

# MICHIGAN DRY BEAN PERFORMANCE TRIALS

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# Michigan Dry Bean Performance Trials 2021

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## Author

**Scott Bales**, Dry Bean Specialist  
Department of Plant, Soil, and Microbial Sciences  
Michigan State University  
Email: [balessco@msu.edu](mailto:balessco@msu.edu)  
Phone: 989-262-8550

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## Introduction

One hundred fifty (150) lines from 12 separate market classes were tested across six locations (Table 1) in 2021. In each table documenting the results, you will find such agronomic information as flowering date, plant maturity, height, and disease tolerance. Flowering and plant maturity are rated visually in days after planting (DAP) across all locations. Lodging is evaluated on a scale of 1 to 5, with a 1 indicating that the entry was completely erect in the field at harvest and a 5 indicating that the entry was flat on the ground with stems and pods touching the soils' surface. White mold infection was recorded in Huron County by calculating the percent of infection on each replication (number infected/total stand)\*100). In 2021, white mold incidence was evaluated at the Huron County location due to adequate disease pressure. White mold was not present in either location where kidney bean testing was conducted (Montcalm or SVREC), and was not, therefore, evaluated in 2021.

Yield results are presented in pounds per acre (Lb. A<sup>-1</sup>) adjusted to 18% moisture for all locations. Small and medium seeded beans were tested in Bay, Huron, Sanilac, and Tuscola counties. Large seeded beans were tested in Montcalm and Tuscola counties (SVREC). Following individual location results, yield is presented combined over locations for 2021 unless production systems differ (irrigated vs. dry land); this combining represents a one-year average across all locations. When possible, this combining is also done for two- and three-year averages across locations and years. For example, a three-year average of navy bean yields includes data from 2019, 2020, and 2021 at four locations per year (12 site years).

At the bottom of most columns, you will find the trial average (mean), least significant difference (LSD), and coefficient of variation (CV) for the data within that column. To assist in the evaluation of these results the entry with the highest numerical yield in each column (trial and year) is followed by two asterisks (\*\*). However, entries that are not significantly different from the highest yielding entry are followed by one asterisk (\*). This means that if an entry is followed by either one or two asterisks, there is **no** evidence that the entries differed for that given trait.

**Table 1. Trial location, grower co-operator, planting date, nitrogen application rate, nitrogen application method, total accumulated growing degree days (GDD), and total precipitation.**

| County                             | Co-operator           | Planting Date | Nitrogen Rate<br>(lb/A) | Nitrogen<br>Application | Total GDD* | Total<br>Precipitation<br>(inches) |
|------------------------------------|-----------------------|---------------|-------------------------|-------------------------|------------|------------------------------------|
| Bay                                | Weiss Farms           | 31-May        | 53                      | Broadcast               | 2229       | 13.3"                              |
| Huron                              | Gentner-Bischer Farms | 11-June       | 42                      | 2x2                     | 1967       | 14.2"                              |
| Sanilac                            | Keinath Farms         | 5-June        | 53                      | 2x2                     | 2243       | 15.9"                              |
| Tuscola<br>(Kidney beans)          | SVREC                 | 6-June        | 42                      | Broadcast               | 2308       | 15.9"                              |
| Tuscola<br>(Small and medium seed) | Zimmer Farms          | 4-June        | 42                      | 2x2                     | 2347       | 17.1"                              |
| Montcalm                           | Waldron Farms         | 3-June        | 42                      | 2x2                     | 2274       | 17.6" +<br>Irrigation              |

\*Weather data retrieved from the nearest Michigan Automated Weather Network (MAWN) and the Enviro-weather Program station nearest to the trial. All weather data is from the day of planting to October 1. Growing degree days were calculated using the following equation:  

$$((MAX + MIN)/2) - 50.$$



## Methods & Soil Test Information

Dry beans were seeded in four row plots (20" rows) that measure 6.6' wide by 20' long. Each entry is replicated **four** times within the trial. All trials were designed as a randomized complete block (RCB). Trials received industry standard seed treatments, fertilization, and weed control applications at labeled rates. White mold fungicides were not applied to any location.

The absence of fungicide allows the evaluation of a variety's natural tolerance or avoidance to white mold when the disease is present. Yield data is obtained by direct harvest for small- and medium-seeded beans. Large seeded beans are pulled by a two row Picket bean puller and then mechanically thrashed to prevent harvest loss. Following harvest, samples are cleaned, weighed, and moisture tested. Questions regarding the 2021 performance trials or suggestions for 2022 should be directed to Scott Bales at 989-262-8550, ext. 2, or [balessco@msu.edu](mailto:balessco@msu.edu).

