.7 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | FALL13 | 1.0 | 8.7 | 8.3 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | FALL13 | 1.0 | 7.0 | 8.3 | 8.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 4 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 1.0 | 8.3 | 8.0 | 10.0 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | FALL13 | 1.0 | 9.0 | 8.0 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL13 | 1.0 | 9.3 | 7.0 | 9.7 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 7 | pendimethalin | 3.3 | EC | 3.8 | lb ai/a | FALL13 | 1.0 | 8.0 | 7.0 | 8.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 8 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | FALL13 | 1.0 | 8.3 | 8.7 | 9.7 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 9 | diuron | 80 | DF | 3.2 | lb ai/a | FALL13 | 1.0 | 8.0 | 7.3 | 9.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 10 | dichlobenil | 1.4 | CS | 4 | lb ai/a | FALL13 | 1.0 | 9.3 | 7.7 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 11 | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | 1.0 | 9.0 | 8.3 | 9.0 | 1.0 |
| 12 | Untreated Check | | | | | FALL13 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.00 | 2.17 | 1.85 | 1.24 | 0.00 |
| Standard Deviation | | | | | | | 0.00 | 1.28 | 1.09 | 0.73 | 0.00 |
| CV | | | | | | | 0.0 | 16.2 | 14.96 | 8.38 | 0.0 |

# Fall Weed Control in Apple - CRC 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PERG | BLME | BRPL | COLQ | DAND |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | PERG | BLME | BRPL | COLQ | DAND |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 8.7 | 7.0 | 10.0 | 10.0 | 5.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | FALL13 | 8.7 | 9.0 | 10.0 | 10.0 | 8.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | FALL13 | 2.7 | 10.0 | 10.0 | 10.0 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 4 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 7.7 | 7.7 | 10.0 | 10.0 | 6.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | FALL13 | 6.7 | 10.0 | 6.3 | 4.0 | 8.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL13 | 6.0 | 10.0 | 10.0 | 7.0 | 4.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 7 | pendimethalin | 3.3 | EC | 3.8 | lb ai/a | FALL13 | 7.0 | 10.0 | 10.0 | 10.0 | 6.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 8 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | FALL13 | 7.3 | 10.0 | 10.0 | 10.0 | 8.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 9 | diuron | 80 | DF | 3.2 | lb ai/a | FALL13 | 7.0 | 10.0 | 5.0 | 10.0 | 6.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 10 | dichlobenil | 1.4 | CS | 4 | lb ai/a | FALL13 | 9.7 | 10.0 | 10.0 | 10.0 | 9.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 11 | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | 5.7 | 3.0 | 7.7 | 10.0 | 8.0 |
| 12 | Untreated Check | | | | | FALL13 | 3.0 | 9.0 | 7.7 | 10.0 | 5.0 |
| LSD (P=.05) | | | | | | | 3.11 | 3.45 | 4.04 | 3.51 | 3.22 |
| Standard Deviation | | | | | | | 1.84 | 2.04 | 2.38 | 2.07 | 1.90 |
| CV | | | | | | | 27.54 | 23.11 | 26.83 | 22.41 | 28.07 |

# Fall Weed Control in Apple - CRC 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WHCL | WICA | APPLE | BYGR | FAPA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | WHCL | WICA | | BYGR | FAPA |
| | Crop Code | | | | | | | | APPLE | | |
| | Rating Date | | | | | | 10/Jun/14 | 10/Jun/14 | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 1.7 | 10.0 | 1.3 | 5.7 | 5.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | FALL13 | 6.7 | 10.0 | 1.7 | 10.0 | 9.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | FALL13 | 1.3 | 10.0 | 1.0 | 3.0 | 2.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 4 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 7.7 | 10.0 | 1.0 | 3.0 | 3.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | FALL13 | 3.7 | 7.0 | 1.0 | 2.3 | 1.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL13 | 4.0 | 10.0 | 1.0 | 6.0 | 2.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 7 | pendimethalin | 3.3 | EC | 3.8 | lb ai/a | FALL13 | 1.0 | 7.7 | 1.0 | 8.7 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 8 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | FALL13 | 8.3 | 10.0 | 1.0 | 6.0 | 3.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 9 | diuron | 80 | DF | 3.2 | lb ai/a | FALL13 | 4.7 | 10.0 | 1.0 | 5.3 | 5.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 10 | dichlobenil | 1.4 | CS | 4 | lb ai/a | FALL13 | 5.7 | 9.3 | 1.0 | 4.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 11 | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | 4.7 | 10.0 | 1.0 | 4.7 | 3.7 |
| 12 | Untreated Check | | | | | FALL13 | 1.7 | 10.0 | 1.0 | 10.0 | 10.0 |
| LSD (P=.05) | | | | | | | 4.00 | 3.05 | 0.39 | 4.98 | 3.21 |
| Standard Deviation | | | | | | | 2.36 | 1.80 | 0.23 | 2.94 | 1.90 |
| CV | | | | | | | 55.52 | 18.95 | 21.26 | 51.39 | 40.2 |

# Fall Weed Control in Apple - CRC 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PERG | BRPL | DAND | WHCL | APPLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | PERG | BRPL | DAND | WHCL | |
| Crop Code | | | | | | | | | | | APPLE |
| Rating Date | | | | | | | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 | 28/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 8.7 | 10.0 | 5.0 | 1.7 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | FALL13 | 9.7 | 10.0 | 7.0 | 5.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | FALL13 | 2.3 | 10.0 | 6.3 | 1.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 4 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 6.3 | 9.0 | 2.7 | 4.3 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | FALL13 | 6.7 | 2.0 | 7.7 | 6.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL13 | 6.0 | 10.0 | 4.0 | 6.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 7 | pendimethalin | 3.3 | EC | 3.8 | lb ai/a | FALL13 | 7.3 | 10.0 | 5.3 | 1.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 8 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | FALL13 | 5.3 | 9.0 | 8.7 | 5.0 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 9 | diuron | 80 | DF | 3.2 | lb ai/a | FALL13 | 5.0 | 4.0 | 3.0 | 8.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 10 | dichlobenil | 1.4 | CS | 4 | lb ai/a | FALL13 | 9.3 | 10.0 | 9.7 | 5.7 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 11 | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | 8.0 | 5.7 | 7.3 | 3.7 | 1.0 |
| 12 | Untreated Check | | | | | FALL13 | 3.3 | 7.3 | 3.3 | 1.7 | 1.0 |
| LSD (P=.05) | | | | | | | 4.59 | 3.42 | 4.06 | 5.04 | 0.00 |
| Standard Deviation | | | | | | | 2.71 | 2.02 | 2.39 | 2.98 | 0.00 |
| CV | | | | | | | 41.68 | 25.0 | 41.05 | 71.95 | 0.0 |

# Fall Weed Control in Apple - CRC 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BYGR | LACG | YEFT | DAND | WHCL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | BYGR | LACG | YEFT | DAND | WHCL |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 28/Aug/14 | 28/Aug/14 | 28/Aug/14 | 28/Aug/14 | 28/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 6.0 | 6.3 | 6.7 | 4.3 | 3.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | FALL13 | 9.7 | 9.3 | 8.0 | 6.3 | 3.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | FALL13 | 1.0 | 4.3 | 3.0 | 3.3 | 3.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 4 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 1.7 | 1.7 | 1.7 | 2.7 | 2.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 5 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | FALL13 | 7.3 | 4.3 | 4.0 | 5.0 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL13 | 7.3 | 1.7 | 6.7 | 2.7 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 7 | pendimethalin | 3.3 | EC | 3.8 | lb ai/a | FALL13 | 8.3 | 10.0 | 8.7 | 2.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 8 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | FALL13 | 3.3 | 4.0 | 2.0 | 6.3 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 9 | diuron | 80 | DF | 3.2 | lb ai/a | FALL13 | 1.0 | 4.7 | 5.0 | 5.3 | 8.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 10 | dichlobenil | 1.4 | CS | 4 | lb ai/a | FALL13 | 2.3 | 1.0 | 4.0 | 7.7 | 6.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | | | | | |
| 11 | glyphosate | 5.4 | L | 1 | lb ai/a | FALL13 | 3.7 | 5.3 | 4.3 | 4.0 | 4.3 |
| 12 | Untreated Check | | | | | FALL13 | 9.3 | 9.3 | 9.0 | 4.3 | 4.3 |
| LSD (P=.05) | | | | | | | 3.94 | 5.12 | 4.62 | 3.94 | 5.28 |
| Standard Deviation | | | | | | | 2.32 | 3.02 | 2.73 | 2.33 | 3.12 |
| CV | | | | | | | 45.72 | 58.48 | 51.98 | 51.43 | 68.05 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

**Project Code: 128-14-02** **Location: Clarksville, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Apple** **Variety: Fuji, Gala, Red Delicious**
**Planting Method: Transplant** **Planting Date: 2005**
**Spacing: 12 ft** **Row Spacing: 18 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 11 ft wide x 50 ft long**

**Soil Type: Lapeer Sandy Loam** **OM: 2.0%** **pH: 6.7**
**Sand: 39%** **Silt: 45%** **Clay: 16%** **CEC: 5.6**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| FALL | 11/4/13 | 3:00 pm | 51/46 | F | Damp | 3-4 SE | 34 | 100% Cloudy | N |
| EPRE | 4/8/14 | 2:45 pm | 60/53 | F | Damp | 6-9 NW | 33 | 10% Cloudy | N |
| LPRE | 5/7/14 | 10:50 am | 56/49 | F | Damp | 6-8 W | 72 | 90% Cloudy | Y |
| LPOS | 6/25/14 | 1:00 pm | 74/70 | F | Wet | 1-2 E | 81 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 11/4/13 | APPLE | | Dormant | |
| 11/4/13 | DAND = dandelion | 4-6″ | Rosette | Many |
| 11/4/13 | PERG = perennial ryegrass | 3-5″ | Foliar | Many |
| 11/4/13 | WHCL = white clover | 3-4″ | Foliar | Many |
| 4/8 | APPLE | | Dormant | |
| 4/8 | DAND = dandelion | 3″ | Veg | Many |
| 5/7 | APPLE | 0.5-1″ leaf | Foliar | |
| 5/7 | ANBG = annual bluegrass | 2-3″ | | Few |
| 5/7 | DAND = dandelion | 4-6″ | Flower | Moderate |
| 5/7 | WHCL = white clover | 1-2″ | Foliar | Moderate |
| 6/25 | ANBG = annual bluegrass | 8-10″ | Flower | |
| 6/25 | BRPL = broadleaf plantain | 4-6″ | Veg | Few |
| 6/25 | BYGR = barnyardgrass | 12-18″ | Veg | Many |
| 6/25 | DAND = dandelion | 12-18″ | Flower | Many |
| 6/25 | FAPA = fall panicum | 2-6″ | Veg | Moderate |
| 6/25 | LACG = large crabgrass | 2-8″ | Veg | Many |
| 6/25 | PERG = perennial ryegrass | 12-18″ | Flower | Moderate |
| 6/25 | PRKW = prostrate knotweed | 3-4″ | Flower | Many |
| 6/25 | WHCL = white clover | 6-8″ | Flower | Many |

**Notes and Comments**
**1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

**Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-14**

Trial ID: 128-14-02 Location: Clarksville, MI
Protocol ID: 128-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 1/Apr/14 Diameter CM | APPLE 7/May/14 RATING 1-10 | ANBG 7/May/14 RATING 1-10 | DAND 7/May/14 RATING 1-10 | WHCL 7/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 5.72 | 1.0 | 9.3 | 7.0 | 9.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 5.14 | 1.0 | 8.7 | 8.0 | 9.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 5.33 | 1.0 | 10.0 | 8.3 | 9.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 5.27 | 1.0 | 9.0 | 8.3 | 9.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 4.53 | 3.3 | 4.3 | 5.3 | 7.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 4.89 | 1.0 | 10.0 | 10.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 4.20 | 1.0 | 10.0 | 9.7 | 9.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 4.76 | 1.0 | 9.3 | 9.0 | 8.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 5.71 | 1.0 | 10.0 | 9.7 | 9.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 5.05 | 1.0 | 9.3 | 9.3 | 7.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 5.53 | 1.0 | 10.0 | 9.0 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 12 | Untreated Check | | | | | ALL | 5.62 | 1.0 | 1.0 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.939 | 1.98 | 2.23 | 2.12 | 1.75 |
| Standard Deviation | | | | | | | 0.555 | 1.17 | 1.32 | 1.25 | 1.03 |
| CV | | | | | | | 10.78 | 97.67 | 15.65 | 15.9 | 12.28 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 10/Jun/14 RATING 1-10 | BYGR 10/Jun/14 RATING 1-10 | PERG 10/Jun/14 RATING 1-10 | BRPL 10/Jun/14 RATING 1-10 | DAND 10/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 1.0 | 10.0 | 9.3 | 10.0 | 8.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 1.0 | 9.0 | 9.7 | 10.0 | 9.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 1.0 | 9.0 | 8.0 | 10.0 | 8.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 1.0 | 4.3 | 4.3 | 9.0 | 3.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 3.7 | 4.0 | 9.0 | 10.0 | 8.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.0 | 10.0 | 9.7 | 6.7 | 6.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 1.0 | 5.0 | 9.3 | 9.3 | 5.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.0 | 5.7 | 5.3 | 10.0 | 6.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 9.3 | 9.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 1.0 | 3.0 | 2.7 | 2.3 | 5.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 9.3 | 7.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 12 | Untreated Check | | | | | ALL | 1.0 | 10.0 | 3.0 | 7.0 | 3.0 |
| LSD (P=.05) | | | | | | | 2.26 | 4.98 | 3.15 | 3.52 | 3.49 |
| Standard Deviation | | | | | | | 1.33 | 2.94 | 1.86 | 2.08 | 2.06 |
| CV | | | | | | | 109.09 | 39.2 | 24.74 | 24.23 | 31.02 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

| Pest Code | | | | | | | PRKW | WHCL | | BYGR | FAPA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Crop Code | | | | | | | | | APPLE | | |
| Rating Date | | | | | | | 10/Jun/14 | 10/Jun/14 | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 10.0 | 8.3 | 1.0 | 2.3 | 2.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 9.3 | 6.0 | 1.0 | 2.3 | 1.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 9.0 | 4.7 | 1.0 | 1.0 | 1.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 7.0 | 3.0 | 1.0 | 4.7 | 7.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 10.0 | 7.7 | 1.0 | 9.7 | 10.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 10.0 | 9.0 | 1.3 | 3.3 | 3.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 10.0 | 1.7 | 1.0 | 1.3 | 2.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 10.0 | 4.7 | 1.0 | 3.3 | 3.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 10.0 | 4.3 | 1.0 | 6.0 | 5.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 5.7 | 1.7 | 1.0 | 10.0 | 10.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 10.0 | 10.0 | 1.0 | 7.0 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 12 | Untreated Check | | | | | ALL | 10.0 | 1.7 | 1.0 | 10.0 | 10.0 |
| LSD (P=.05) | | | | | | | 3.56 | 3.56 | 0.29 | 4.42 | 3.59 |
| Standard Deviation | | | | | | | 2.10 | 2.10 | 0.17 | 2.61 | 2.12 |
| CV | | | | | | | 22.74 | 40.23 | 16.6 | 51.37 | 38.36 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LACG | PERG | BRPL | DAND | WHCL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | LACG | PERG | BRPL | DAND | WHCL |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 | 16/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 1.0 | 9.7 | 7.0 | 8.0 | 7.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 4.0 | 9.3 | 6.7 | 6.7 | 4.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 2.7 | 8.7 | 10.0 | 3.7 | 1.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 6.7 | 2.7 | 5.3 | 5.0 | 6.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 10.0 | 9.7 | 10.0 | 9.3 | 9.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 4.3 | 9.3 | 2.3 | 6.0 | 8.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 7.0 | 9.7 | 10.0 | 5.3 | 1.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 3.0 | 5.0 | 10.0 | 4.7 | 3.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 4.0 | 10.0 | 4.0 | 5.7 | 1.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 9.7 | 9.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 10.0 | 10.0 | 9.7 | 6.3 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 12 | Untreated Check | | | | | ALL | 10.0 | 1.7 | 8.7 | 2.7 | 5.0 |
| LSD (P=.05) | | | | | | | 4.90 | 2.83 | 3.40 | 4.76 | 4.01 |
| Standard Deviation | | | | | | | 2.90 | 1.67 | 2.01 | 2.81 | 2.37 |
| CV | | | | | | | 47.82 | 20.93 | 25.69 | 46.21 | 41.95 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 28/Aug/14 RATING 1-10 | BYGR 28/Aug/14 RATING 1-10 | LACG 28/Aug/14 RATING 1-10 | YEFT 28/Aug/14 RATING 1-10 | DAND 28/Aug/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 1.0 | 6.0 | 1.7 | 2.3 | 4.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 1.0 | 3.7 | 1.7 | 2.0 | 5.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 1.0 | 3.7 | 1.7 | 6.0 | 6.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 1.0 | 3.7 | 6.0 | 2.3 | 6.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 1.0 | 6.3 | 4.7 | 7.3 | 7.7 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.0 | 8.7 | 2.0 | 6.3 | 8.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 1.0 | 1.0 | 3.0 | 3.3 | 5.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.0 | 6.0 | 5.0 | 8.7 | 4.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 1.0 | 9.3 | 4.7 | 7.0 | 6.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 1.0 | 4.0 | 5.7 | 8.0 | 4.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | | | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 9.3 | 6.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| 12 | Untreated Check | | | | | ALL | 1.0 | 10.0 | 9.3 | 9.0 | 3.0 |
| LSD (P=.05) | | | | | | | 0.00 | 5.49 | 3.77 | 3.67 | 4.39 |
| Standard Deviation | | | | | | | 0.00 | 3.24 | 2.23 | 2.17 | 2.59 |
| CV | | | | | | | 0.0 | 53.83 | 48.33 | 36.34 | 45.75 |