**Table 2. Soil test information from the six county locations, including organic matter (%OM), pH, and cation exchange capacity (CEC). All macro- and micronutrients were sufficient for dry bean production.**

| Location                        | % OM | Soil Type       | pH  | CEC  |
|---------------------------------|------|-----------------|-----|------|
| Bay                             | 2.6  | Sandy Clay Loam | 6.8 | 10.9 |
| Huron                           | 2.8  | Loam            | 7.6 | 12.1 |
| Sanilac                         | 3.3  | Clay Loam       | 7.6 | 11.5 |
| Tuscola (Kidney beans)          | 2.5  | Clay Loam       | 7.7 | 16.8 |
| Tuscola (Small and medium seed) | 3.6  | Clay Loam       | 7.6 | 16.6 |
| Montcalm                        | 2.3  | Sandy Loam      | 6.3 | 7.6  |



**Table 3. Navy bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | White Mold<br>Infection (%) | Bay<br>(Lb. A <sup>-1</sup> ) | Huron<br>(Lb. A <sup>-1</sup> ) | Sanilac<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | 1-year avg.<br>(Lb. A <sup>-1</sup> ) | 2-year avg.<br>(Lb. A <sup>-1</sup> ) | 3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|-----------------------------|-------------------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <i>Apex</i>                 | 92                | 42                 | 17.0                     | 2.5              | 36*                         | 2959*                         | 3701*                           | 2669                              | 2905                              | 2928                                  | 2827                                  | 2632                                  |
| <i>Argosy</i>               | 92                | 41                 | 18.0                     | 2.0              | 33*                         | 2612                          | 3716**                          | 2915                              | 3334*                             | 3028*                                 | 2734                                  | 2671                                  |
| <i>Armada</i>               | 90                | 44                 | 20.0                     | 2.0              | 48                          | 3127*                         | 3522*                           | 3009                              | 3120                              | 3108*                                 | 2883*                                 | 2686                                  |
| <i>Blizzard</i>             | 90                | 43                 | 18.0                     | 1.6              | 61                          | 3324*                         | 2945                            | 2967                              | 3367*                             | 3120*                                 | 2936*                                 | 2742                                  |
| <i>HMS Bounty</i>           | 91                | 43                 | 18.0                     | 1.3              | 21**                        | 2955*                         | 2902                            | 3672**                            | 3158                              | 3130*                                 | 3041*                                 | 2728                                  |
| <i>HMS Medalist</i>         | 92                | 42                 | 18.0                     | 2.0              | 51                          | 2951*                         | 2906                            | 2873                              | 3343*                             | 3011*                                 | 2985*                                 | 2785                                  |
| <i>Liberty (15095)</i>      | 91                | 44                 | 16.0                     | 1.9              | 49                          | 3123*                         | 2899                            | 3647*                             | 3521*                             | 3233**                                | 3094**                                | 2988**                                |
| <i>Merlin</i>               | 92                | 42                 | 18.0                     | 1.8              | 43                          | 2641                          | 2438                            | 2696                              | 2782                              | 2560                                  | 2579                                  | 2413                                  |
| <i>Nautica</i>              | 89                | 43                 | 17.0                     | 2.1              | 39*                         | 3158*                         | 3326*                           | 3021                              | 3100                              | 3052*                                 | -----                                 | 2575                                  |
| <i>Rogue</i>                | 90                | 44                 | 16.0                     | 3.1              | 60                          | 3109*                         | 3328*                           | 2762                              | 3517*                             | 3149*                                 | 2842                                  | -----                                 |
| <i>Shock</i>                | 90                | 42                 | 15.0                     | 2.4              | 61                          | 2874*                         | 2937                            | 2848                              | 3015                              | 2967                                  | 2705                                  | -----                                 |
| <i>Valiant</i>              | 90                | 43                 | 16.0                     | 1.7              | 55                          | 2858*                         | 2444                            | 2954                              | 3052                              | 2821                                  | 2793                                  | 2569                                  |
| <i>Victory (15094)</i>      | 89                | 43                 | 18.0                     | 2.0              | 49                          | 3079*                         | 2959                            | 3015                              | 3481*                             | 3158*                                 | 3071*                                 | 2874*                                 |
| <i>Vigilant</i>             | 88                | 42                 | 18.0                     | 1.4              | 41                          | 2545                          | 2958                            | 3116                              | 2984                              | 2804                                  | 2678                                  | -----                                 |
| <i>12039</i>                | 92                | 46                 | 16.0                     | 2.2              | 57                          | 2852*                         | 2924                            | 2948                              | 3335*                             | 2943                                  | 2852                                  | 2761                                  |
| <i>14068</i>                | 91                | 46                 | 19.0                     | 1.8              | 67                          | 2126                          | 2107                            | 2818                              | 3611*                             | 2768                                  | 2837                                  | 2639                                  |
| <i>14078</i>                | 91                | 44                 | 18.0                     | 1.7              | 56                          | 2532                          | 2949                            | 3018                              | 3075                              | 2840                                  | -----                                 | -----                                 |
| <i>14084</i>                | 90                | 43                 | 20.0                     | 1.8              | 48                          | 2961*                         | 2751                            | 2601                              | 3103                              | 2838                                  | 2838                                  | 2524                                  |
| <i>EX1802-N</i>             | 86                | 45                 | 13.0                     | 1.0              | 36*                         | 2460                          | 2764                            | 2226                              | 2735                              | 2270                                  | 2357                                  | -----                                 |
| <i>EX1803-N</i>             | 87                | 44                 | 16.0                     | 1.3              | 41*                         | 2370                          | 2180                            | 2062                              | 2601                              | 2298                                  | 2414                                  | -----                                 |
| <i>EX1804-N</i>             | 88                | 43                 | 17.0                     | 1.3              | 29*                         | 2760                          | 2780                            | 2571                              | 3157                              | 2868                                  | 2555                                  | -----                                 |
| <i>N18103</i>               | 88                | 44                 | 17.0                     | 1.7              | 27*                         | 3085*                         | 3129                            | 3206*                             | 3404*                             | 3038*                                 | 2852                                  | -----                                 |
| <i>N19226</i>               | 89                | 45                 | 18.0                     | 1.9              | 39*                         | 3203*                         | 2171                            | 2620                              | 3214*                             | 2794                                  | -----                                 | -----                                 |
| <i>N19246</i>               | 90                | 43                 | 17.0                     | 1.9              | 42                          | 3319*                         | 2683                            | 3025                              | 3650**                            | 3224*                                 | -----                                 | -----                                 |
| <i>N19253</i>               | 90                | 42                 | 19.0                     | 1.6              | 44                          | 3014*                         | 2546                            | 2903                              | 3068                              | 2825                                  | 2864                                  | -----                                 |
| <i>N19285</i>               | 90                | 42                 | 16.0                     | 2.7              | 66                          | 2755                          | 2206                            | 2532                              | 3187*                             | 2685                                  | 2555                                  | -----                                 |
| <i>N20388</i>               | 90                | 43                 | 17.0                     | 1.3              | 53                          | 2479                          | 2493                            | 3026                              | 3360*                             | 2901                                  | -----                                 | -----                                 |
| <i>N20404</i>               | 88                | 43                 | 18.0                     | 1.1              | 30*                         | 3144*                         | 3434*                           | 3230*                             | 3325*                             | 3191*                                 | -----                                 | -----                                 |
| <i>SV1893GH</i>             | 90                | 44                 | 16.0                     | 2.0              | 66                          | 3341**                        | 2613                            | 3036                              | 3461*                             | 3135*                                 | 2903*                                 | 2462                                  |
| <b>MEAN</b>                 | 90                | 43                 | 17.2                     | 1.8              | 45.9                        | 2877                          | 2847                            | 2905                              | 3206                              | 2916                                  | 2791                                  | 2671                                  |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 19.2                        | 499                           | 577                             | 515                               | 467                               | 289                                   | 221                                   | 122                                   |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 0.4                         | 14.7%                         | 11.9%                           | 15.0%                             | 12.4%                             | 16.5%                                 | 18.7%                                 | 13.7%                                 |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 4. Black bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | White Mold<br>Infection (%) | Bay<br>(Lb. A <sup>-1</sup> ) | Huron<br>(Lb. A <sup>-1</sup> ) | Sanilac<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | 1-year avg.<br>(Lb. A <sup>-1</sup> ) | 2-year avg.<br>(Lb. A <sup>-1</sup> ) | 3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|-----------------------------|-------------------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <i>Ace</i>                  | 88                | 44                 | 17.0                     | 1.4              | 56                          | 2695                          | 2928                            | 2895                              | 3298                              | 2954                                  | -----                                 | -----                                 |
| <i>Adams</i>                | 91                | 45                 | 16.0                     | 1.9              | 41                          | 3456*                         | 3647**                          | 3276                              | 3752*                             | 3256*                                 | 3318**                                | -----                                 |
| <i>Black Bear</i>           | 93                | 46                 | 16.0                     | 1.9              | 53                          | 2189                          | 2720                            | 2794                              | 3745*                             | 2881                                  | 2837                                  | 2661                                  |
| <i>Black Tails</i>          | 91                | 45                 | 18.0                     | 1.8              | 52                          | 2807                          | 2874                            | 2557                              | 3399                              | 2800                                  | 2846                                  | 2631                                  |
| <i>Black Beard</i>          | 91                | 46                 | 20.0                     | 1.7              | 54                          | 2609                          | 3355*                           | 3215                              | 3822*                             | 3065                                  | 3025                                  | 2836*                                 |
| <i>Eclipse</i>              | 87                | 43                 | 17.0                     | 1.3              | 55                          | 2302                          | 2913                            | 2521                              | 3036                              | 2642                                  | 2632                                  | -----                                 |
| <i>ND Twilight</i>          | 86                | 44                 | 16.0                     | 2.5              | 76                          | 2357                          | 3088                            | 2650                              | 3263                              | 2717                                  | 2486                                  | -----                                 |
| <i>Nimbus</i>               | 91                | 46                 | 18.0                     | 1.8              | 41                          | 2193                          | 2998                            | 3753**                            | 3290                              | 3006                                  | 3294*                                 | 3091**                                |
| <i>Spectre</i>              | 93                | 45                 | 19.0                     | 1.9              | 28*                         | 2511                          | 2886                            | 3177                              | 3729*                             | 3009                                  | 3152*                                 | 2872*                                 |
| <i>Zenith</i>               | 91                | 45                 | 16.0                     | 1.5              | 35*                         | 2722                          | 3282                            | 3207                              | 3728*                             | 3186*                                 | 3011                                  | 2736                                  |
| <i>Zorro</i>                | 91                | 44                 | 17.0                     | 1.4              | 34*                         | 2863                          | 3227                            | 2868                              | 3737*                             | 3069                                  | 2938                                  | 2705                                  |
| <i>14531</i>                | 91                | 45                 | 17.0                     | 1.8              | 47                          | 2545                          | 3036                            | 2919                              | 3677*                             | 2873                                  | -                                     | -                                     |
| <i>15610</i>                | 92                | 46                 | 16.0                     | 1.5              | 53                          | 2837                          | 3395*                           | 2661                              | 3399                              | 2943                                  | 2913                                  | 2774                                  |
| <i>15619</i>                | 92                | 46                 | 17.0                     | 1.9              | 67                          | 2582                          | 2564                            | 3135                              | 3765*                             | 2705                                  | 3001                                  | 2727                                  |
| <i>16590</i>                | 93                | 43                 | 17.0                     | 1.7              | 52                          | 2592                          | 3323*                           | 3275                              | 3785*                             | 3175*                                 | 3092*                                 | -----                                 |
| <i>16648</i>                | 91                | 44                 | 17.0                     | 2.0              | 54                          | 2433                          | 3213                            | 3392                              | 4026**                            | 3077                                  | 2953                                  | -----                                 |
| <i>17715</i>                | 90                | 46                 | 16.0                     | 1.9              | 55                          | 2917                          | 3236                            | 2984                              | 3721                              | 3187*                                 | 2954                                  | -----                                 |
| <i>17751</i>                | 90                | 44                 | 17.0                     | 1.3              | 40                          | 2922                          | 3528*                           | 3131                              | 3582*                             | 3291*                                 | 3248*                                 | -----                                 |