# Fall and Spring Weed Control in Apple with Pindar - CRC - 2013-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WHCL | APPLE |
|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | WHCL | |
| | Crop Code | | | | | | | APPLE |
| | Rating Date | | | | | | 28/Aug/14 | 16/Oct/14 |
| | Rating Type | | | | | | RATING | Diameter |
| | Rating Unit | | | | | | 1-10 | CM |
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 8.3 | 6.64 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | |
| 2 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 7.7 | 6.15 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | FALL13 | 3.0 | 6.22 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | |
| 4 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 7.3 | 6.26 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 7.7 | 5.29 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL13 | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | |
| 6 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 9.3 | 5.69 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| 7 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 3.3 | 4.95 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 6.3 | 5.53 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| 9 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 1.0 | 6.52 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| 10 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 7.0 | 6.05 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPOS | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPOS | | |
| 11 | terbacil | 80 | WDG | 2.4 | lb ai/a | EPRE | 10.0 | 6.55 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | |
| 12 | Untreated Check | | | | | ALL | 3.3 | 6.52 |
| LSD (P=.05) | | | | | | | 4.62 | 0.990 |
| Standard Deviation | | | | | | | 2.73 | 0.584 |
| CV | | | | | | | 44.02 | 9.69 |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

**Project Code: 128-14-03** **Location: Clarksville, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Apple** **Variety: Honeycrisp, Golden Delicious, Gala**
**Planting Method: Transplant** **Planting Date: 2005**
**Spacing: 12 ft** **Row Spacing: 18 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 11 ft wide x 30 ft long**

**Soil Type: Lapeer Sandy Loam** **OM: 2.0%** **pH: 6.7**
**Sand: 39%** **Silt: 45%** **Clay: 16%** **CEC: 5.6**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| FALL | 11/4/13 | 11:00 am | 48/44 | F | Damp | 3-4 SE | 48 | 80% Cloudy | N |
| EPRE | 4/8/14 | 3:35pm | 56/53 | F | Damp | 8-10 NW | 55 | 30% Cloudy | N |
| LPRE | 5/7/14 | 10:00 am | 49/47 | F | Wet | 4-6 SE | 77 | 70% Cloudy | Y |
| LPOS | 6/25/14 | 12:15 pm | 69/67 | F | Wet | 1-2 E | 87 | 100% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/8 | APPLE | | Dormant | |
| 4/8 | DAND = dandelion | 3″ | Veg | Many |
| 5/7 | APPLE | 0.5-1″ leaf | Foliar | |
| 5/7 | ANBG = annual bluegrass | 2-3″ | | Few |
| 5/7 | DAND = dandelion | 3-6″ | Flower | Few |
| 5/7 | WHCL = white clover | 1-2″ | Foliar | Few |
| 6/25 | APPLE | 1.5″ fruit | Fruiting | Good |
| 6/25 | BYGR = barnyardgrass | 12-18″ | Veg | Many |
| 6/25 | COCW = common chickweed | 8-12″ | Bud/Flower | Many |
| 6/25 | COLQ = common lambsquarters | 8-12″ | Veg | Moderate |
| 6/25 | RRPW = redroot pigweed | 6-8″ | Veg | Many |
| 6/25 | WHCL = white clover | 6-8″ | Flower | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill. Some rows (varieties) were weak, resulting in higher ratings.
3. 2014 was the third year of a three-year project. The same treatments were applied each year.

# Apple Tolerance to Pindar GT – CRC – 2011-2014

**Apple Tolerance to Pindar GT – CRC – 2011-2014**

Trial ID: 128-14-03 Location: Clarksville, MI
Protocol ID: 128-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 1/Apr/14 DIAMETER CM | APPLE 7/May/14 RATING 1-10 | ANBG 7/May/14 RATING 1-10 | DAND 7/May/14 RATING 1-10 | WHCL 7/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL | 5.45 | 1.0 | 9.3 | 9.7 | 9.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | FALL | 4.80 | 1.0 | 9.0 | 8.7 | 8.7 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 3 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL | 4.78 | 1.0 | 9.7 | 8.3 | 8.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 4 | oxyfluorfen | 4 | SC | 3 | lb ai/a | FALL | 4.36 | 1.0 | 9.7 | 9.0 | 8.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 5.69 | 1.0 | 9.3 | 9.0 | 9.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL | 5.22 | 1.0 | 7.3 | 7.0 | 10.0 |
| | sulfentrazone | 4 | F | 0.25 | lb ai/a | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 1/Apr/14 DIAMETER CM | APPLE 7/May/14 RATING 1-10 | ANBG 7/May/14 RATING 1-10 | DAND 7/May/14 RATING 1-10 | WHCL 7/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | | |
| | Crop Code | | | | | | APPLE | APPLE | | | |
| | Rating Date | | | | | | 1/Apr/14 | 7/May/14 | 7/May/14 | 7/May/14 | 7/May/14 |
| | Rating Type | | | | | | DIAMETER | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | CM | 1-10 | 1-10 | 1-10 | 1-10 |
| 7 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 5.98 | 1.0 | 10.0 | 9.3 | 9.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 8 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | EPRE | 4.07 | 1.0 | 10.0 | 10.0 | 9.7 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 9 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 4.94 | 1.0 | 9.7 | 10.0 | 9.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 10 | oxyfluorfen | 4 | SC | 3 | lb ai/a | EPRE | 3.93 | 1.0 | 10.0 | 10.0 | 9.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 5.63 | 1.0 | 10.0 | 9.7 | 8.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 3.88 | 1.0 | 6.3 | 10.0 | 7.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | Untreated Check | | | | | SPRING | | | | | |
| LSD (P=.05) | | | | | | | 2.079 | 0.00 | 2.89 | 2.08 | 2.32 |
| Standard Deviation | | | | | | | 1.228 | 0.00 | 1.71 | 1.23 | 1.37 |
| CV | | | | | | | 25.08 | 0.0 | 18.59 | 13.34 | 15.17 |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE | BYGR | PERG | COCW | COLQ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | BYGR | PERG | COCW | COLQ |
| Crop Code | | | | | | | APPLE | | | | |
| Rating Date | | | | | | | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL | 1.3 | 8.3 | 10.0 | 9.7 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | FALL | 1.7 | 7.7 | 10.0 | 10.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 3 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL | 1.0 | 8.0 | 10.0 | 8.7 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 4 | oxyfluorfen | 4 | SC | 3 | lb ai/a | FALL | 1.0 | 7.7 | 10.0 | 9.0 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 1.0 | 2.0 | 10.0 | 9.0 | 4.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL | 1.0 | 8.0 | 10.0 | 9.7 | 9.3 |
| | sulfentrazone | 4 | F | 0.25 | lb ai/a | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 10/Jun/14 RATING 1-10 | BYGR 10/Jun/14 RATING 1-10 | PERG 10/Jun/14 RATING 1-10 | COCW 10/Jun/14 RATING 1-10 | COLQ 10/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.3 | 9.3 | 10.0 | 10.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 8 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | EPRE | 2.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 9 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 1.3 | 9.3 | 10.0 | 7.7 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 10 | oxyfluorfen | 4 | SC | 3 | lb ai/a | EPRE | 1.3 | 9.7 | 10.0 | 9.7 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 1.0 | 3.0 | 10.0 | 9.3 | 6.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 1.3 | 3.0 | 7.7 | 10.0 | 5.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | | |
| | Untreated Check | | | | | SPRING | | | | | |
| LSD (P=.05) | | | | | | | 0.88 | 3.05 | 1.98 | 2.10 | 3.99 |
| Standard Deviation | | | | | | | 0.52 | 1.80 | 1.17 | 1.24 | 2.36 |
| CV | | | | | | | 40.68 | 25.16 | 11.9 | 13.2 | 27.03 |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | BYGR | | BYGR |
| Crop Code | | | | | | | APPLE | | APPLE | |
| Rating Date | | | | | | | 16/Jul/14 | 16/Jul/14 | 28/Aug/14 | 28/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL | 1.7 | 10.0 | 2.3 | 7.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | FALL | 1.7 | 9.7 | 2.0 | 6.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 3 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL | 1.3 | 9.7 | 1.7 | 5.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 4 | oxyfluorfen | 4 | SC | 3 | lb ai/a | FALL | 2.0 | 9.3 | 2.3 | 6.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 1.3 | 9.0 | 1.0 | 2.3 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL | 2.0 | 9.3 | 2.3 | 6.7 |
| | sulfentrazone | 4 | F | 0.25 | lb ai/a | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | BYGR | | BYGR |
| Crop Code | | | | | | | APPLE | | APPLE | |
| Rating Date | | | | | | | 16/Jul/14 | 16/Jul/14 | 28/Aug/14 | 28/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 7 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.0 | 9.7 | 1.0 | 8.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 8 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | EPRE | 2.3 | 10.0 | 2.3 | 8.7 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 9 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 1.3 | 9.7 | 2.0 | 8.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 10 | oxyfluorfen | 4 | SC | 3 | lb ai/a | EPRE | 2.3 | 10.0 | 2.3 | 6.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 1.3 | 10.0 | 1.3 | 6.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 2.0 | 1.0 | 3.0 | 3.0 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | Untreated Check | | | | | SPRING | | | | |
| LSD (P=.05) | | | | | | | 1.46 | 0.85 | 1.79 | 4.70 |
| Standard Deviation | | | | | | | 0.86 | 0.50 | 1.06 | 2.78 |
| CV | | | | | | | 51.02 | 5.6 | 53.63 | 44.23 |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | FAPA 28/Aug/14 RATING 1-10 | LACG 28/Aug/14 RATING 1-10 | RRPW 28/Aug/14 RATING 1-10 | APPLE 16/Oct/14 DIAMETER CM |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL | 9.3 | 5.7 | 6.7 | 6.14 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | FALL | 8.7 | 7.0 | 8.0 | 5.41 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 3 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL | 7.3 | 8.3 | 8.7 | 5.43 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 4 | oxyfluorfen | 4 | SC | 3 | lb ai/a | FALL | 9.0 | 7.0 | 9.7 | 5.04 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 5 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 5.3 | 7.7 | 2.0 | 6.57 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 6 | terbacil | 80 | WDG | 2.4 | lb ai/a | FALL | 8.3 | 7.0 | 6.7 | 5.97 |
| | sulfentrazone | 4 | F | 0.25 | lb ai/a | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |

# Apple Tolerance to Pindar GT – CRC – 2011-2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | FAPA | LACG | RRPW | APPLE |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | FAPA | LACG | RRPW | |
| Crop Code | | | | | | | | | | APPLE |
| Rating Date | | | | | | | 28/Aug/14 | 28/Aug/14 | 28/Aug/14 | 16/Oct/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | DIAMETER |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | CM |
| 7 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 8.7 | 5.7 | 9.3 | 6.66 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 8 | oxyfluorfen | 3.93 | SC | 2.94 | lb ai/a | EPRE | 10.0 | 6.7 | 9.7 | 4.55 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 9 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 9.3 | 7.0 | 9.0 | 5.79 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 10 | oxyfluorfen | 4 | SC | 3 | lb ai/a | EPRE | 7.7 | 4.7 | 5.7 | 4.38 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 9.0 | 3.7 | 5.7 | 6.73 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | EPRE | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | LPRE,LPOS | | | | |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | LPRE,LPOS | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL | 4.7 | 1.7 | 8.3 | 4.23 |
| | ammonium sulfate | 100 | SG | 0.17 | lb/gal | FALL | | | | |
| | Untreated Check | | | | | SPRING | | | | |
| LSD (P=.05) | | | | | | | 2.82 | 4.34 | 2.58 | 2.585 |
| Standard Deviation | | | | | | | 1.67 | 2.57 | 1.52 | 1.527 |
| CV | | | | | | | 20.55 | 42.76 | 20.44 | 27.38 |

# Spring Weed Control in Apple – HTRC - 2014

**Project Code: 128-14-04** **Location: East Lansing, MI**
**Block 160**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Apple** **Variety: See notes**
**Planting Method: Transplant** **Planting Date: 2006**
**Spacing: 12 ft** **Row Spacing: 18 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 11 ft wide x 50 ft long**

**Soil Type: Marlette Fine Sandy Loam** **OM: 3.2%** **pH: 6.1**
**Sand: 66%** **Silt: 22%** **Clay: 12%** **CEC: 6.4**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/17/14 | 1:30 pm | 59/46 | F | Moist | 9-11 SE | 27 | 60% Cloudy | N |
| EPOS | 5/30/14 | 1:00 pm | 80/67 | F | Damp | 1-2 SW | 41 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/17 | APPLE | | | |
| 4/17 | BHPL = buckhorn plantain | 4-6″ | Veg | Moderate |
| 4/17 | CUDO = curly dock | 3-6″ | Veg | Moderate |
| 4/17 | DAND = dandelion | 3-5″ | Veg | Many |
| 4/17 | QUGR = quackgrass | 4-8″ | Veg | Moderate |
| 4/17 | RECL = red clover | 6-8″ | Veg | Many |
| 4/17 | WICA = wild carrot | 2-4″ | Veg | Few |
| 5/30 | APPLE | | Foliar | Good |
| 5/30 | ALFA = alfalfa | 10-18″ | Foliar | Moderate |
| 5/30 | BFTF = birdsfoot trefoil | 6-10″ | Foliar | Moderate |
| 5/30 | CUDO = curly dock | 12-24″ | Foliar | Moderate |
| 5/30 | DAND = dandelion | 6-12″ | Flower | Moderate |
| 5/30 | DOBG = downy bromegrass | 12-18″ | Seed | Moderate |
| 5/30 | VIPW = Virginia pepperwood | 10-20″ | Seed | Moderate |
| 5/30 | WICA = wild carrot | 4-10″ | Foliar | Moderate |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Varieties: Luckyjon, Spartan, Gala, Honeycrisp, Fuji
4. Row 1 removed on 1 June 2014 due to fire blight during treatment period.