| <i>B19309</i>               | 90                | 44                 | 17.0                     | 1.6              | 37*                         | 2860                          | 3378*                           | 3442*                             | 3620*                             | 3218*                                 | -----                                 | -----                                 |
| <i>B19330</i>               | 89                | 44                 | 17.0                     | 1.7              | 58                          | 2920                          | 2915                            | 2848                              | 3938*                             | 3085                                  | 2997                                  | -----                                 |
| <i>B19344</i>               | 90                | 43                 | 18.0                     | 1.5              | 38*                         | 3579*                         | 2975                            | 3118                              | 3650*                             | 3303*                                 | 3217*                                 | -----                                 |
| <i>B20547</i>               | 90                | 42                 | 18.0                     | 1.6              | 19**                        | 3711**                        | 3129                            | 3473*                             | 3528                              | 3375*                                 | -----                                 | -----                                 |
| <i>B20591</i>               | 89                | 42                 | 17.0                     | 1.7              | 30*                         | 3169                          | 3579*                           | 3360                              | 3851*                             | 3466**                                | -----                                 | -----                                 |
| <i>B20597</i>               | 89                | 42                 | 17.0                     | 1.2              | 26*                         | 2475                          | 3240                            | 3186                              | 3459                              | 3090                                  | -----                                 | -----                                 |
| <i>B3036381</i>             | 91                | 45                 | 16.0                     | 2.2              | 50                          | 2926                          | 3206                            | 3034                              | 3392                              | 2918                                  | 2894                                  | -----                                 |
| <i>BL1726-2</i>             | 88                | 45                 | 17.0                     | 1.2              | 33*                         | 3031                          | 3074                            | 3145                              | 3637*                             | 3153                                  | -----                                 | -----                                 |
| <b>MEAN</b>                 | 90                | 45                 | 17.1                     | 1.7              | 45.6                        | 2763                          | 3126                            | 3086                              | 3587                              | 3047                                  | 2973                                  | 2782                                  |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 19.5                        | 520                           | 349                             | 341                               | 465                               | 305                                   | 267                                   | 250                                   |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 36.0%                       | 16.0%                         | 9.5%                            | 9.4%                              | 11.0%                             | 16.5%                                 | 21.0%                                 | 26.7%                                 |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 5. Small red and pink bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | White Mold<br>Infection (%) | Bay<br>(Lb. A <sup>-1</sup> ) | Huron<br>(Lb. A <sup>-1</sup> ) | Sanilac<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | 1-year avg.<br>(Lb. A <sup>-1</sup> ) | 2-year avg.<br>(Lb. A <sup>-1</sup> ) | 3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|-----------------------------|-------------------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <i>Cayenne</i>              | 89                | 42                 | 19.0                     | 2.0              | 50                          | 2874*                         | 3340*                           | 2388                              | 3608**                            | 2954                                  | 2727                                  | 2583                                  |
| <i>Rosetta</i>              | 90                | 43                 | 17.0                     | 1.6              | 40                          | 2812*                         | 3456*                           | 2245                              | 3432*                             | 2891                                  | -----                                 | -----                                 |
| <i>Ruby</i>                 | 89                | 45                 | 14.0                     | 2.8              | 77                          | 2186                          | 2797                            | 2156                              | 3296*                             | 2495                                  | 2590                                  | 2363                                  |
| <i>Viper</i>                | 85                | 45                 | 16.0                     | 1.6              | 53                          | 2327                          | 3522**                          | 3194*                             | 2905                              | 2917                                  | 2963**                                | 2830**                                |
| 16686                       | 89                | 43                 | 17.0                     | 2.3              | 66                          | 2941*                         | 3112                            | 3254**                            | 3250*                             | 3130**                                | 2894*                                 | 2557                                  |
| 17837                       | 90                | 44                 | 18.0                     | 1.6              | 65                          | 2273                          | 3130                            | 2932*                             | 3505*                             | 2922                                  | 2794                                  | 2506                                  |
| 17839                       | 91                | 45                 | 17.0                     | 2.0              | 44                          | 2200                          | 3364*                           | 2635                              | 3550*                             | 2745                                  | 2764                                  | 2419                                  |
| 17875                       | 88                | 45                 | 16.0                     | 2.3              | 44                          | 2661                          | 3380*                           | 3018*                             | 3308*                             | 3035*                                 | -----                                 | -----                                 |
| R17604                      | 89                | 43                 | 19.0                     | 1.7              | 30*                         | 3223**                        | 3333*                           | 2368                              | 3381*                             | 3037*                                 | 2765                                  | 2598                                  |
| R20627                      | 89                | 44                 | 19.0                     | 1.3              | 22**                        | 3024*                         | 3456*                           | 2375                              | 3452*                             | 3075*                                 | -----                                 | -----                                 |
| R20667                      | 87                | 44                 | 18.0                     | 1.3              | 27*                         | 3106*                         | 3502*                           | 2864*                             | 3119*                             | 3076*                                 | -----                                 | -----                                 |
| S18904                      | 88                | 43                 | 15.0                     | 1.4              | 42                          | 2703                          | 2911                            | 2639                              | 2777                              | 2700                                  | 2584                                  | -----                                 |
| <b>MEAN</b>                 | 89                | 44                 | 17.0                     | 1.8              | 46.9                        | 2694                          | 3275                            | 2672                              | 3298                              | 2915                                  | 2760                                  | 2551                                  |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 13.0                        | 479                           | 281                             | 534                               | 695                               | 172                                   | 147                                   | 169                                   |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 23.7                        | 12.7%                         | 7.1%                            | 16.6%                             | 17.5%                             | 17.5%                                 | 17.6%                                 | 19.7%                                 |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 6. Pinto bean agronomic and yield results.**