# Spring Weed Control in Apple – HTRC - 2014

**Spring Weed Control in Apple – HTRC - 2014**

Trial ID: 128-14-04 Location: East Lansing, MI
Protocol ID: 128-14-04 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | APPLE 30/May/14 RATING 1-10 | DOBG 30/May/14 RATING 1-10 | QUGR 30/May/14 RATING 1-10 | ALFA 30/May/14 RATING 1-10 | BFTF 30/May/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 1.0 | 7.3 | 8.7 | 8.0 | 7.7 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 1.0 | 6.7 | 6.3 | 6.3 | 4.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.3 | 6.3 | 7.7 | 7.0 | 6.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 1.0 | 8.0 | 9.7 | 5.0 | 6.3 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 7.3 | 7.7 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 5.0 | 8.3 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.0 | 10.0 | 9.0 | 8.0 | 9.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 1.0 | 10.0 | 9.7 | 7.3 | 9.3 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 8.0 | 9.0 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | DOBG | QUGR | ALFA | BFTF |
| Crop Code | | | | | | | APPLE | | | | |
| Rating Date | | | | | | | 30/May/14 | 30/May/14 | 30/May/14 | 30/May/14 | 30/May/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 7.3 | 9.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 1.0 | 9.0 | 9.3 | 7.3 | 9.3 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 1.0 | 10.0 | 8.7 | 7.7 | 9.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 7.3 | 8.7 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 14 | Untreated | | | | | | 1.0 | 5.0 | 4.7 | 4.0 | 3.0 |
| LSD (P=.05) | | | | | | | 0.26 | 3.73 | 2.65 | 4.04 | 3.80 |
| Standard Deviation | | | | | | | 0.15 | 2.22 | 1.58 | 2.40 | 2.27 |
| CV | | | | | | | 15.07 | 25.44 | 17.9 | 35.19 | 29.65 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CUDO | DAND | VIPW | WICA | APPLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | CUDO | DAND | VIPW | WICA | |
| Crop Code | | | | | | | | | | | APPLE |
| Rating Date | | | | | | | 30/May/14 | 30/May/14 | 30/May/14 | 30/May/14 | 25/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 7.3 | 5.0 | 10.0 | 8.0 | 1.0 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 2.3 | 3.3 | 5.3 | 7.0 | 1.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 2.0 | 5.3 | 7.7 | 7.7 | 1.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 6.3 | 6.3 | 10.0 | 9.7 | 1.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 8.7 | 8.0 | 10.0 | 7.7 | 1.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 9.0 | 9.0 | 10.0 | 8.7 | 1.0 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 5.0 | 3.0 | 4.0 | 4.0 | 1.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 6.3 | 7.7 | 10.0 | 9.7 | 1.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 5.3 | 9.0 | 10.0 | 9.0 | 1.0 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 9.0 | 9.3 | 10.0 | 7.3 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 5.3 | 8.7 | 9.7 | 9.0 | 3.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 9.7 | 9.7 | 9.7 | 8.0 | 1.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 10.0 | 9.3 | 9.3 | 9.3 | 1.0 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 14 | Untreated | | | | | | 4.3 | 1.7 | 3.0 | 3.0 | 1.0 |
| LSD (P=.05) | | | | | | | 4.47 | 2.60 | 3.91 | 3.15 | 1.55 |
| Standard Deviation | | | | | | | 2.66 | 1.55 | 2.33 | 1.88 | 0.93 |
| CV | | | | | | | 41.09 | 22.72 | 27.47 | 24.34 | 81.01 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | DOBG | QUGR | ALFA | BFTF | BHPL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | DOBG | QUGR | ALFA | BFTF | BHPL |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 3.3 | 1.7 | 1.3 | 1.3 | 1.0 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 1.7 | 3.3 | 1.3 | 1.3 | 7.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.0 | 1.7 | 3.3 | 2.7 | 9.3 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 6.0 | 9.3 | 4.0 | 6.0 | 10.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 10.0 | 10.0 | 8.3 | 8.3 | 10.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 10.0 | 10.0 | 7.0 | 8.0 | 10.0 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 8.7 | 9.7 | 8.0 | 8.0 | 5.3 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 10.0 | 9.3 | 8.0 | 7.0 | 8.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 8.7 | 4.7 | 7.7 | 7.3 | 10.0 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 10.0 | 9.0 | 8.3 | 8.0 | 9.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 8.7 | 9.0 | 9.3 | 8.7 | 4.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 10.0 | 8.7 | 9.7 | 7.0 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 10.0 | 10.0 | 5.0 | 4.3 | 8.3 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 14 | Untreated | | | | | | 4.0 | 4.0 | 3.0 | 3.3 | 4.0 |
| LSD (P=.05) | | | | | | | 3.61 | 3.20 | 4.47 | 3.94 | 4.61 |
| Standard Deviation | | | | | | | 2.15 | 1.91 | 2.66 | 2.35 | 2.75 |
| CV | | | | | | | 29.48 | 26.61 | 44.16 | 40.41 | 35.95 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COLQ | CUDO | PEST | RECL | WICA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | COLQ | CUDO | PEST | RECL | WICA |
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 | 25/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 7.0 | 5.0 | 4.7 | 1.7 | 1.0 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 10.0 | 1.0 | 4.0 | 1.0 | 1.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 10.0 | 1.0 | 4.0 | 1.0 | 1.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 10.0 | 4.7 | 7.3 | 3.7 | 5.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 10.0 | 8.3 | 6.3 | 10.0 | 7.3 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 10.0 | 8.7 | 7.3 | 10.0 | 8.3 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 10.0 | 6.3 | 8.7 | 6.3 | 4.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 10.0 | 5.0 | 10.0 | 9.7 | 9.7 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 10.0 | 2.3 | 6.0 | 10.0 | 8.7 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 10.0 | 5.7 | 9.3 | 10.0 | 7.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 10.0 | 3.3 | 7.0 | 9.7 | 8.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 10.0 | 9.3 | 7.3 | 9.0 | 3.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 10.0 | 8.3 | 4.7 | 8.7 | 5.7 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 14 | Untreated | | | | | | 4.0 | 3.0 | 4.0 | 3.7 | 2.7 |
| LSD (P=.05) | | | | | | | 3.23 | 4.59 | 6.00 | 2.71 | 3.32 |
| Standard Deviation | | | | | | | 1.93 | 2.73 | 3.57 | 1.61 | 1.98 |
| CV | | | | | | | 20.58 | 53.11 | 55.17 | 23.89 | 38.27 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | QUGR | YEFT | ALFA |
| Crop Code | | | | | | | APPLE | | | |
| Rating Date | | | | | | | 25/Jul/14 | 25/Jul/14 | 25/Jul/14 | 25/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 1.0 | 3.0 | 2.3 | 6.7 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 1.0 | 7.0 | 4.0 | 7.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.6 | 9.0 | 4.7 | 4.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 1.3 | 8.7 | 9.0 | 4.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 1.3 | 10.0 | 9.3 | 8.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 6.7 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.3 | 9.7 | 9.3 | 7.7 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 1.3 | 9.3 | 9.0 | 9.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 1.0 | 6.7 | 1.0 | 7.7 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 1.0 | 9.3 | 7.7 | 9.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 1.0 | 6.7 | 7.0 | 7.7 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 1.0 | 10.0 | 9.3 | 7.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 1.0 | 9.3 | 9.0 | 4.3 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 14 | Untreated | | | | | | 1.0 | 7.0 | 3.3 | 5.0 |
| LSD (P=.05) | | | | | | | 0.59 | 3.81 | 3.52 | 5.73 |
| Standard Deviation | | | | | | | 0.35 | 2.27 | 2.10 | 3.41 |
| CV | | | | | | | 30.97 | 27.45 | 30.93 | 50.46 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BFTF | CORW | CUDO | RECL |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | BFTF | CORW | CUDO | RECL |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 25/Jul/14 | 25/Jul/14 | 25/Jul/14 | 25/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 3.0 | 5.0 | 4.0 | 3.3 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 2.0 | 5.3 | 1.7 | 5.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 2.3 | 3.3 | 1.3 | 3.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 5.3 | 9.0 | 4.0 | 3.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 7.0 | 9.3 | 8.0 | 10.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 8.7 | 9.0 | 8.3 | 9.7 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 7.7 | 10.0 | 6.3 | 6.3 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 7.7 | 10.0 | 7.0 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 7.0 | 8.3 | 5.7 | 10.0 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 7.7 | 9.0 | 8.0 | 9.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 6.3 | 8.3 | 4.3 | 10.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 4.0 | 8.7 | 6.0 | 7.7 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 3.7 | 8.0 | 9.3 | 6.7 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 14 | Untreated | | | | | | 2.7 | 7.0 | 5.3 | 3.0 |
| LSD (P=.05) | | | | | | | 4.94 | 3.86 | 4.96 | 3.61 |
| Standard Deviation | | | | | | | 2.94 | 2.30 | 2.95 | 2.15 |
| CV | | | | | | | 54.91 | 29.18 | 52.11 | 30.64 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WICA | APPLE | FAPA | YEFT |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | WICA | | FAPA | YEFT |
| | Crop Code | | | | | | | APPLE | | |
| | Rating Date | | | | | | 25/Jul/14 | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 3.3 | 1.0 | 7.7 | 1.0 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 3.7 | 1.0 | 9.3 | 3.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 2.3 | 1.0 | 9.0 | 4.7 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 4.3 | 1.0 | 8.7 | 7.3 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 7.7 | 1.0 | 10.0 | 8.7 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 7.3 | 1.0 | 10.0 | 10.0 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 2.7 | 1.0 | 9.0 | 8.3 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 10.0 | 1.0 | 6.3 | 8.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 9.0 | 1.0 | 3.3 | 2.3 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 4.0 | 1.0 | 10.0 | 4.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 7.0 | 1.0 | 8.3 | 4.0 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 3.0 | 1.0 | 10.0 | 9.7 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 2.7 | 1.0 | 10.0 | 7.3 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 14 | Untreated | | | | | | 2.3 | 1.0 | 9.0 | 5.3 |
| LSD (P=.05) | | | | | | | 4.03 | 0.00 | 3.59 | 5.27 |
| Standard Deviation | | | | | | | 2.40 | 0.00 | 2.14 | 3.14 |
| CV | | | | | | | 48.45 | 0.0 | 24.83 | 51.68 |

# Spring Weed Control in Apple – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | ALFA | BFTF | RECL | WICA |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | | |
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 | 22/Aug/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | 1.7 | 3.0 | 1.0 | 3.3 |
| 2 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 5.0 | 3.7 | 1.7 | 4.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 3 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 4.3 | 3.0 | 4.7 | 4.0 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 4 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 4.0 | 6.0 | 4.0 | 5.3 |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 5 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 8.0 | 5.3 | 9.3 | 4.3 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | rimsulfuron | 25 | SG | 0.016 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 6 | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPRE | 5.7 | 5.7 | 10.0 | 6.0 |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | Zeus Prime XC | 3.55 | SE | 0.162 | lb ai/a | EPOS | | | | |
| | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS | | | | |
| 7 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 5.0 | 7.3 | 7.7 | 4.3 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | |
| | saflufenacil | 70 | WG | 0.044 | lb ai/a | EPOS | | | | |
| 8 | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | 7.7 | 8.0 | 9.3 | 10.0 |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | EPRE | | | | |
| 9 | mesotrione | 4 | SC | 0.188 | lb ai/a | EPRE | 6.7 | 4.7 | 9.0 | 9.7 |
| | simazine | 90 | WDG | 4 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 10 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 8.3 | 7.3 | 8.3 | 4.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.5 | L | 0.95 | lb ai/a | EPRE | | | | |
| 11 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPRE | 7.0 | 7.0 | 9.3 | 8.7 |
| | diuron | 80 | DF | 3 | lb ai/a | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPRE | | | | |
| 12 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 6.3 | 5.7 | 5.0 | 1.7 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 13 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 4.3 | 4.0 | 7.0 | 3.3 |
| | rimsulfuron | 25 | SG | 0.031 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 14 | Untreated | | | | | | 2.0 | 2.3 | 1.3 | 6.0 |
| LSD (P=.05) | | | | | | | 5.04 | 5.37 | 2.34 | 4.25 |
| Standard Deviation | | | | | | | 3.00 | 3.20 | 1.39 | 2.53 |
| CV | | | | | | | 55.3 | 61.31 | 22.27 | 47.27 |

# Preemergence Weed Control in Blueberry with Zeus, Alion, and Trellis – SWMREC - 2014

**Project Code: 127-14-01** **Location: Benton Harbor, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Blueberry** **Variety: Blue Crop**
**Planting Method: Transplant** **Planting Date: 1990**
**Spacing: 4 ft** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 30 ft long**

**Soil Type: Spinks loamy fine sand** **OM: 2.4%** **pH: 5.9**
**Sand: 83%** **Silt: 10 %** **Clay: 7%** **CEC: 6.0**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/23/14 | 1:00 pm | 58/54 | F | Moist | 5-8 NW | 44 | 10% Cloudy | N |
| EPOS | 6/6/14 | 11:30 am | 74/64 | F | Moist | 1-3 NW | 39 | 0% Cloudy | N |
| LPOS | 7/9/14 | 12:30 pm | 76/76 | F | Dry | 2-5 NE | 60 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | BLUEBERRY | 3-4″ | Prebud break | |
| 4/23 | HAVE = hairy vetch | 5-8″ | Veg | Few |
| 4/23 | YEHW = yellow hawkweed | 3-5″ | Veg | Many |
| 6/6 | BLUEBERRY | 4-5″ | Fruiting | |
| 6/6 | BHPL = buckhorn plantain | 12-18″ | Flower | Many |
| 6/6 | HAVE = hairy vetch | 18-24″ | Flower | Many |
| 6/6 | YEHW = yellow hawkweed | 18-24″ | Flower | Moderate |
| 7/9 | BLUEBERRY | 4-5″ | Fruit Ripe | |
| 7/9 | BHPL = buckhorn plantain | 12-18″ | Flower | Moderate |
| 7/9 | GIFT = giant foxtail | 12-24″ | Flower | Many |
| 7/9 | HAVE = hairy vetch | 24-36″ | Flower | Few |
| 7/9 | QUGR = quackgrass | 18-24″ | Flower | Few |
| 7/9 | RESO = red sorrel | 4-8″ | Flower | Few |
| 7/9 | YEHW = yellow hawkweed | 12-18″ | Flower | Many |

**Notes and Comments**
**1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**
**3. Yields were not taken.**
**4. Treatments 5 - 10 were applied to the same plots as in 2013.**

# Preemergence Weed Control in Blueberry with Zeus, Alion, and Trellis – SWMREC - 2014

**Preemergence Weed Control in Blueberry with Zeus, Alion, and Trellis - SWMREC - 2014**

Trial ID: 127-14-01 Location: Benton Harbor, MI
Protocol ID: 127-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BLBE 3/Jun/14 RATING 1-10 | GIFT 3/Jun/14 RATING 1-10 | QUGR 3/Jun/14 RATING 1-10 | BHPL 3/Jun/14 RATING 1-10 | HAVE 3/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 1.0 | 7.3 | 7.0 | 7.0 | 10.0 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | | |
| | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPOS | | | | | |
| | paraquat dichloride | 2 | SL | 0.5 | lb ai/a | EPOS | | | | | |
| | COC | 100 | SL | 1 | % v/v | EPOS | | | | | |
| 2 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 1.0 | 10.0 | 9.3 | 9.7 | 9.7 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | | |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | diuron | 80 | DF | 1.6 | lb ai/a | LPOS | | | | | |
| | COC | 100 | SL | 1 | % v/v | LPOS | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.0 | 10.0 | 9.0 | 10.0 | 9.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | LPOS | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | LPOS | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 1.0 | 10.0 | 9.7 | 10.0 | 10.0 |
| | rimsulfuron | 25 | SG | 0.032 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 5 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 1.0 | 9.3 | 10.0 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 6 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 7 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 1.0 | 1.3 | 8.7 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.7 | 1.0 | 10.0 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 9 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 1.0 | 1.3 | 10.0 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 10 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 9.3 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 11 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 1.0 | 1.0 | 9.3 | 9.3 | 10.0 |
| 12 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 1.3 | 10.0 | 9.3 | 10.0 | 8.7 |
| 13 | Untreated | | | | | | 1.0 | 7.7 | 10.0 | 4.0 | 9.0 |
| LSD (P=.05) | | | | | | | 0.58 | 3.01 | 2.91 | 3.36 | 1.23 |
| Standard Deviation | | | | | | | 0.35 | 1.78 | 1.73 | 1.99 | 0.73 |
| CV | | | | | | | 32.12 | 26.06 | 18.35 | 21.71 | 7.52 |

# Preemergence Weed Control in Blueberry with Zeus, Alion, and Trellis – SWMREC - 2014

| Pest Code | | | | | | RESO | YEHW | | GIFT | QUGR |
|---|---|---|---|---|---|---|---|---|---|---|
| Crop Code | | | | | | | | BLBE | | |
| Rating Date | | | | | | 3/Jun/14 | 3/Jun/14 | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 |
| Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
| 1 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 8.7 | 1.3 | 9.7 | 7.0 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | | |
| | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPOS | | | | | |
| | paraquat dichloride | 2 | SL | 0.5 | lb ai/a | EPOS | | | | | |
| | COC | 100 | SL | 1 | % v/v | EPOS | | | | | |
| 2 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 9.3 | 6.7 | 1.0 | 6.7 | 10.0 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | | |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | diuron | 80 | DF | 1.6 | lb ai/a | LPOS | | | | | |
| | COC | 100 | SL | 1 | % v/v | LPOS | | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 10.0 | 10.0 | 1.0 | 7.3 | 10.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | LPOS | | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | LPOS | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 9.0 | 10.0 | 1.0 | 5.7 | 10.0 |
| | rimsulfuron | 25 | SG | 0.032 | lb ai/a | EPRE | | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 5 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 8.7 | 10.0 | 1.0 | 6.3 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 6 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 8.7 | 10.0 | 1.0 | 9.3 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 7 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 9.0 | 10.0 | 1.3 | 1.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 8.0 | 10.0 | 2.3 | 1.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 9 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 10.0 | 10.0 | 1.3 | 1.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | | |
| 10 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 9.3 | 9.7 | 1.0 | 3.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 11 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 9.0 | 10.0 | 1.3 | 1.0 | 10.0 |
| 12 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 10.0 | 10.0 | 1.7 | 1.0 | 10.0 |
| 13 | Untreated | | | | | | 3.0 | 3.0 | 1.0 | 7.0 | 10.0 |
| LSD (P=.05) | | | | | | | 2.58 | 1.95 | 0.66 | 4.64 | 2.43 |
| Standard Deviation | | | | | | | 1.53 | 1.16 | 0.39 | 2.76 | 1.44 |
| CV | | | | | | | 17.41 | 12.75 | 31.0 | 59.72 | 14.75 |