| VARIETY            | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | White Mold<br>Infection (%) | Bay<br>(Lb. A <sup>-1</sup> ) | Huron<br>(Lb. A <sup>-1</sup> ) | Sanilac<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | 1-year avg.<br>(Lb. A <sup>-1</sup> ) | 2-year avg.<br>(Lb. A <sup>-1</sup> ) | 3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|--------------------|-------------------|--------------------|--------------------------|------------------|-----------------------------|-------------------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <i>Charro</i>      | 88                | 43                 | 16.0                     | 2.0              | 57*                         | 2900                          | 2737                            | 2586*                             | 3641**                            | 2910                                  | 3069*                                 | 2716**                                |
| <i>LaPaz</i>       | 85                | 44                 | 17.0                     | 2.0              | 53*                         | 2828                          | 2775                            | 2831*                             | 3552*                             | 2899                                  | 2908                                  | 2562*                                 |
| <i>ND Falcon</i>   | 90                | 45                 | 18.0                     | 2.0              | 57*                         | 2215                          | 2867                            | 1782                              | 2621                              | 2391                                  | 2453                                  | ----                                  |
| <i>ND Palomino</i> | 91                | 44                 | 13.0                     | 3.2              | 72*                         | 2861                          | 2867                            | 2492                              | 3017*                             | 2920                                  | 2759                                  | ----                                  |
| <i>Windbreaker</i> | 84                | 43                 | 13.0                     | 3.3              | 79.0                        | 1997                          | 3129*                           | 1916                              | 2780                              | 2561                                  | 2430                                  | ----                                  |
| <i>P19103</i>      | 92                | 43                 | 15.0                     | 3.2              | 52**                        | 3696**                        | 3539**                          | 3014*                             | 3600*                             | 3335**                                | 3171**                                | ----                                  |
| <i>P19713</i>      | 87                | 43                 | 17.0                     | 1.6              | 58*                         | 2584                          | 2928                            | 3210*                             | 3568*                             | 3072*                                 | ----                                  | ----                                  |
| <i>SV6139GR</i>    | 85                | 44                 | 16.0                     | 1.7              | 67*                         | 2973                          | 3363*                           | 3308**                            | 3339*                             | 3177*                                 | 3000*                                 | ----                                  |
| <b>MEAN</b>        | 88                | 44                 | 15.5                     | 2.4              | 13.9                        | 2757                          | 2967                            | 2642                              | 3265                              | 2908                                  | 2827                                  | 2639                                  |
| <b>LSD</b> (0.05)  | ----              | ----               | ----                     | ----             | 5.0                         | 383                           | 397                             | 673                               | 692                               | 316                                   | 202                                   | 256                                   |
| <b>CV</b>          | ----              | ----               | ----                     | ----             | 18.8%                       | 11.4%                         | 10.9%                           | 20.9%                             | 17.3%                             | 17.5%                                 | 16.7                                  | 28.30%                                |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.