# Preemergence Weed Control in Blueberry with Zeus, Alion, and Trellis – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | BHPL | HAVE | RESO | YEHW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 7.0 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | |
| | terbacil | 80 | WDG | 1.6 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPOS | | | | |
| | paraquat dichloride | 2 | SL | 0.5 | lb ai/a | EPOS | | | | |
| | COC | 100 | SL | 1 | % v/v | EPOS | | | | |
| 2 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 9.7 | 10.0 | 10.0 | 2.7 |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | EPRE | | | | |
| | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | diuron | 80 | DF | 1.6 | lb ai/a | LPOS | | | | |
| | COC | 100 | SL | 1 | % v/v | LPOS | | | | |
| 3 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 10.0 | 9.0 | 10.0 | 10.0 |
| | oryzalin | 4 | L | 3 | lb ai/a | EPRE | | | | |
| | halosulfuron | 75 | WG | 0.023 | lb ai/a | LPOS | | | | |
| | clethodim | 0.97 | EC | 0.12 | lb ai/a | LPOS | | | | |
| 4 | indaziflam | 1.67 | SC | 0.052 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 8.3 |
| | rimsulfuron | 25 | SG | 0.032 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 5 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 9.3 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 6 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 10.0 | 10.0 | 8.7 | 10.0 |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 7 | isoxaben | 75 | DF | 0.5 | lb ai/a | EPRE | 10.0 | 10.0 | 9.3 | 9.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 8 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 10.0 | 10.0 | 7.7 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 9 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 10 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 10.0 | 10.0 | 7.7 | 9.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 11 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 10.0 | 7.0 | 10.0 | 9.0 |
| 12 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 10.0 |
| 13 | Untreated | | | | | | 4.0 | 10.0 | 7.0 | 1.0 |
| LSD (P=.05) | | | | | | | 2.43 | 2.50 | 3.70 | 3.21 |
| Standard Deviation | | | | | | | 1.44 | 1.48 | 2.20 | 1.90 |
| CV | | | | | | | 15.17 | 15.28 | 23.75 | 23.33 |

# Blueberry Efficacy and Crop Safety with Indaziflam – IR4 - HTRC - 2014

**Project Code:** IR4-127-14-02 **Location:** East Lansing, MI
Block 114

**Personnel:** Bernard H. Zandstra, Nicole Schroeder
**Crop:** Blueberry **Variety:** Jersey
**Planting Method:** 3-yr plants **Planting Date:** 1971
**Spacing:** 4 ft **Row Spacing:** 10 ft
**Tillage Type:** Conventional **Study Design:** RCB **Replications:** 3
**Plot Size:** 6 ft wide x 30 ft long

**Soil Type:** Capac loam **OM:** 4.1% **pH:** 5.3
**Sand:** 71% **Silt:** 17% **Clay:** 12% **CEC:** 12.0

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| LPRE | 5/14/14 | 1:25 pm | 56/59 | F | Wet/Moist | 0-1 S | 71 | 100% Cloudy | N |
| POST | 7/10/14 | 12:30 pm | 77/67 | F | Dry | 3-4 N | 64 | 60% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 5/14 | BLUEBERRY | | Bud break | |
| 5/14 | DAND = dandelion | | | Few |
| 5/14 | GORO = goldenrod | | | Many |
| 5/14 | QUGR = quackgrass | | | Many |
| 5/14 | WICA = wild carrot | | | Few |
| 7/10 | BLUEBERRY | | Fruit set | |
| 7/10 | DAND = dandelion | | | Many |
| 7/10 | GORO = goldenrod | | | Many |
| 7/10 | PERG = perennial ryegrass | | | Many |
| 7/10 | QUGR = quackgrass | | | Many |
| 7/10 | WHCL = white clover | | | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. The treatment plots were the same as in 2013.

# Blueberry Efficacy and Crop Safety with Indaziflam – IR4 - HTRC - 2014

**Blueberry Efficacy and Crop Safety with Indaziflam – IR4 – HTRC - 2014**

| | | | |
|---|---|---|---|
| Trial ID: | IR4-127-14-02 | Location: | East Lansing, MI |
| Protocol ID: | IR4-127-14-02 | Investigator: | Dr. Bernard Zandstra |
| Study Director: | Nicole Schroeder | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | QUGR | DAND | GORO |
| Crop Code | | | | | | | BLBE | | | |
| Rating Date | | | | | | | 19/May/14 | 19/May/14 | 19/May/14 | 19/May/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 1.3 | 2.0 | 1.3 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 1.0 | 6.5 | 8.0 | 7.3 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 1.0 | 3.0 | 2.5 | 1.3 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 1.0 | 3.3 | 2.8 | 2.5 |
| LSD (P=.05) | | | | | | | 0.00 | 2.41 | 1.96 | 1.01 |
| Standard Deviation | | | | | | | 0.00 | 1.51 | 1.23 | 0.63 |
| CV | | | | | | | 0.0 | 43.12 | 32.2 | 20.54 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | PERG | QUGR |
| Crop Code | | | | | | | | BLBE | | |
| Rating Date | | | | | | | 19/May/14 | 20/Jun/14 | 20/Jun/14 | 20/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.5 | 1.0 | 1.0 | 1.0 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 7.0 | 1.0 | 2.8 | 3.0 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 1.0 | 1.0 | 4.5 | 2.5 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 1.8 | 1.0 | 4.8 | 4.5 |
| LSD (P=.05) | | | | | | | 2.56 | 0.00 | 2.20 | 1.36 |
| Standard Deviation | | | | | | | 1.60 | 0.00 | 1.37 | 0.85 |
| CV | | | | | | | 56.92 | 0.0 | 42.29 | 30.9 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | CATH | DAND | GORO | WICA |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 20/Jun/14 | 20/Jun/14 | 20/Jun/14 | 20/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 4.0 | 1.0 | 1.0 | 1.0 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 2.0 | 7.3 | 3.5 | 7.3 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 1.5 | 4.5 | 1.5 | 1.3 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 1.8 | 2.5 | 3.8 | 1.3 |
| LSD (P=.05) | | | | | | | 3.54 | 4.51 | 2.07 | 2.85 |
| Standard Deviation | | | | | | | 2.21 | 2.82 | 1.29 | 1.78 |
| CV | | | | | | | 95.68 | 73.96 | 53.07 | 66.29 |

# Blueberry Efficacy and Crop Safety with Indaziflam – IR4 - HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | QUGR | CATH | GORO |
| Crop Code | | | | | | | BLBE | | | |
| Rating Date | | | | | | | 17/Jul/14 | 17/Jul/14 | 17/Jul/14 | 17/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 1.3 | 1.0 | 1.0 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 1.0 | 7.3 | 7.0 | 6.8 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 1.0 | 5.8 | 7.3 | 2.8 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 1.0 | 6.5 | 8.8 | 5.0 |
| LSD (P=.05) | | | | | | | 0.00 | 1.85 | 2.90 | 1.53 |
| Standard Deviation | | | | | | | 0.00 | 1.16 | 1.81 | 0.96 |
| CV | | | | | | | 0.0 | 22.32 | 30.17 | 24.71 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | LACG | QUGR |
| Crop Code | | | | | | | | BLBE | | |
| Rating Date | | | | | | | 17/Jul/14 | 29/Jul/14 | 29/Jul/14 | 29/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.0 | 1.0 | 1.3 | 1.5 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 8.0 | 1.0 | 3.5 | 4.0 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 3.5 | 1.0 | 4.0 | 2.5 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 1.8 | 1.0 | 4.0 | 3.8 |
| LSD (P=.05) | | | | | | | 2.07 | 0.00 | 1.07 | 1.20 |
| Standard Deviation | | | | | | | 1.29 | 0.00 | 0.67 | 0.75 |
| CV | | | | | | | 36.31 | 0.0 | 21.08 | 25.53 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | CATH | GORO | WICA |
| Crop Code | | | | | | | | | |
| Rating Date | | | | | | | 29/Jul/14 | 29/Jul/14 | 29/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 |
| 1 | Untreated | | | | | | 1.3 | 1.5 | 3.5 |
| 2 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | LPRE, LPOS | 4.8 | 3.0 | 7.3 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | LPRE, LPOS | 5.0 | 2.5 | 3.3 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE, LPOS | 4.8 | 4.3 | 2.0 |
| LSD (P=.05) | | | | | | | 4.08 | 2.48 | 4.15 |
| Standard Deviation | | | | | | | 2.55 | 1.55 | 2.59 |
| CV | | | | | | | 64.78 | 55.03 | 64.82 |

# Preemergence Weed Control in Cherry – CRC - 2014

**Project Code: 128-14-05** **Location: Clarksville, MI**
**Tier 32**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Cherry** **Variety: Ulster, Heidelfinger**
**Planting Method: Transplant** **Planting Date: 1995**
**Spacing: 8 ft, 5 trees/plot** **Row Spacing: 16 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 11 ft wide x 40 ft long**

**Soil Type: Sandy Loam** **OM: 1.5%** **pH: 6.8**
**Sand: 64%** **Silt: 22%** **Clay: 14%** **CEC: 5.5**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| FALL13 | 11/4/13 | 9:30 am | 41/42 | F | Damp | 3-4 NE | 63 | 100% Cloudy | Y |
| EPRE | 4/8/14 | 9:15 am | 48/38 | F | Damp | 1-3 NW | 51 | 90% Cloudy | N |
| FALL14 | 11/3/14 | 9:35 am | 52/42 | F | Moist | 2-3 W | 34 | 5% Cloudy | Y |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 11/4/13 | CHERRY | | Dormant | |
| 11/4/13 | COCW = common chickweed | 2-3″ | Bud | Many |
| 11/4/13 | DAND = dandelion | 3-5″ | Foliar | Moderate |
| 11/4/13 | HOWE = horseweed | 0.5-1″ | Seedling | Moderate |
| 11/4/13 | PERG = perennial ryegrass | 3-4″ | | Many |
| 11/4/13 | WHCL = white clover | 2-4″ | Foliar | Moderate |
| 4/8 | CHERRY | | Dormant | |
| 4/8 | COCW = common chickweed | 2″ | Veg | Moderate |
| 4/8 | DAND = dandelion | 3″ | Veg | Many |
| 11/3 | CHERRY | | Dormant | |
| 11/3 | DAND = dandelion | 10-12″ | Veg | Moderate |
| 11/3 | POIV = poison ivy | 12-18″ | Veg | Many |
| 11/3 | WHCL = white clover | 2-4″ | Veg | Few |
| 11/3 | WICA = wild carrot | 10-12″ | Veg | Few |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer; one pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. This is a 3-year experiment. The first treatments were applied in Fall 2013.
4. Cherry tree diameter: mean of 5 trees per plot.

# Preemergence Weed Control in Cherry – CRC - 2014

**Preeemergence Weed Control in Cherry – CRC - 2014**

Trial ID: 128-14-05 Location: Clarksville, MI
Protocol ID: 128-14-05 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CHERRY 1/Apr/14 DIAMETER CM | CHERRY 10/Jun/14 RATING 1-10 | PERG 10/Jun/14 RATING 1-10 | COCW 10/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | | | PERG | COCW |
| | Crop Code | | | | | | CHERRY | CHERRY | | |
| | Rating Date | | | | | | 1/Apr/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 |
| | Rating Type | | | | | | DIAMETER | RATING | RATING | RATING |
| | Rating Unit | | | | | | CM | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 18.07 | 1.0 | 9.3 | 5.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 18.79 | 1.0 | 9.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 3 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | EPRE | 20.83 | 1.0 | 10.0 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 4 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 20.15 | 1.0 | 10.0 | 8.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 5 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 14.55 | 1.0 | 10.0 | 6.7 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | FALL13 | 18.74 | 1.0 | 10.0 | 4.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 7 | isoxaben | 75 | DF | 0.75 | lb ai/a | EPRE | 20.70 | 1.0 | 6.3 | 10.0 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 8 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 22.91 | 1.0 | 8.0 | 10.0 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 9 | isoxaben | 75 | DF | 0.75 | lb ai/a | FALL13 | 18.20 | 1.0 | 5.3 | 7.7 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 10 | isoxaben | 75 | DF | 2 | lb ai/a | FALL13 | 20.06 | 1.0 | 7.3 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 21.05 | 1.0 | 7.0 | 7.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 19.06 | 1.0 | 6.7 | 10.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| LSD (P=.05) | | | | | | | 6.342 | 0.00 | 4.06 | 5.11 |
| Standard Deviation | | | | | | | 3.745 | 0.00 | 2.39 | 3.02 |
| CV | | | | | | | 19.28 | 0.0 | 29.03 | 36.84 |

# Preemergence Weed Control in Cherry – CRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | DAND 10/Jun/14 RATING 1-10 | POIV 10/Jun/14 RATING 1-10 | WHCL 10/Jun/14 RATING 1-10 | CHERRY 22/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | DAND | POIV | WHCL | |
| | Crop Code | | | | | | | | | CHERRY |
| | Rating Date | | | | | | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 22/Jul/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 7.0 | 4.3 | 7.0 | 4.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 8.3 | 3.7 | 10.0 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 3 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | EPRE | 10.0 | 10.0 | 10.0 | 1.3 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 4 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 9.3 | 9.7 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 5 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 9.7 | 8.7 | 10.0 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | FALL13 | 10.0 | 3.7 | 10.0 | 1.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 7 | isoxaben | 75 | DF | 0.75 | lb ai/a | EPRE | 6.3 | 9.3 | 10.0 | 1.7 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 8 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 7.0 | 6.7 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 9 | isoxaben | 75 | DF | 0.75 | lb ai/a | FALL13 | 7.3 | 10.0 | 10.0 | 1.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 10 | isoxaben | 75 | DF | 2 | lb ai/a | FALL13 | 9.3 | 10.0 | 10.0 | 1.3 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 4.7 | 10.0 | 7.0 | 1.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 7.7 | 10.0 | 7.7 | 1.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| LSD (P=.05) | | | | | | | 3.89 | 4.84 | 4.12 | 2.67 |
| Standard Deviation | | | | | | | 2.30 | 2.86 | 2.43 | 1.58 |
| CV | | | | | | | 28.54 | 35.71 | 26.12 | 115.75 |

# Preemergence Weed Control in Cherry – CRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PERG | QUGR | DAND | POIV |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | PERG | QUGR | DAND | POIV |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 22/Jul/14 | 22/Jul/14 | 22/Jul/14 | 22/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 8.0 | 6.7 | 6.3 | 6.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 9.0 | 6.3 | 7.7 | 3.3 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 3 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | EPRE | 10.0 | 10.0 | 9.7 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 4 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 9.0 | 9.3 | 9.3 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 5 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 10.0 | 9.0 | 9.3 | 10.0 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | FALL13 | 10.0 | 10.0 | 9.7 | 6.7 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 7 | isoxaben | 75 | DF | 0.75 | lb ai/a | EPRE | 4.3 | 10.0 | 5.0 | 9.7 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 8 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 7.0 | 10.0 | 9.0 | 7.0 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 9 | isoxaben | 75 | DF | 0.75 | lb ai/a | FALL13 | 3.3 | 9.0 | 8.7 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 10 | isoxaben | 75 | DF | 2 | lb ai/a | FALL13 | 6.7 | 9.0 | 7.7 | 10.0 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 5.7 | 9.0 | 5.3 | 10.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 4.0 | 9.7 | 7.7 | 7.0 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| LSD (P=.05) | | | | | | | 5.50 | 3.39 | 3.89 | 5.23 |
| Standard Deviation | | | | | | | 3.25 | 2.00 | 2.30 | 3.09 |
| CV | | | | | | | 44.79 | 22.24 | 28.9 | 37.19 |

# Preemergence Weed Control in Cherry – CRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WICA 22/Jul/14 RATING 1-10 | CHERRY 28/Aug/14 RATING 1-10 | PERG 28/Aug/14 RATING 1-10 | CHERRY 16/Oct/14 DIAMETER CM |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pest Code | | | | | | WICA | | PERG | |
| | Crop Code | | | | | | | CHERRY | | CHERRY |
| | Rating Date | | | | | | 22/Jul/14 | 28/Aug/14 | 28/Aug/14 | 16/Oct/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | DIAMETER |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | CM |
| 1 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | EPRE | 7.0 | 1.0 | 6.3 | 18.69 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 2 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | EPRE | 10.0 | 1.0 | 6.0 | 19.46 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 3 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | EPRE | 10.0 | 1.0 | 10.0 | 21.17 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 4 | oxyfluorfen | 4 | SC | 1.5 | lb ai/a | FALL13 | 10.0 | 1.0 | 9.3 | 20.68 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 5 | oxyfluorfen | 3.93 | SC | 1.47 | lb ai/a | FALL13 | 10.0 | 1.0 | 6.0 | 15.09 |
| | penoxsulam | 0.083 | SC | 0.031 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 6 | oxyfluorfen | 3.93 | SC | 2.95 | lb ai/a | FALL13 | 9.7 | 1.0 | 9.3 | 19.31 |
| | penoxsulam | 0.083 | SC | 0.062 | | | | | | |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 7 | isoxaben | 75 | DF | 0.75 | lb ai/a | EPRE | 9.0 | 1.0 | 6.0 | 21.46 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 8 | isoxaben | 75 | DF | 2 | lb ai/a | EPRE | 10.0 | 1.0 | 6.7 | 23.53 |
| | glyphosate | 5.4 | L | 1.5 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 9 | isoxaben | 75 | DF | 0.75 | lb ai/a | FALL13 | 10.0 | 1.0 | 2.7 | 18.80 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 10 | isoxaben | 75 | DF | 2 | lb ai/a | FALL13 | 10.0 | 1.0 | 5.7 | 20.19 |
| | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| 11 | glyphosate | 5.4 | L | 1.35 | lb ai/a | EPRE | 7.3 | 1.0 | 6.0 | 21.58 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| 12 | glyphosate | 5.4 | L | 1.35 | lb ai/a | FALL13 | 7.7 | 1.0 | 2.3 | 18.17 |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | FALL13 | | | | |
| LSD (P=.05) | | | | | | | 4.00 | 0.00 | 5.68 | 7.083 |
| Standard Deviation | | | | | | | 2.36 | 0.00 | 3.36 | 4.182 |
| CV | | | | | | | 25.58 | 0.0 | 52.78 | 21.08 |

# Preemergence Weed Control in Grape – SWMREC - 2014

**Project Code: 132-14-01** **Location: Benton Harbor, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Grape** **Variety: Concord**
**Planting Method: Rooted cuttings** **Planting Date: 1990** **Harvest Date: 10/10/14**
**Spacing: 7 ft** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 42 ft long**

**Soil Type: Spinks loamy fine sand** **OM: 2.1%** **pH: 5.2**
**Sand: 90%** **Silt: 5%** **Clay: 5%** **CEC: 4.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/23/14 | 2:30 pm | 50/60 | F | Damp | 2-3 NW | 40 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | GRAPE | | Bud swell | Good |
| 4/23 | PERG = perennial ryegrass | 2-3″ | | Many |
| 4/23 | QUGR = quackgrass | 2-3″ | | Few |
| 4/23 | SFGE = smallflower geranium | 0.5-1″ | | Moderate |
| | HONE = horsenettle | | | |
| | HOWE = horseweed | | | |
| | LACG = large crabgrass | | | |
| | RESO = red sorrel | | | |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Cooperators: Eric Hanson, Paolo Sabbatini, Patrick Murad
4. 2014 is year 2 of a 2-year GREEEN project.
5. All clusters were harvested from the middle two vines in each plot.
6. Vines were pruned in April 2014. Pruning data reflect effects of 2013 treatments. All vine trimmings in each plot were weighed.

# Preemergence Weed Control in Grape – SWMREC - 2014

**Preemergence Weed Control in Grape – SWMREC - 2014**

Trial ID: 132-14-01 Location: Benton Harbor, MI
Protocol ID: 132-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 20/Apr/14 PRUNED KG/PLOT | GRAPE 3/Jun/14 RATING 1-10 | LACG 3/Jun/14 RATING 1-10 | PERG 3/Jun/14 RATING 1-10 | HONE 3/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 1.14 | 1.0 | 1.3 | 6.7 | 1.7 |
| 2 | diuron | 80 | DF | 4 | lb ai/a | EPRE | 1.18 | 1.0 | 10.0 | 10.0 | 4.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 3 | simazine | 90 | WDG | 4 | lb ai/a | EPRE | 1.12 | 1.0 | 4.0 | 8.0 | 2.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 4 | norflurazon | 80 | DF | 3.2 | lb ai/a | EPRE | 1.01 | 1.0 | 10.0 | 7.3 | 1.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 5 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 1.23 | 1.0 | 10.0 | 9.3 | 5.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.28 | 1.0 | 10.0 | 6.3 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 7 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 0.92 | 1.0 | 10.0 | 8.0 | 1.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 8 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 1.64 | 1.7 | 10.0 | 9.3 | 4.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 9 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 0.87 | 1.3 | 10.0 | 8.3 | 2.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 10 | flazasulfuron | 25 | WG | 0.033 | lb ai/a | EPRE | 1.49 | 1.0 | 10.0 | 9.7 | 4.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 11 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.07 | 1.3 | 10.0 | 3.0 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 12 | Pindar GT | 4.013 | SC | 0.752 | lb ai/a | EPRE | 0.88 | 1.3 | 10.0 | 4.7 | 4.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 13 | pendimethalin | 3.8 | CS | 6 | lb ai/a | EPRE | 1.26 | 1.3 | 10.0 | 1.7 | 4.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 14 | oryzalin | 4 | L | 6 | lb ai/a | EPRE | 1.17 | 1.3 | 10.0 | 6.3 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 15 | mesotrione | 4 | SC | 0.375 | lb ai/a | EPRE | 1.22 | 1.3 | 10.0 | 4.3 | 7.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 16 | Untreated Check | | | | | EPRE | 1.20 | 1.3 | 10.0 | 1.0 | 4.0 |
| LSD (P=.05) | | | | | | | 0.688 | 0.80 | 2.19 | 3.09 | 6.21 |
| Standard Deviation | | | | | | | 0.413 | 0.48 | 1.31 | 1.85 | 3.73 |
| CV | | | | | | | 35.34 | 40.19 | 14.44 | 28.48 | 118.44 |

# Preemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HOWE | SFGE | GRAPE | LACG |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | HOWE | SFGE | | LACG |
| Crop Code | | | | | | | | | GRAPE | |
| Rating Date | | | | | | | 3/Jun/14 | 3/Jun/14 | 22/Jul/14 | 22/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 8.7 | 2.7 | 2.0 | 1.0 |
| 2 | diuron | 80 | DF | 4 | lb ai/a | EPRE | 10.0 | 3.3 | 1.3 | 4.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | simazine | 90 | WDG | 4 | lb ai/a | EPRE | 7.0 | 1.0 | 1.0 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 4 | norflurazon | 80 | DF | 3.2 | lb ai/a | EPRE | 10.0 | 1.0 | 1.0 | 8.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 5 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 10.0 | 4.0 | 1.0 | 6.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 10.0 | 1.0 | 1.0 | 9.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 7 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 10.0 | 3.3 | 1.7 | 10.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 10.0 | 4.0 | 1.0 | 2.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 6.0 | 4.7 | 1.0 | 3.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | flazasulfuron | 25 | WG | 0.033 | lb ai/a | EPRE | 10.0 | 10.0 | 1.0 | 7.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 11 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 10.0 | 1.0 | 1.3 | 2.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 12 | Pindar GT | 4.013 | SC | 0.752 | lb ai/a | EPRE | 10.0 | 5.7 | 1.3 | 2.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 13 | pendimethalin | 3.8 | CS | 6 | lb ai/a | EPRE | 8.0 | 3.7 | 1.3 | 9.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 14 | oryzalin | 4 | L | 6 | lb ai/a | EPRE | 7.7 | 2.3 | 1.0 | 8.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 15 | mesotrione | 4 | SC | 0.375 | lb ai/a | EPRE | 10.0 | 3.0 | 1.0 | 3.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | |
| 16 | Untreated Check | | | | | EPRE | 9.3 | 7.0 | 1.7 | 9.3 |
| LSD (P=.05) | | | | | | | 3.27 | 4.63 | 0.80 | 3.33 |
| Standard Deviation | | | | | | | 1.96 | 2.78 | 0.48 | 1.99 |
| CV | | | | | | | 21.39 | 77.01 | 38.83 | 35.86 |

# Preemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HONE | HOWE | RESO | SFGE | GRAPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | |
| Rating Date | | | | | | | 22/Jul/14 | 22/Jul/14 | 22/Jul/14 | 22/Jul/14 | 4/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 4.7 | 4.3 | 10.0 | 6.7 | 2.0 |
| 2 | diuron | 80 | DF | 4 | lb ai/a | EPRE | 2.3 | 10.0 | 7.0 | 4.3 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 3 | simazine | 90 | WDG | 4 | lb ai/a | EPRE | 3.0 | 10.0 | 10.0 | 4.3 | 2.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 4 | norflurazon | 80 | DF | 3.2 | lb ai/a | EPRE | 3.0 | 10.0 | 7.0 | 9.0 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 5 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 5.0 | 9.3 | 10.0 | 5.3 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 2.0 | 9.0 | 4.7 | 2.3 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 7 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 1.0 | 10.0 | 6.0 | 3.0 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 8 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 1.7 | 10.0 | 9.0 | 5.3 | 1.3 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 9 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 1.3 | 10.0 | 7.3 | 7.7 | 1.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 10 | flazasulfuron | 25 | WG | 0.033 | lb ai/a | EPRE | 4.0 | 7.7 | 10.0 | 10.0 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 11 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 1.3 | 10.0 | 10.0 | 5.3 | 1.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 12 | Pindar GT | 4.013 | SC | 0.752 | lb ai/a | EPRE | 2.7 | 10.0 | 10.0 | 10.0 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 13 | pendimethalin | 3.8 | CS | 6 | lb ai/a | EPRE | 5.3 | 8.3 | 2.7 | 7.3 | 1.7 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 14 | oryzalin | 4 | L | 6 | lb ai/a | EPRE | 2.0 | 4.0 | 7.7 | 7.3 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 15 | mesotrione | 4 | SC | 0.375 | lb ai/a | EPRE | 1.3 | 10.0 | 4.0 | 3.3 | 1.0 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 16 | Untreated Check | | | | | EPRE | 5.0 | 2.0 | 1.3 | 5.3 | 1.7 |
| LSD (P=.05) | | | | | | | 4.75 | 2.73 | 5.11 | 4.38 | 0.99 |
| Standard Deviation | | | | | | | 2.85 | 1.64 | 3.07 | 2.63 | 0.59 |
| CV | | | | | | | 99.88 | 19.48 | 42.07 | 43.5 | 41.76 |

# Preemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LACG 4/Sep/14 RATING 1-10 | HONE 4/Sep/14 RATING 1-10 | HOWE 4/Sep/14 RATING 1-10 | GRAPE 10/Oct/14 HARVEST #/PLOT | GRAPE 10/Oct/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | 1.0 | 1.0 | 4.7 | 128.50 | 10.75 |
| 2 | diuron | 80 | DF | 4 | lb ai/a | EPRE | 4.3 | 1.7 | 9.3 | 102.83 | 8.35 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 3 | simazine | 90 | WDG | 4 | lb ai/a | EPRE | 2.7 | 1.7 | 10.0 | 121.33 | 9.18 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 4 | norflurazon | 80 | DF | 3.2 | lb ai/a | EPRE | 10.0 | 1.3 | 10.0 | 99.00 | 8.12 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 5 | dichlobenil | 1.4 | CS | 4 | lb ai/a | EPRE | 6.0 | 2.7 | 9.3 | 109.83 | 8.82 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 10.0 | 1.0 | 9.7 | 106.17 | 8.85 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 7 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 10.0 | 1.0 | 10.0 | 120.17 | 9.27 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 8 | rimsulfuron | 25 | DF | 0.063 | lb ai/a | EPRE | 4.7 | 2.3 | 10.0 | 129.17 | 11.15 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 9 | oxyfluorfen | 4 | SC | 2 | lb ai/a | EPRE | 4.7 | 1.7 | 8.3 | 94.83 | 7.88 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 10 | flazasulfuron | 25 | WG | 0.033 | lb ai/a | EPRE | 4.7 | 3.3 | 7.7 | 126.83 | 11.37 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 11 | isoxaben | 75 | DF | 1 | lb ai/a | EPRE | 4.3 | 2.3 | 9.0 | 83.17 | 6.68 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 12 | Pindar GT | 4.013 | SC | 0.752 | lb ai/a | EPRE | 2.7 | 3.0 | 10.0 | 79.17 | 6.53 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 13 | pendimethalin | 3.8 | CS | 6 | lb ai/a | EPRE | 10.0 | 3.3 | 5.3 | 99.50 | 7.53 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 14 | oryzalin | 4 | L | 6 | lb ai/a | EPRE | 9.0 | 1.7 | 8.3 | 86.50 | 7.25 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 15 | mesotrione | 4 | SC | 0.375 | lb ai/a | EPRE | 2.7 | 2.0 | 10.0 | 84.83 | 7.22 |
| | glyphosate | 5.5 | L | 1 | lb ai/a | EPRE | | | | | |
| 16 | Untreated Check | | | | | EPRE | 9.7 | 3.3 | 2.3 | 59.33 | 3.25 |
| LSD (P=.05) | | | | | | | 3.34 | 3.30 | 2.57 | 53.699 | 5.414 |
| Standard Deviation | | | | | | | 2.00 | 1.98 | 1.54 | 32.207 | 3.247 |
| CV | | | | | | | 33.28 | 95.01 | 18.43 | 31.59 | 39.3 |

# Postemergence Weed Control in Grape – SWMREC - 2014

**Project Code: 132-14-02** **Location: Benton Harbor, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Grape** **Variety: Concord**
**Planting Method: Rooted cuttings** **Planting Date: 1990** **Harvest Date: 10/10/14**
**Spacing: 7 ft** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 42 ft long**

**Soil Type: Spinks loamy fine sand** **OM: 2.1%** **pH: 5.2**
**Sand: 90%** **Silt: 5%** **Clay: 5%** **CEC: 4.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPOS | 6/6/14 | 12:40 pm | 76/71 | F | Moist | 2-4 SW | 31 | 5% Cloudy | N |
| LPOS | 7/9/14 | 1:00 pm | 76/72 | F | Moist | 2-4 NW | 58 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/6 | GRAPE | 4-5′ | Pre-Bud Break | Good |
| 6/6 | DOBG = downy bromegrass | 18-24″ | Flower | Many |
| 6/6 | HAVE = hairy vetch | 12-18″ | Flower | Few |
| 6/6 | HONE = horsenettle | 4-6″ | Veg | Few |
| 6/6 | PERG = perennial ryegrass | 12-18″ | Flower | Many |
| 6/6 | RESO = red sorrel | 10-12″ | Seed set | Many |
| 6/6 | SFGE = smallflower geranium | 6-8″ | Flower | Few |
| 6/6 | YEHW = yellow hawkweed | 12-18″ | Flower | Many |
| 7/9 | GRAPE | 1-1.5 cm | Fruit | Good |
| 7/9 | HAVE = hairy vetch | 6-24″ | Flower | Few |
| 7/9 | HONE = horsenettle | 6-12″ | Flower | Many |
| 7/9 | HOWE = horseweed | 12-18″ | Veg | Many |
| 7/9 | LACG = large crabgrass | 4-12″ | Veg | Many |
| 7/9 | PERG = perennial ryegrass | 12-24″ | Flower | Many |
| 7/9 | RESO = red sorrel | 10-14″ | Late flower | Many |
| 7/9 | YEHW = yellow hawkweed | 12-18″ | Flower | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Cooperators: Eric Hanson, Paolo Sabbatini, Patrick Murad
4. 2014 is year 2 of a 2-year GREEEN project.
5. All clusters were harvested from the middle two vines in each plot.
6. Vines were pruned in April 2014. Pruning data reflect effects of 2013 treatments. All vine trimmings in each plot were weighed.