**Table 7. Great northern bean agronomic and yield results.**

| VARIETY           | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | White Mold<br>Infection (%) | Bay<br>(Lb. A <sup>-1</sup> ) | Huron<br>(Lb. A <sup>-1</sup> ) | Sanilac<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | 1-year avg.<br>(Lb. A <sup>-1</sup> ) | 2-year avg.<br>(Lb. A <sup>-1</sup> ) | 3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-------------------|-------------------|--------------------|--------------------------|------------------|-----------------------------|-------------------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <i>Aries</i>      | 85                | 43                 | 15.0                     | 2.5              | 69.0                        | 1773                          | 2252                            | 2291                              | 2802*                             | 2286                                  | 2302                                  | 2153                                  |
| <i>Draco</i>      | 85                | 44                 | 14.0                     | 2.2              | 51*                         | 2183                          | 2537                            | 2599*                             | 2537                              | 2483                                  | ----                                  | ----                                  |
| <i>Eiger</i>      | 88                | 45                 | 18.0                     | 2.3              | 44*                         | 2973*                         | 3171*                           | 2671*                             | 3000*                             | 2953                                  | 3149*                                 | 2919**                                |
| <i>ND Pegasus</i> | 87                | 44                 | 18.0                     | 1.8              | 37**                        | 3380**                        | 3400**                          | 3178**                            | 3533**                            | 3373**                                | 3223**                                | ----                                  |
| <i>Powderhorn</i> | 84                | 43                 | 14.0                     | 1.8              | 48*                         | 2280                          | 3144*                           | 2112                              | 2803*                             | 2659                                  | 2554                                  | 2300                                  |
| <i>Virgo</i>      | 89                | 43                 | 16.0                     | 2.3              | 49*                         | 2834                          | 3217*                           | 2852*                             | 2880*                             | 2945                                  | 2764                                  | ----                                  |
| <i>14164</i>      | 86                | 42                 | 15.0                     | 1.6              | 51*                         | 2351                          | 2370                            | 2127                              | 1919                              | 2294                                  | ----                                  | ----                                  |
| <i>G19611</i>     | 90                | 43                 | 17.0                     | 2.3              | 39*                         | 3008*                         | 3319*                           | 2745*                             | 3073*                             | 3194*                                 | ----                                  | ----                                  |
| <i>G19613</i>     | 86                | 45                 | 17.0                     | 1.8              | 44*                         | 3264*                         | 3112*                           | 3073*                             | 3270*                             | 3180*                                 | ----                                  | ----                                  |
| <b>MEAN</b>       | 87                | 44                 | 16                       | 2.0              | 47.9                        | 2672                          | 2947                            | 2627                              | 2868                              | 2819                                  | 2798                                  | 2457                                  |
| <b>LSD</b> (0.05) | ----              | ----               | ----                     | ----             | 16.2                        | 436                           | 335                             | 600                               | 760                               | 231                                   | 247                                   | 206                                   |
| <b>CV</b>         | ----              | ----               | ----                     | ----             | 28.0%                       | 13.5%                         | 9.3%                            | 18.8%                             | 21.0%                             | 13.9%                                 | 21.3%                                 | 24.7%                                 |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 8. Cranberry bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | Montcalm<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| AAC Scotty                  | 97                | 35                 | 11.0                     | 3.0              | 2809                               | 2173                              | -----                                              | -----                                              | -----                                             | -----                                             |
| Amaranto                    | 83                | 36                 | 11.0                     | 2.7              | 2988                               | 2006                              | 2765                                               | 3011*                                              | 1961                                              | 1664                                              |
| Bellagio                    | 83                | 36                 | 13.0                     | 3.0              | 2785                               | 2498*                             | 2323                                               | 2550                                               | 2296                                              | 1918                                              |
| Chianti                     | 84                | 39                 | 12.0                     | 2.0              | 3034                               | 2305*                             | 2709                                               | 2942                                               | -----                                             | -----                                             |
| Etna                        | 81                | 35                 | 12.0                     | 2.2              | 3461**                             | 2107                              | 3141*                                              | 3267**                                             | 2197*                                             | 1721                                              |
| Jester                      | 85                | 37                 | 13.0                     | 2.2              | 3326*                              | 2308*                             | 2820                                               | 2867                                               | 2507*                                             | 2130*                                             |
| Vero                        | 85                | 36                 | 12.0                     | 2.7              | 3239*                              | 2134                              | 2934*                                              | 2975                                               | 1947                                              | -----                                             |
| 16756                       | 89                | 38                 | 13.0                     | 2.2              | 3072                               | 1973                              | 2768                                               | -----                                              | 1911                                              | -----                                             |
| 16758                       | 83                | 35                 | 12.0                     | 2.2              | 3205*                              | 1958                              | 2900                                               | -----                                              | 1948                                              | -----                                             |
| 16760                       | 82                | 36                 | 10.0                     | 2.7              | 3333*                              | 2307*                             | 3168*                                              | 3152*                                              | 2138                                              | 1855                                              |
| 16764                       | 81                | 38                 | 11.0                     | 4.0              | 2924                               | 2200                              | 2875                                               | 2842                                               | 2235*                                             | 1964*                                             |