**Postemergence Weed Control in Grape – SWMREC - 2014**

Trial ID: 132-14-02 Location: Benton Harbor, MI
Protocol ID: 132-14-02 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 21/Apr/14 PRUNED KG/PLOT | GRAPE 9/Jul/14 RATING 1-10 | LACG 9/Jul/14 RATING 1-10 | PERG 9/Jul/14 RATING 1-10 | HAVE 9/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPOS,LPOS | 1.37 | 1.0 | 7.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 2 | glyphosate | 5.5 | L | 1.4 | lb ai/a | EPOS,LPOS | 0.93 | 1.3 | 2.0 | 10.0 | 6.7 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 3 | glyphosate | 5.5 | L | 2.8 | lb ai/a | EPOS,LPOS | 1.07 | 1.0 | 1.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 4 | Spartan Charge | 3.5 | SE | 0.273 | lb ai/a | EPOS,LPOS | 1.43 | 1.3 | 10.0 | 4.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 5 | glufosinate | 2.34 | L | 1.5 | lb ai/a | EPOS,LPOS | 0.90 | 1.7 | 1.0 | 9.7 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 6 | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | EPOS,LPOS | 0.63 | 2.0 | 9.0 | 2.3 | 4.3 |
| | sethoxydim | 1.53 | EC | 0.38 | lb ai/a | EPOS,LPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | EPOS,LPOS | 0.87 | 1.7 | 9.7 | 7.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS,LPOS | 0.77 | 2.0 | 7.7 | 4.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 9 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPOS,LPOS | 1.47 | 1.3 | 10.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 10 | Untreated Check | | | | | EPOS,LPOS | 1.43 | 1.0 | 10.0 | 4.0 | 7.0 |
| LSD (P=.05) | | | | | | | 0.863 | 1.36 | 3.06 | 5.08 | 4.53 |
| Standard Deviation | | | | | | | 0.503 | 0.79 | 1.78 | 2.96 | 2.64 |
| CV | | | | | | | 46.31 | 55.2 | 26.49 | 41.75 | 30.01 |

# Postemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HONE | HOWE | RESO | YEHW |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | HONE | HOWE | RESO | YEHW |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 | 9/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPOS,LPOS | 4.0 | 1.0 | 9.3 | 7.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 2 | glyphosate | 5.5 | L | 1.4 | lb ai/a | EPOS,LPOS | 4.0 | 9.7 | 7.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 3 | glyphosate | 5.5 | L | 2.8 | lb ai/a | EPOS,LPOS | 6.7 | 10.0 | 7.3 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 4 | Spartan Charge | 3.5 | SE | 0.273 | lb ai/a | EPOS,LPOS | 2.0 | 6.7 | 8.0 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 5 | glufosinate | 2.34 | L | 1.5 | lb ai/a | EPOS,LPOS | 3.7 | 10.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 6 | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | EPOS,LPOS | 1.0 | 10.0 | 1.0 | 3.3 |
| | sethoxydim | 1.53 | EC | 0.38 | lb ai/a | EPOS,LPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | EPOS,LPOS | 4.0 | 5.0 | 4.0 | 2.7 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS,LPOS | 1.3 | 6.3 | 4.0 | 7.7 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 9 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPOS,LPOS | 4.0 | 2.0 | 1.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 10 | Untreated Check | | | | | EPOS,LPOS | 4.3 | 7.0 | 1.0 | 4.0 |
| LSD (P=.05) | | | | | | | 6.98 | 5.08 | 5.57 | 3.96 |
| Standard Deviation | | | | | | | 4.07 | 2.96 | 3.25 | 2.31 |
| CV | | | | | | | 116.23 | 43.75 | 61.7 | 35.36 |

# Postemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 22/Jul/14 RATING 1-10 | LACG 22/Jul/14 RATING 1-10 | PERG 22/Jul/14 RATING 1-10 | HONE 22/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPOS,LPOS | 1.3 | 10.0 | 9.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 2 | glyphosate | 5.5 | L | 1.4 | lb ai/a | EPOS,LPOS | 1.0 | 10.0 | 10.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 3 | glyphosate | 5.5 | L | 2.8 | lb ai/a | EPOS,LPOS | 1.0 | 10.0 | 10.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 4 | Spartan Charge | 3.5 | SE | 0.273 | lb ai/a | EPOS,LPOS | 1.0 | 9.0 | 3.0 | 5.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 5 | glufosinate | 2.34 | L | 1.5 | lb ai/a | EPOS,LPOS | 1.0 | 10.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 6 | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | EPOS,LPOS | 1.3 | 9.3 | 4.0 | 4.7 |
| | sethoxydim | 1.53 | EC | 0.38 | lb ai/a | EPOS,LPOS | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | EPOS,LPOS | 1.0 | 10.0 | 4.7 | 5.7 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS,LPOS | 1.7 | 7.7 | 4.0 | 8.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 9 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPOS,LPOS | 1.7 | 10.0 | 6.7 | 5.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | |
| 10 | Untreated Check | | | | | EPOS,LPOS | 1.3 | 9.3 | 2.3 | 6.0 |
| LSD (P=.05) | | | | | | | 0.58 | 2.48 | 3.50 | 3.68 |
| Standard Deviation | | | | | | | 0.34 | 1.44 | 2.04 | 2.14 |
| CV | | | | | | | 27.47 | 15.15 | 32.09 | 29.22 |

# Postemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | HOWE | RESO | SFGE | GRAPE | LACG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | HOWE | RESO | SFGE | | LACG |
| Crop Code | | | | | | | | | | GRAPE | |
| Rating Date | | | | | | | 22/Jul/14 | 22/Jul/14 | 22/Jul/14 | 4/Sep/14 | 4/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPOS,LPOS | 4.0 | 10.0 | 9.7 | 1.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 2 | glyphosate | 5.5 | L | 1.4 | lb ai/a | EPOS,LPOS | 10.0 | 9.7 | 10.0 | 1.3 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 3 | glyphosate | 5.5 | L | 2.8 | lb ai/a | EPOS,LPOS | 10.0 | 10.0 | 10.0 | 1.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 4 | Spartan Charge | 3.5 | SE | 0.273 | lb ai/a | EPOS,LPOS | 8.3 | 10.0 | 10.0 | 1.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 5 | glufosinate | 2.34 | L | 1.5 | lb ai/a | EPOS,LPOS | 10.0 | 10.0 | 10.0 | 1.0 | 8.7 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 6 | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | EPOS,LPOS | 10.0 | 6.7 | 10.0 | 1.7 | 10.0 |
| | sethoxydim | 1.53 | EC | 0.38 | lb ai/a | EPOS,LPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | EPOS,LPOS | 6.3 | 9.0 | 10.0 | 1.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS,LPOS | 10.0 | 6.7 | 10.0 | 2.0 | 7.3 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 9 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPOS,LPOS | 2.7 | 4.7 | 8.3 | 1.7 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 10 | Untreated Check | | | | | EPOS,LPOS | 7.0 | 6.3 | 7.0 | 1.0 | 8.3 |
| LSD (P=.05) | | | | | | | 4.61 | 3.70 | 3.11 | 1.06 | 2.38 |
| Standard Deviation | | | | | | | 2.69 | 2.15 | 1.81 | 0.62 | 1.39 |
| CV | | | | | | | 34.3 | 25.95 | 19.08 | 49.0 | 15.04 |

# Postemergence Weed Control in Grape – SWMREC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | PERG 4/Sep/14 RATING 1-10 | HONE 4/Sep/14 RATING 1-10 | HOWE 4/Sep/14 RATING 1-10 | GRAPE 10/Oct/14 HARVEST #/PLOT | GRAPE 10/Oct/14 HARVEST KG/PLOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | paraquat dichloride | 2 | SL | 1 | lb ai/a | EPOS,LPOS | 9.7 | 5.0 | 1.0 | 96.67 | 9.02 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 2 | glyphosate | 5.5 | L | 1.4 | lb ai/a | EPOS,LPOS | 10.0 | 7.7 | 10.0 | 82.83 | 7.32 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 3 | glyphosate | 5.5 | L | 2.8 | lb ai/a | EPOS,LPOS | 10.0 | 8.3 | 10.0 | 108.00 | 9.30 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 4 | Spartan Charge | 3.5 | SE | 0.273 | lb ai/a | EPOS,LPOS | 2.7 | 1.0 | 7.0 | 85.33 | 6.72 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 5 | glufosinate | 2.34 | L | 1.5 | lb ai/a | EPOS,LPOS | 9.3 | 5.3 | 10.0 | 91.50 | 8.40 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 6 | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | EPOS,LPOS | 4.3 | 1.0 | 9.0 | 79.67 | 5.15 |
| | sethoxydim | 1.53 | EC | 0.38 | lb ai/a | EPOS,LPOS | | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | EPOS,LPOS | 2.3 | 6.3 | 4.0 | 86.33 | 6.28 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 8 | halosulfuron | 75 | WG | 0.047 | lb ai/a | EPOS,LPOS | 4.3 | 6.7 | 1.7 | 78.83 | 5.02 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 9 | rimsulfuron | 25 | SG | 0.063 | lb ai/a | EPOS,LPOS | 10.0 | 3.3 | 1.0 | 79.67 | 6.60 |
| | NIS | 100 | SL | 0.25 | % v/v | EPOS,LPOS | | | | | |
| 10 | Untreated Check | | | | | EPOS,LPOS | 3.7 | 5.0 | 6.0 | 86.00 | 7.62 |
| LSD (P=.05) | | | | | | | 3.17 | 5.58 | 4.81 | 24.812 | 2.830 |
| Standard Deviation | | | | | | | 1.85 | 3.26 | 2.80 | 14.464 | 1.650 |
| CV | | | | | | | 27.89 | 65.54 | 46.97 | 16.53 | 23.1 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

**Project Code: 132-14-04** **Location: East Lansing, MI**
**Block 37**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Grape** **Variety: Concord**
**Planting Method: Seedling** **Planting Date: 1967**
**Spacing: 7 ft, 4 vines/plot** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 30 ft long**

**Soil Type: Capac Loam** **OM: 5.1%** **pH: 7.1**
**Sand: 53%** **Silt: 30%** **Clay: 17%** **CEC: 12.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/24/14 | 3:00 pm | 56/50 | F | Dry | 3-5 SE | 24 | 100% Cloudy | N |
| PO1 | 6/5/14 | 11:15 am | 73/66 | F | Moist | 3-5 W | 35 | 0% Cloudy | N |
| PO2 | 7/1/14 | 1:30 pm | 82/78 | F | Moist | 4-7 SW | 61 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/24 | GRAPE | 6′ | Bud swell | Good |
| 4/24 | PERG = perennial ryegrass | 2-3″ | | Many |
| 4/24 | QUGR = quackgrass | 1-3″ | | Moderate |
| 4/24 | DAND = dandelion | 4-6″ | | Moderate |
| 4/24 | WHCL = white clover | 1-2″ | | Moderate |
| 6/5 | GRAPE | | Early fruit | Good |
| 6/5 | COMA = common mallow | 4-6″ | Flower | Few |
| 6/5 | DAND = dandelion | 6-8″ | Flower | Moderate |
| 6/5 | JABR = Japanese brome | 18-20″ | Flower | Many |
| 6/5 | WHCL = white clover | 6-8″ | Flower | Moderate |
| 7/1 | GRAPE | | Fruit | Good |
| 7/1 | COMA = common mallow | 8-10″ | Veg | Few |
| 7/1 | JABR = Japanese brome | 12-18″ | Flower | Many |
| 7/1 | QUGR = quackgrass | 12-18″ | Flower | Many |
| 7/1 | WICA = wild carrot | 18-32″ | Early flower | Many |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Yields were not taken.

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

**Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014**

Trial ID: 132-14-04 Location: East Lansing, MI
Protocol ID: 132-14-04 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 2/Jun/14 RATING 1-10 | JABR 2/Jun/14 RATING 1-10 | PERG 2/Jun/14 RATING 1-10 | QUGR 2/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 1.0 | 10.0 | 9.3 | 9.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 1.0 | 10.0 | 9.3 | 7.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 1.3 | 4.0 | 5.0 | 6.3 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 1.0 | 5.3 | 3.3 | 4.7 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 1.0 | 5.3 | 6.0 | 6.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 1.0 | 1.0 | 9.3 | 8.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 1.3 | 8.3 | 9.0 | 7.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 5.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 9.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 1.0 | 8.3 | 9.3 | 8.3 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 1.0 | 9.7 | 9.7 | 8.3 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 1.0 | 6.3 | 7.0 | 2.0 |
| LSD (P=.05) | | | | | | | 0.41 | 4.80 | 4.09 | 4.32 |
| Standard Deviation | | | | | | | 0.24 | 2.84 | 2.41 | 2.55 |
| CV | | | | | | | 22.83 | 38.53 | 29.77 | 37.17 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COMA | DAND | FIBW | WHCL |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 2/Jun/14 | 2/Jun/14 | 2/Jun/14 | 2/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 7.0 | 8.0 | 4.0 | 9.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.0 | 9.7 | 4.7 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 7.0 | 3.7 | 3.7 | 8.7 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 4.0 | 8.3 | 7.3 | 9.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 7.0 | 6.3 | 4.0 | 7.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 4.7 | 7.0 | 2.7 | 7.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 4.0 | 9.3 | 2.0 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 6.7 | 7.3 | 2.7 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 10.0 | 9.7 | 6.7 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 7.0 | 9.7 | 9.0 | 7.7 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 9.7 | 8.7 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 3.3 | 4.7 | 5.7 | 4.0 |
| LSD (P=.05) | | | | | | | 7.96 | 3.76 | 4.47 | 4.78 |
| Standard Deviation | | | | | | | 4.70 | 2.22 | 2.64 | 2.82 |
| CV | | | | | | | 72.67 | 28.57 | 51.91 | 32.99 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WICA | GRAPE | QUGR | COMA |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | QUGR | COMA |
| Crop Code | | | | | | | | GRAPE | | |
| Rating Date | | | | | | | 2/Jun/14 | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 7.7 | 2.0 | 8.7 | 7.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.7 | 2.0 | 5.3 | 7.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 7.0 | 1.3 | 6.0 | 7.0 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 9.3 | 1.7 | 1.0 | 7.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 10.0 | 1.7 | 3.3 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 7.0 | 1.0 | 3.3 | 4.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 8.3 | 2.0 | 5.7 | 4.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 10.0 | 1.7 | 5.0 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 10.0 | 1.0 | 8.3 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 1.3 | 5.0 | 7.3 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 9.3 | 1.7 | 9.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 7.0 | 1.3 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 5.46 | 0.75 | 4.70 | 6.72 |
| Standard Deviation | | | | | | | 3.23 | 0.44 | 2.78 | 3.97 |
| CV | | | | | | | 37.48 | 28.35 | 54.06 | 56.23 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | DAND | FIBW | HOWE | WHCL |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | DAND | FIBW | HOWE | WHCL |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 | 17/Jun/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 4.3 | 5.0 | 10.0 | 7.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.7 | 1.3 | 10.0 | 9.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 3.7 | 2.0 | 10.0 | 7.0 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 9.3 | 3.0 | 10.0 | 7.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 8.0 | 2.0 | 7.3 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 7.7 | 2.0 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 5.7 | 1.0 | 10.0 | 6.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 7.0 | 1.7 | 10.0 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 9.3 | 5.7 | 10.0 | 10.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 8.7 | 8.0 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 9.0 | 8.3 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 1.0 | 1.0 | 10.0 | 1.0 |
| LSD (P=.05) | | | | | | | 5.10 | 3.76 | 2.26 | 5.03 |
| Standard Deviation | | | | | | | 3.01 | 2.22 | 1.33 | 2.97 |
| CV | | | | | | | 44.44 | 65.0 | 13.64 | 38.48 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WICA | GRAPE | PERG | QUGR |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | PERG | QUGR |
| Crop Code | | | | | | | | GRAPE | | |
| Rating Date | | | | | | | 17/Jun/14 | 18/Jul/14 | 18/Jul/14 | 18/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 4.0 | 1.0 | 7.7 | 6.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 6.3 | 1.0 | 6.0 | 2.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 3.3 | 1.3 | 1.7 | 7.3 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 10.0 | 1.7 | 1.0 | 4.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 8.0 | 1.3 | 3.0 | 4.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 10.0 | 1.7 | 1.3 | 4.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 7.0 | 1.3 | 6.3 | 2.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 7.3 | 1.3 | 4.0 | 4.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 10.0 | 1.3 | 8.7 | 6.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 9.0 | 1.3 | 10.0 | 9.3 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 1.0 | 9.7 | 7.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 4.0 | 1.3 | 1.0 | 1.0 |
| LSD (P=.05) | | | | | | | 5.52 | 1.14 | 4.98 | 4.63 |
| Standard Deviation | | | | | | | 3.26 | 0.67 | 2.94 | 2.74 |
| CV | | | | | | | 43.93 | 51.5 | 58.54 | 55.32 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COMA | FIBW | WICA | GRAPE |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 18/Jul/14 | 18/Jul/14 | 18/Jul/14 | 20/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 7.0 | 2.0 | 1.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.0 | 1.7 | 5.3 | 1.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 7.0 | 3.3 | 1.3 | 1.7 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 5.0 | 4.0 | 9.3 | 2.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 7.0 | 1.7 | 9.3 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 4.0 | 1.0 | 10.0 | 1.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 4.0 | 1.3 | 7.0 | 1.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 7.3 | 2.0 | 6.0 | 1.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 10.0 | 6.3 | 10.0 | 1.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 9.3 | 10.0 | 1.3 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 9.3 | 10.0 | 1.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 4.0 | 1.0 | 7.0 | 1.3 |
| LSD (P=.05) | | | | | | | 7.71 | 2.45 | 4.78 | 1.28 |
| Standard Deviation | | | | | | | 4.55 | 1.45 | 2.82 | 0.76 |
| CV | | | | | | | 66.38 | 40.43 | 39.08 | 54.51 |

# Preemergence and Postemergence Weed Control in Grapes – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COMA | FIBW | HOWE | WICA |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 20/Aug/14 | 20/Aug/14 | 20/Aug/14 | 20/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | EPRE | 7.0 | 1.7 | 9.0 | 2.3 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.0 | 3.0 | 10.0 | 2.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 3 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | EPRE | 7.0 | 2.3 | 7.7 | 3.0 |
| 4 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | EPRE | 7.0 | 5.3 | 7.3 | 9.0 |
| 5 | bicyclopyrone | 1.67 | SL | 0.045 | lb ai/a | PO1 | 8.7 | 2.0 | 7.7 | 6.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 6 | bicyclopyrone | 1.67 | SL | 0.033 | lb ai/a | PO1 | 4.0 | 1.3 | 4.0 | 7.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1 | | | | |
| 7 | pyroxasulfone | 85 | WDG | 0.133 | lb ai/a | EPRE | 4.3 | 3.0 | 9.3 | 7.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | EPRE | 9.0 | 3.0 | 10.0 | 5.7 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 9 | flazasulfuron | 25 | WG | 0.045 | lb ai/a | EPRE | 10.0 | 8.0 | 4.7 | 9.0 |
| | glyphosate | 5.4 | L | 1 | lb ai/a | EPRE | | | | |
| 10 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 6.7 | 7.7 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | carfentrazone | 2 | EC | 0.02 | lb ai/a | PO2 | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 11 | sulfentrazone | 4 | F | 0.1875 | lb ai/a | EPRE | 10.0 | 5.7 | 10.0 | 10.0 |
| | pendimethalin | 3.8 | CS | 3.8 | lb ai/a | EPRE | | | | |
| | glyphosate | 5.5 | L | 1.375 | lb ai/a | EPRE | | | | |
| | N Pak (AMS) | 100 | L | 2.5 | % v/v | EPRE | | | | |
| | paraquat dichloride | 2 | SL | 1 | lb ai/a | PO1 | | | | |
| | diuron | 80 | DF | 2 | lb ai/a | PO1 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO1 | | | | |
| | Spartan Charge | 3.5 | SE | 0.205 | lb ai/a | PO2 | | | | |
| | COC | 100 | SL | 1 | % v/v | PO2 | | | | |
| 12 | Untreated | | | | | | 7.0 | 1.0 | 8.3 | 7.0 |
| LSD (P=.05) | | | | | | | 7.26 | 3.06 | 5.46 | 4.94 |
| Standard Deviation | | | | | | | 4.28 | 1.81 | 3.22 | 2.92 |
| CV | | | | | | | 58.65 | 49.28 | 39.46 | 43.75 |

# Field Bindweed Control in Grape – HTRC - 2014

**Project Code: 132-14-05** **Location: East Lansing, MI**
**Block 37**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Grape** **Variety: Concord**
**Planting Method: Seedling** **Planting Date: 1967**
**Spacing: 7 ft** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 30 ft long**

**Soil Type: Capac loam** **OM: 5.1%** **pH: 7.1**
**Sand: 53%** **Silt: 30%** **Clay: 17%** **CEC: 12.8**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PO1 | 6/5/14 | 10:40 am | 75/61 | F | Moist | 0-2 W | 37 | 0% Cloudy | N |
| PO2 | 7/1/14 | 1:00 pm | 82/78 | F | Moist | 4-7 SW | 61 | 5% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 6/5 | GRAPE | | Early fruit | Good |
| 6/5 | COMA = common mallow | 6-8″ | Veg | Few |
| 6/5 | FIBW = field bindweed | 18-24″ | Veg | Many |
| 6/5 | HOWE = horseweed | 10-12″ | Veg | Few |
| 6/5 | WICA = wild carrot | 6-8″ | Veg | Few |
| 7/1 | GRAPE | 5-7′ | Fruit, 0.25″ | Good |
| 7/1 | COMA = common mallow | 8-10″ | Veg | Moderate |
| 7/1 | FIBW = field bindweed | 18-36″ | Flower | Many |
| 7/1 | PERG = perennial ryegrass | 5-6″ | Veg | Many |
| 7/1 | QUGR = quackgrass | 12-18″ | Flower | Many |
| 7/1 | WHCL = white clover | 4-6″ | Veg | Many |
| 7/1 | WICA = wild carrot | 12-24″ | Early flower | Many |

**Notes and Comments**
**1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.**
**2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.**
**3. Yields were not taken.**

# Field Bindweed Control in Grape – HTRC - 2014

**Field Bindweed Control in Grape – HTRC - 2014**

Trial ID: 132-14-05 Location: East Lansing, MI
Protocol ID: 132-14-05 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 17/Jun/14 RATING 1-10 | QUGR 17/Jun/14 RATING 1-10 | FIBW 17/Jun/14 RATING 1-10 | WHCL 17/Jun/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | glyphosate | 5.4 | L | 1.35 | lb ai/a | PO1, PO2 | 1.7 | 5.3 | 4.7 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 2 | glufosinate | 2.34 | L | 1 | lb ai/a | PO1, PO2 | 1.7 | 9.3 | 8.3 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 3 | ammonium soap of fatty acid | 22 | L | 20 | % v/v | PO1, PO2 | 2.0 | 4.0 | 2.3 | 8.0 |
| 4 | pelargonic acid | 4.2 | EC | 7 | % v/v | PO1, PO2 | 1.7 | 4.3 | 1.3 | 10.0 |
| 5 | FeHEDTA | 26.5 | L | 5 | % v/v | PO1, PO2 | 1.3 | 2.7 | 1.3 | 6.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 6 | Zeus Prime XC | 3.5 | EC | 0.41 | lb ai/a | PO1, PO2 | 2.3 | 5.0 | 8.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | PO1, PO2 | 2.0 | 7.3 | 8.0 | 10.0 |
| | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | PO1, PO2 | | | | |
| | sethoxydim | 1.53 | EC | 0.25 | lb ai/a | PO1, PO2 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 8 | Untreated | | | | | | 2.0 | 1.3 | 1.0 | 4.0 |
| LSD (P=.05) | | | | | | | 0.78 | 3.21 | 1.85 | 4.19 |
| Standard Deviation | | | | | | | 0.44 | 1.83 | 1.06 | 2.39 |
| CV | | | | | | | 24.17 | 37.23 | 24.12 | 28.54 |

# Field Bindweed Control in Grape – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | WICA | GRAPE | PERG | QUGR |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | PERG | QUGR |
| Crop Code | | | | | | | | GRAPE | | |
| Rating Date | | | | | | | 17/Jun/14 | 18/Jul/14 | 18/Jul/14 | 18/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | glyphosate | 5.4 | L | 1.35 | lb ai/a | PO1, PO2 | 3.3 | 1.0 | 10.0 | 9.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 2 | glufosinate | 2.34 | L | 1 | lb ai/a | PO1, PO2 | 10.0 | 1.0 | 10.0 | 8.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 3 | ammonium soap of fatty acid | 22 | L | 20 | % v/v | PO1, PO2 | 4.7 | 1.3 | 5.7 | 2.3 |
| 4 | pelargonic acid | 4.2 | EC | 7 | % v/v | PO1, PO2 | 4.0 | 1.0 | 6.3 | 3.0 |
| 5 | FeHEDTA | 26.5 | L | 5 | % v/v | PO1, PO2 | 7.0 | 1.3 | 3.0 | 2.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 6 | Zeus Prime XC | 3.5 | EC | 0.41 | lb ai/a | PO1, PO2 | 8.7 | 1.0 | 4.7 | 4.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | PO1, PO2 | 6.0 | 1.0 | 10.0 | 8.3 |
| | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | PO1, PO2 | | | | |
| | sethoxydim | 1.53 | EC | 0.25 | lb ai/a | PO1, PO2 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 8 | Untreated | | | | | | 4.0 | 1.3 | 4.0 | 1.7 |
| LSD (P=.05) | | | | | | | 7.46 | 0.66 | 3.68 | 4.16 |
| Standard Deviation | | | | | | | 4.26 | 0.38 | 2.10 | 2.38 |
| CV | | | | | | | 71.48 | 33.6 | 31.35 | 46.76 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COMA | FIBW | WICA | GRAPE |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | COMA | FIBW | WICA | |
| Crop Code | | | | | | | | | | GRAPE |
| Rating Date | | | | | | | 18/Jul/14 | 18/Jul/14 | 18/Jul/14 | 20/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | glyphosate | 5.4 | L | 1.35 | lb ai/a | PO1, PO2 | 10.0 | 8.3 | 8.7 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 2 | glufosinate | 2.34 | L | 1 | lb ai/a | PO1, PO2 | 10.0 | 5.3 | 10.0 | 1.3 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 3 | ammonium soap of fatty acid | 22 | L | 20 | % v/v | PO1, PO2 | 7.0 | 1.7 | 4.0 | 1.7 |
| 4 | pelargonic acid | 4.2 | EC | 7 | % v/v | PO1, PO2 | 4.0 | 2.3 | 4.3 | 1.0 |
| 5 | FeHEDTA | 26.5 | L | 5 | % v/v | PO1, PO2 | 4.0 | 1.7 | 6.0 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 6 | Zeus Prime XC | 3.5 | EC | 0.41 | lb ai/a | PO1, PO2 | 10.0 | 8.3 | 8.7 | 1.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | PO1, PO2 | 10.0 | 8.0 | 7.0 | 2.0 |
| | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | PO1, PO2 | | | | |
| | sethoxydim | 1.53 | EC | 0.25 | lb ai/a | PO1, PO2 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 8 | Untreated | | | | | | 1.0 | 1.3 | 4.0 | 1.7 |
| LSD (P=.05) | | | | | | | 5.01 | 1.27 | 6.81 | 1.04 |
| Standard Deviation | | | | | | | 2.86 | 0.73 | 3.89 | 0.59 |
| CV | | | | | | | 40.9 | 15.74 | 59.03 | 44.45 |

# Field Bindweed Control in Grape – HTRC - 2014

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | COMA | FIBW | HOWE | WICA |
|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | | | |
| Crop Code | | | | | | | | | | |
| Rating Date | | | | | | | 20/Aug/14 | 20/Aug/14 | 20/Aug/14 | 20/Aug/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | glyphosate | 5.4 | L | 1.35 | lb ai/a | PO1, PO2 | 3.0 | 8.0 | 7.7 | 9.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 2 | glufosinate | 2.34 | L | 1 | lb ai/a | PO1, PO2 | 3.7 | 1.7 | 10.0 | 10.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 3 | ammonium soap of fatty acid | 22 | L | 20 | % v/v | PO1, PO2 | 7.0 | 2.7 | 8.0 | 4.0 |
| 4 | pelargonic acid | 4.2 | EC | 7 | % v/v | PO1, PO2 | 7.0 | 4.3 | 9.3 | 3.7 |
| 5 | FeHEDTA | 26.5 | L | 5 | % v/v | PO1, PO2 | 4.7 | 2.3 | 10.0 | 7.0 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 6 | Zeus Prime XC | 3.5 | EC | 0.41 | lb ai/a | PO1, PO2 | 10.0 | 3.7 | 7.7 | 7.7 |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 7 | carfentrazone | 2 | EC | 0.031 | lb ai/a | PO1, PO2 | 7.0 | 3.3 | 7.0 | 3.7 |
| | pyraflufen | 0.177 | SC | 0.0055 | lb ai/a | PO1, PO2 | | | | |
| | sethoxydim | 1.53 | EC | 0.25 | lb ai/a | PO1, PO2 | | | | |
| | NIS | 100 | SL | 0.25 | % v/v | PO1, PO2 | | | | |
| 8 | Untreated | | | | | | 4.0 | 2.3 | 9.0 | 2.7 |
| LSD (P=.05) | | | | | | | 5.98 | 2.31 | 4.56 | 5.92 |
| Standard Deviation | | | | | | | 3.41 | 1.32 | 2.60 | 3.38 |
| CV | | | | | | | 58.92 | 37.22 | 30.34 | 56.75 |

# Weed Control in Third-Year Grape – Benton Harbor - 2014

**Project Code: 132-14-03** **Location: Benton Harbor, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Grape** **Variety: Concord**
**Planting Method: Transplant** **Planting Date: 2013**
**Spacing: 9 ft** **Row Spacing: 10 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 35 ft long**

**Soil Type: Spinks loamy fine sand** **OM: 2.2%** **pH: 4.4**
**Sand: 88%** **Silt: 1%** **Clay: 11%** **CEC: 6.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/23/14 | 5:00 pm | 48/58 | F | Dry | 5-6 NW | 38 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | GRAPE | 12-15″ | Bud swell | Good |
| 4/23 | ANBG = annual bluegrass | 0.5-1″ | | Moderate |
| 6/3 | HOWE = horseweed | | | |
| 6/3 | LACG = large crabgrass | | | |

**Notes and Comments**
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass over each row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Grower: John Hinkleman; on Napier Avenue, 2-3 miles west of M-140.

# Weed Control in Third-Year Grape – Benton Harbor - 2014

**Weed Control in Third-Year Grape – Benton Harbor - 2014**

Trial ID: 132-14-03 Location: Benton Harbor, MI
Protocol ID: 132-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | GRAPE 3/Jun/14 RATING 1-10 | LACG 3/Jun/14 RATING 1-10 | HOWE 3/Jun/14 RATING 1-10 | GRAPE 22/Jul/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oryzalin | 4 | L | 4 lb ai/a | | PRE | 1.7 | 3.7 | 9.0 | 2.0 |
| 2 | pendimethalin | 3.8 | CS | 4 lb ai/a | | PRE | 1.7 | 5.0 | 6.0 | 2.3 |
| 3 | napropamide | 50 | DF | 4 lb ai/a | | PRE | 2.0 | 3.7 | 7.0 | 1.3 |
| 4 | pronamide | 3.3 | SC | 4 lb ai/a | | PRE | 1.0 | 5.0 | 2.3 | 2.0 |
| 5 | flumioxazin | 51 | WDG | 0.383 lb ai/a | | PRE | 3.7 | 9.3 | 7.0 | 1.3 |
| 6 | isoxaben | 75 | DF | 1 lb ai/a | | PRE | 1.3 | 3.7 | 4.0 | 1.7 |
| 7 | simazine | 90 | WDG | 2 lb ai/a | | PRE | 1.0 | 7.3 | 9.7 | 1.0 |
| 8 | s-metolachlor | 7.62 | EC | 1.9 lb ai/a | | PRE | 1.7 | 4.0 | 6.3 | 1.3 |
| 9 | indaziflam | 1.67 | SC | 0.065 lb ai/a | | PRE | 2.0 | 6.7 | 6.3 | 1.3 |
| 10 | sulfentrazone | 4 | F | 0.375 lb ai/a | | PRE | 1.0 | 6.0 | 7.0 | 2.3 |
| 11 | pyroxasulfone | 85 | WDG | 0.26 lb ai/a | | PRE | 1.0 | 2.7 | 8.3 | 1.7 |
| 12 | Untreated Check | | | | | | 1.0 | 3.0 | 5.7 | 2.0 |
| LSD (P=.05) | | | | | | | 1.41 | 4.03 | 5.94 | 1.68 |
| Standard Deviation | | | | | | | 0.83 | 2.38 | 3.51 | 0.99 |
| CV | | | | | | | 52.44 | 47.58 | 53.5 | 58.49 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | LACG 22/Jul/14 RATING 1-10 | HOWE 22/Jul/14 RATING 1-10 | GRAPE 4/Sep/14 RATING 1-10 | LACG 4/Sep/14 RATING 1-10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | oryzalin | 4 | L | 4 lb ai/a | | PRE | 5.3 | 4.0 | 2.3 | 6.3 |
| 2 | pendimethalin | 3.8 | CS | 4 lb ai/a | | PRE | 4.7 | 2.0 | 1.7 | 5.7 |
| 3 | napropamide | 50 | DF | 4 lb ai/a | | PRE | 8.7 | 4.0 | 2.3 | 7.0 |
| 4 | pronamide | 3.3 | SC | 4 lb ai/a | | PRE | 7.0 | 1.0 | 1.3 | 6.3 |
| 5 | flumioxazin | 51 | WDG | 0.383 lb ai/a | | PRE | 5.3 | 4.0 | 2.0 | 6.3 |
| 6 | isoxaben | 75 | DF | 1 lb ai/a | | PRE | 2.7 | 2.3 | 2.3 | 2.7 |
| 7 | simazine | 90 | WDG | 2 lb ai/a | | PRE | 2.3 | 9.3 | 2.0 | 3.0 |
| 8 | s-metolachlor | 7.62 | EC | 1.9 lb ai/a | | PRE | 7.3 | 5.3 | 2.0 | 7.0 |
| 9 | indaziflam | 1.67 | SC | 0.065 lb ai/a | | PRE | 6.7 | 1.7 | 1.7 | 7.0 |
| 10 | sulfentrazone | 4 | F | 0.375 lb ai/a | | PRE | 1.0 | 7.0 | 3.0 | 2.3 |
| 11 | pyroxasulfone | 85 | WDG | 0.26 lb ai/a | | PRE | 7.7 | 2.3 | 2.0 | 5.3 |
| 12 | Untreated Check | | | | | | 1.0 | 4.3 | 2.3 | 1.0 |
| LSD (P=.05) | | | | | | | 3.30 | 5.21 | 1.58 | 2.63 |
| Standard Deviation | | | | | | | 1.95 | 3.08 | 0.93 | 1.55 |
| CV | | | | | | | 39.25 | 78.01 | 44.8 | 31.09 |

# Weed Control in Raspberry – HTRC - 2014

Project Code: 131-14-01 Location: East Lansing, MI
Block 128

Personnel: Bernard H. Zandstra, Colin Phillippo
Crop: Red Raspberry Variety: Caroline
Planting Method: Rooted plants Planting Date: 2009
Spacing: 2 ft Row Spacing: 10 ft
Tillage Type: Conventional Study Design: RCB Replications: 3
Plot Size: 5.33 ft wide x 30 ft long

Soil Type: Colwood loam OM: 2.7% pH: 6.3
Sand: 68% Silt: 23% Clay: 9% CEC: 6.2

Herbicide Application Information

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| PRE | 4/29/14 | 1:00 pm | 66/54 | F | Damp | 5-7 SE | 61 | 10% Cloudy | N |

Crop and Weed Information at Application

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/29 | RASPBERRY | 3-5″ | 2-leaf stage | Good |
| 4/29 | DAND = dandelion | 6-8″ | Foliar | Many |
| 4/29 | PEST = perennial sowthistle | 2-4″ | Foliar | Few |
| 4/29 | QUGR = quackgrass | 4-6″ | Foliar | Many |
| 4/29 | WHCL = white clover | 2-4″ | Foliar | Many |
| | CATH = Canada thistle | | | |

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Plants were mowed to the ground before application.
4. Yields were not taken because of very irregular stand in about half of the plots.