| 16775                       | 84                | 34                 | 12.0                     | 1.5              | 2795                               | 1822                              | 2520                                               | 2704                                               | 1994                                              | 1663                                              |
| 16776                       | 84                | 47                 | 15.0                     | 1.5              | 2507                               | 1983                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 16816                       | 83                | 34                 | 13.0                     | 2.5              | 3096                               | 1807                              | 2848                                               | -----                                              | 2003                                              | -----                                             |
| 151093                      | 83                | 37                 | 13.0                     | 2.5              | 3405*                              | 2514**                            | 3177**                                             | 2947                                               | 2519**                                            | 2166**                                            |
| <b>MEAN</b>                 | 84                | 37                 | 12.3                     | 2.4              | 3066                               | 2144                              | 2842                                               | 2926                                               | 2138                                              | 1890                                              |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 361                                | 286                               | 265                                                | 260                                                | 202                                               | 237                                               |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 9.8%                               | 11.1%                             | 11.2%                                              | 13.1%                                              | 16.3%                                             | 16.8%                                             |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 9. Light red kidney bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | Montcalm<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <i>Big Red</i>              | 81                | 34                 | 12.0                     | 2.5              | 3306                               | 2429                              | 2888*                                              | 2701*                                              | 2247*                                             | 1938                                              |
| <i>California Early</i>     | 80                | 33                 | 11.0                     | 2.7              | 2922                               | 2021                              | 2858*                                              | 2691*                                              | 1949                                              | 1462                                              |
| <i>Clouseau</i>             | 85                | 34                 | 10.0                     | 3.2              | 3211                               | 2370                              | 2848*                                              | 2687*                                              | 2381*                                             | 1713                                              |
| <i>Coho</i>                 | 84                | 40                 | 15.0                     | 2.2              | 2374                               | 2765*                             | 2522                                               | 2525*                                              | 2512**                                            | 2203                                              |
| <i>Pink Panther</i>         | 83                | 34                 | 11.0                     | 2.5              | 3282                               | 2089                              | 2981*                                              | -----                                              | 2106                                              | -----                                             |
| <i>Red Dawn</i>             | 79                | 35                 | 12.0                     | 2.7              | 2915                               | 2423                              | 3030**                                             | 2781**                                             | 2295*                                             | 1985                                              |
| <i>Ronnie's Red</i>         | 85                | 39                 | 15.0                     | 1.7              | 2185                               | 2715*                             | 2131                                               | 2395                                               | 2498*                                             | 2188                                              |
| <i>Rosie</i>                | 86                | 39                 | 14.0                     | 2.2              | 2058                               | 2336                              | 1845                                               | -----                                              | 2252*                                             | -----                                             |
| 11413                       | 86                | 34                 | 11.0                     | 3.2              | 3331                               | 2309                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 15916                       | 84                | 35                 | 9.0                      | 3.5              | 3378*                              | 2425                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 15923                       | 84                | 34                 | 12.0                     | 2.2              | 3622*                              | 2196                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 16998                       | 84                | 35                 | 11.0                     | 2.0              | 3542*                              | 2258                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 161082                      | 84                | 36                 | 14.0                     | 2.0              | 3320                               | 2144                              | -----                                              | -----                                              | -----                                             | -----                                             |
| K17703                      | 85                | 36                 | 14.0                     | 2.0              | -----                              | -----                             | 2568                                               | 2443                                               | 2512*                                             | 2812**                                            |
| K19610                      | 83                | 40                 | 12.0                     | 2.2              | -----                              | -----                             | -----                                              | -----                                              | -----                                             | -----                                             |
| K20734                      | 85                | 38                 | 15.0                     | 1.7              | 2430                               | 2928**                            | -----                                              | -----                                              | -----                                             | -----                                             |
| K20743                      | 86                | 36                 | 15.0                     | 1.7              | 3643**                             | 2832*                             | -----                                              | -----                                              | -----                                             | -----                                             |
| <b>MEAN</b>                 | 84                | 36                 | 12.5                     | 2.4              | 2966                               | 2454                              | 2629                                               | 2603                                               | 2306                                              | 2043                                              |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 458                                | 317                               | 368                                                | 322                                                | 345                                               | 342                                               |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 13.0%                              | 10.9%                             | 16.7%                                              | 23.5%                                              | 15.4%                                             | 22.0%                                             |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