# Weed Control in Raspberry – HTRC - 2014

**Weed Control in Raspberry**

Trial ID: 131-14-01 Location: East Lansing, MI
Protocol ID: 131-14-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | RASP | QUGR | DAND | RASP | QUGR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Crop Code | | | | | | | | | | |
| | Rating Date | | | | | | 20/May/14 | 20/May/14 | 20/May/14 | 10/Jun/14 | 10/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1.6 | lb ai/a | PRE | 1.0 | 6.7 | 7.7 | 1.7 | 8.7 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 3.3 | 7.7 | 9.0 | 2.7 | 7.3 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 4.3 | 3.7 | 5.3 | 3.7 | 3.3 |
| 4 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 3.7 | 4.0 | 5.3 | 4.3 | 4.3 |
| 5 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 1.3 | 1.7 | 7.3 | 2.3 | 1.0 |
| 6 | flumioxazin | 51 | WDG | 0.255 | lb ai/a | PRE | 4.7 | 5.0 | 8.0 | 2.0 | 2.0 |
| 7 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 3.7 | 6.0 | 9.0 | 4.0 | 5.0 |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 1.0 | 1.7 | 5.7 | 3.0 | 1.7 |
| 9 | saflufenacil | 70 | WG | 0.044 | lb ai/a | PRE | 3.0 | 1.3 | 5.3 | 2.3 | 1.0 |
| 10 | Untreated | | | | | | 1.7 | 6.0 | 6.3 | 2.7 | 5.0 |
| LSD (P=.05) | | | | | | | 4.31 | 3.96 | 4.46 | 3.47 | 5.12 |
| Standard Deviation | | | | | | | 2.51 | 2.31 | 2.60 | 2.02 | 2.98 |
| CV | | | | | | | 90.88 | 52.87 | 37.68 | 70.63 | 75.81 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | CATH | DAND | PEST | WHCL |
|---|---|---|---|---|---|---|---|---|---|---|
| | Crop Code | | | | | | | | | |
| | Rating Date | | | | | | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 | 10/Jun/14 |
| | Rating Type | | | | | | RATING | RATING | RATING | RATING |
| | Rating Unit | | | | | | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | terbacil | 80 | WDG | 1.6 | lb ai/a | PRE | 9.0 | 3.0 | 8.3 | 10.0 |
| 2 | diuron | 80 | DF | 3 | lb ai/a | PRE | 10.0 | 4.3 | 5.0 | 10.0 |
| 3 | indaziflam | 1.67 | SC | 0.065 | lb ai/a | PRE | 10.0 | 2.3 | 1.7 | 7.0 |
| 4 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | PRE | 10.0 | 1.3 | 7.0 | 7.0 |
| 5 | isoxaben | 75 | DF | 1 | lb ai/a | PRE | 9.0 | 2.3 | 7.7 | 4.0 |
| 6 | flumioxazin | 51 | WDG | 0.255 | lb ai/a | PRE | 7.3 | 2.0 | 2.0 | 7.0 |
| 7 | halosulfuron | 75 | WG | 0.047 | lb ai/a | PRE | 5.0 | 7.3 | 2.0 | 6.7 |
| 8 | pyroxasulfone | 85 | WDG | 0.267 | lb ai/a | PRE | 4.0 | 3.7 | 4.7 | 7.7 |
| 9 | saflufenacil | 70 | WG | 0.044 | lb ai/a | PRE | 8.3 | 3.0 | 6.0 | 7.0 |
| 10 | Untreated | | | | | | 4.0 | 6.3 | 2.0 | 6.0 |
| LSD (P=.05) | | | | | | | 5.24 | 4.34 | 5.35 | 6.04 |
| Standard Deviation | | | | | | | 3.05 | 2.53 | 3.12 | 3.52 |
| CV | | | | | | | 39.83 | 70.99 | 67.26 | 48.65 |

# Weed Control in Fir Christmas Trees with Alion – Wahmhoff Farms - 2014

**Project Code: XMAS-2014-01** **Location: Gobles, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Fir** **Variety: Fraser Fir**
**Planting Method: Transplant** **Planting Date: 2009**
**Spacing: 6 ft** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 35 ft long**

**Soil Type: Loamy Sand** **OM: 3.5%** **pH: 6.6**
**Sand: 84%** **Silt: 8%** **Clay: 8%** **CEC: 5.1**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/23/14 | 11:00 am | 45/45 | F | Damp | 3-4 NE | 50 | 0% Cloudy | N |
| LPRE | 6/3/14 | 10:30 am | 71/68 | F | Damp | 4-6 NW | 43 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | FRASER FIR | 3-6′ | Pre budbreak | Good |
| 6/3 | FRASER FIR | 3-6′ | 2-4″ growth | Good |
| 6/3 | HOWE = horseweed | 2-6″ | Rosette | Moderate |
| 6/3 | WICA = wild carrot | 2-6″ | Foliar | Moderate |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Westar = hexazinone + sulfometuron

# Weed Control in Fir Christmas Trees with Alion – Wahmhoff Farms - 2014

**Weed Control in Fir Christmas Trees with Alion – Wahmhoff Farms - 2014**

Trial ID: XMAS-2014-01 Location: Gobles, MI
Protocol ID: XMAS-2014-01 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | HOWE | WICA | | HONE | HOWE |
| Crop Code | | | | | | | FIR | | | FIR | | |
| Rating Date | | | | | | | 3/Jun/14 | 3/Jun/14 | 3/Jun/14 | 30/Jul/14 | 30/Jul/14 | 30/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 1.0 | 9.0 | 10.0 | 1.0 | 4.0 | 10.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 1.0 | 9.7 | 9.7 | 1.0 | 7.0 | 10.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 1.3 | 5.3 | 9.7 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 1.3 | 8.3 | 9.3 | 1.3 | 7.3 | 10.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 5 | Westar | | WP | 6 | oz/a | EPRE | 2.0 | 10.0 | 10.0 | 2.0 | 2.0 | 9.3 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.0 | 5.3 | 8.7 | 1.7 | 4.7 | 9.7 |
| 7 | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | 1.0 | 7.3 | 8.7 | 1.0 | 3.7 | 3.0 |
| LSD (P=.05) | | | | | | | 0.39 | 1.10 | 0.78 | 1.31 | 4.33 | 0.81 |
| Standard Deviation | | | | | | | 0.22 | 0.62 | 0.44 | 0.73 | 2.43 | 0.45 |
| CV | | | | | | | 18.33 | 7.24 | 4.61 | 55.1 | 50.06 | 5.16 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | HONE | HOWE | WICA |
| Crop Code | | | | | | | | FIR | | | |
| Rating Date | | | | | | | 30/Jul/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.0 | 2.0 | 1.7 | 9.0 | 6.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 3.0 | 3.0 | 3.7 | 10.0 | 2.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 7.3 | 1.7 | 1.3 | 9.7 | 8.7 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 4.0 | 2.7 | 3.7 | 10.0 | 5.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 5 | Westar | | WP | 6 | oz/a | EPRE | 8.0 | 1.7 | 1.7 | 9.3 | 8.7 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 8.7 | 2.3 | 1.7 | 10.0 | 7.7 |
| 7 | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | 2.0 | 1.0 | 2.3 | 5.0 | 1.7 |
| LSD (P=.05) | | | | | | | 2.53 | 0.99 | 2.67 | 2.69 | 2.71 |
| Standard Deviation | | | | | | | 1.42 | 0.56 | 1.50 | 1.51 | 1.52 |
| CV | | | | | | | 24.85 | 27.17 | 65.57 | 16.77 | 26.47 |

# Weed Control in Pine Christmas Trees with Alion – Wahmhoff Farms - 2014

**Project Code: XMAS-2014-03** **Location: Gobles, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Pine** **Variety: White Pine**
**Planting Method: Transplant** **Planting Date: 2009**
**Spacing: 6 ft** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 35 ft long**

**Soil Type: Loamy Sand** **OM: 4.5%** **pH: 6.4**
**Sand: 82%** **Silt: 9%** **Clay: 9%** **CEC: 7.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/23/14 | 10:20 am | 44/45 | F | Moist | 3-4 NE | 50 | 0% Cloudy | N |
| LPRE | 6/3/14 | 10:00 am | 68/66 | F | Damp | 6-8 NW | 44 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | WHITE PINE | 3-7′ | Pre budbreak | Good |
| 4/23 | WICA = wild carrot | 0.5″ | Foliar | Few |
| 6/3 | WHITE PINE | 3-7′ | 6-12″ growth | Good |
| 6/3 | HOWE = horseweed | 1-4″ | Rosette | Moderate |
| 6/3 | WICA = wild carrot | 1-3″ | Foliar | Few |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Westar = hexazinone + sulfometuron

# Weed Control in Pine Christmas Trees with Alion – Wahmhoff Farms - 2014

**Weed Control in Pine Christmas Trees with Alion – Wahmhoff Farms - 2014**

Trial ID: XMAS-14-03 Location: Gobles, MI
Protocol ID: XMAS-14-03 Investigator: Dr. Bernard Zandstra
Study Director: Colin Phillippo

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | HOWE | WICA | | HONE | HOWE |
| Crop Code | | | | | | | PINE | | | PINE | | |
| Rating Date | | | | | | | 3/Jun/14 | 3/Jun/14 | 3/Jun/14 | 30/Jul/14 | 30/Jul/14 | 30/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 1.0 | 9.7 | 8.7 | 1.3 | 5.0 | 8.0 |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 1.0 | 9.3 | 8.3 | 1.3 | 8.0 | 9.3 |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 1.0 | 5.7 | 9.7 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 1.3 | 10.0 | 9.7 | 2.0 | 3.3 | 9.3 |
| 5 | Westar | | WP | 6 | oz/a | EPRE | 1.7 | 10.0 | 10.0 | 2.3 | 5.7 | 10.0 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.0 | 7.7 | 10.0 | 1.7 | 3.7 | 7.7 |
| 7 | Untreated | | | | | | 1.0 | 6.3 | 7.7 | 1.3 | 5.0 | 5.0 |
| LSD (P=.05) | | | | | | | 0.90 | 4.08 | 2.98 | 1.47 | 4.82 | 3.30 |
| Standard Deviation | | | | | | | 0.50 | 2.30 | 1.68 | 0.83 | 2.71 | 1.85 |
| CV | | | | | | | 44.1 | 25.51 | 18.24 | 52.57 | 52.17 | 21.99 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | HONE | HOWE | WICA |
| Crop Code | | | | | | | | PINE | | | |
| Rating Date | | | | | | | 30/Jul/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.0 | 1.0 | 4.0 | 10.0 | 9.3 |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 6.3 | 1.0 | 5.0 | 8.3 | 7.7 |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 10.0 | 1.0 | 4.7 | 10.0 | 10.0 |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 9.3 | 1.7 | 2.3 | 9.7 | 5.7 |
| 5 | Westar | | WP | 6 | oz/a | EPRE | 10.0 | 1.3 | 5.0 | 10.0 | 10.0 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 9.0 | 1.0 | 3.7 | 7.7 | 9.0 |
| 7 | Untreated | | | | | | 7.0 | 1.3 | 3.0 | 6.0 | 9.3 |
| LSD (P=.05) | | | | | | | 4.75 | 0.71 | 3.95 | 4.47 | 3.40 |
| Standard Deviation | | | | | | | 2.67 | 0.40 | 2.22 | 2.51 | 1.91 |
| CV | | | | | | | 31.85 | 33.47 | 56.12 | 28.5 | 21.93 |

# Weed Control in Spruce Christmas Trees with Alion – Wahmhoff Farms - 2014

**Project Code: XMAS-2014-02** **Location: Gobles, MI**

**Personnel: Bernard H. Zandstra, Colin Phillippo**
**Crop: Spruce** **Variety: Blue spruce**
**Planting Method: Transplant** **Planting Date: 2009**
**Spacing: 6 ft** **Row Spacing: 6 ft**
**Tillage Type: Conventional** **Study Design: RCB** **Replications: 3**
**Plot Size: 6 ft wide x 35 ft long**

**Soil Type: Sandy Loam** **OM: 3.6%** **pH: 6.2**
**Sand: 79%** **Silt: 12%** **Clay: 9%** **CEC: 7.2**

**Herbicide Application Information**

| Timing | Date | Time | Air/Soil | T | Soil Surf | Wind | RH | Sky | Dew |
|---|---|---|---|---|---|---|---|---|---|
| EPRE | 4/23/14 | 10:00 am | 41/45 | F | Damp | 5-6 NE | 50 | 0% Cloudy | N |
| LPRE | 6/3/14 | 10:00 am | 68/66 | F | Damp | 6-8 NW | 44 | 0% Cloudy | N |

**Crop and Weed Information at Application**

| | | Height or Diameter | Growth Stage | Density |
|---|---|---|---|---|
| 4/23 | SPRUCE | 3-6′ | Pre bud break | Good |
| 4/23 | No weeds | | | |
| 6/3 | SPRUCE | 3-6′ | 4-6″ growth | Good |
| 6/3 | HOWE = horseweed | 1-3″ | Rosette | Moderate |
| 6/3 | WICA = wild carrot | 2-6″ | Foliar | Few |

**Notes and Comments**
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer. One pass on each side of row.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Westar = hexazinone + sulfometuron

# Weed Control in Spruce Christmas Trees with Alion – Wahmhoff Farms - 2014

**Weed Control in Spruce Christmas Trees with Alion – Wahmhoff Farms - 2014**

| | | | |
|---|---|---|---|
| Trial ID: | XMAS-14-02 | Location: | Gobles, MI |
| Protocol ID: | XMAS-14-02 | Investigator: | Dr. Bernard Zandstra |
| Study Director: | Colin Phillippo | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | | HOWE | WICA | | HONE | HOWE |
| Crop Code | | | | | | | SPRUCE | | | SPRUCE | | |
| Rating Date | | | | | | | 3/Jun/14 | 3/Jun/14 | 3/Jun/14 | 30/Jul/14 | 30/Jul/14 | 30/Jul/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 1.0 | 9.3 | 10.0 | 1.3 | 3.7 | 8.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 1.0 | 9.0 | 6.3 | 2.3 | 6.0 | 8.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 1.0 | 10.0 | 10.0 | 1.3 | 4.3 | 10.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 1.3 | 9.0 | 8.3 | 1.7 | 6.3 | 8.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | | |
| 5 | Westar | | WP | 8 | oz/a | EPRE | 2.0 | 9.0 | 10.0 | 2.7 | 7.0 | 3.7 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 1.0 | 2.0 | 9.0 | 1.0 | 3.7 | 1.3 |
| 7 | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | 1.3 | 1.0 | 4.0 | 1.0 | 3.0 | 1.0 |
| LSD (P=.05) | | | | | | | 0.50 | 1.88 | 4.32 | 1.27 | 4.69 | 2.89 |
| Standard Deviation | | | | | | | 0.28 | 1.06 | 2.43 | 0.71 | 2.63 | 1.63 |
| CV | | | | | | | 22.75 | 15.01 | 29.46 | 44.02 | 54.22 | 27.98 |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Growth Stage | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pest Code | | | | | | | WICA | | HONE | HOWE | WICA |
| Crop Code | | | | | | | | SPRUCE | | | |
| Rating Date | | | | | | | 30/Jul/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 | 4/Sep/14 |
| Rating Type | | | | | | | RATING | RATING | RATING | RATING | RATING |
| Rating Unit | | | | | | | 1-10 | 1-10 | 1-10 | 1-10 | 1-10 |
| 1 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | EPRE | 7.7 | 1.7 | 2.3 | 10.0 | 5.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 2 | indaziflam | 1.67 | SC | 0.085 | lb ai/a | LPRE | 6.0 | 1.7 | 1.7 | 8.0 | 3.0 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 3 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | EPRE | 9.7 | 1.3 | 5.7 | 7.0 | 8.3 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 4 | indaziflam | 1.67 | SC | 0.13 | lb ai/a | LPRE | 6.3 | 1.7 | 1.7 | 8.3 | 3.7 |
| | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | | | | | |
| 5 | Westar | | WP | 8 | oz/a | EPRE | 10.0 | 3.0 | 1.0 | 4.3 | 10.0 |
| | sulfometuron | 75 | DG | 0.0244 | lb ai/a | | | | | | |
| | hexazinone | 75 | DF | 0.257 | lb ai/a | | | | | | |
| 6 | flumioxazin | 51 | WDG | 0.383 | lb ai/a | EPRE | 7.3 | 1.0 | 1.3 | 1.0 | 9.3 |
| 7 | glyphosate | 4 | L | 1.375 | lb ai/a | EPRE | 1.7 | 1.0 | 1.3 | 1.7 | 6.3 |
| LSD (P=.05) | | | | | | | 3.66 | 1.10 | 3.33 | 3.96 | 4.36 |
| Standard Deviation | | | | | | | 2.05 | 0.62 | 1.87 | 2.22 | 2.45 |
| CV | | | | | | | 29.56 | 38.12 | 87.31 | 38.59 | 37.25 |