Table 10. Dark red kidney bean agronomic and yield results.

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant Height<br>(Inches) | Lodging<br>(1-5) | Montcalm<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|--------------------------|------------------|------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <i>Dynasty</i>              | 85                | 38                 | 14.0                     | 2.2              | 3310*                              | 2639                              | 2955*                                              | 3008**                                             | 2519**                                            | 2223*                                             |
| <i>Epic</i>                 | 81                | 37                 | 12.0                     | 2.2              | 3021                               | 2194                              | 2713*                                              | 2750*                                              | 2162                                              | 2019                                              |
| <i>Gallantry</i>            | 84                | 36                 | 13.0                     | 2.5              | 3316*                              | 2355                              | -----                                              | -----                                              | -----                                             | -----                                             |
| <i>Montcalm</i>             | 86                | 30                 | 13.0                     | 2.5              | 3218*                              | 2650**                            | 2675*                                              | 2793*                                              | 2406*                                             | 2064                                              |
| <i>Rampart</i>              | 83                | 37                 | 12.0                     | 2.2              | 3182*                              | 2462*                             | 2755*                                              | 2688                                               | 2361*                                             | 2070                                              |
| <i>Red Cedar</i>            | 85                | 36                 | 12.0                     | 2.7              | 2788                               | 2470*                             | 2721*                                              | 2592                                               | 2195                                              | 2066                                              |
| <i>Red Hawk</i>             | 85                | 35                 | 11.0                     | 3.0              | 2875                               | 1729                              | 2738*                                              | 2916*                                              | 1771                                              | 1754                                              |
| <i>Red Rover</i>            | 85                | 37                 | 13.0                     | 2.7              | 2541                               | 2255                              | 2565                                               | 2759*                                              | 2173                                              | 1926                                              |
| 15977                       | 85                | 37                 | 14.0                     | 2.7              | 3465**                             | 2506*                             | 2731*                                              | -----                                              | 2359*                                             | -----                                             |
| 15978                       | 86                | 40                 | 12.0                     | 2.0              | 1468                               | 2061                              | 1896                                               | 1906                                               | 2169                                              | 2278**                                            |
| 151011                      | 81                | 36                 | 11.0                     | 3.8              | 3287*                              | 2261                              | 3045**                                             | 2967*                                              | 2152                                              | 2008                                              |
| 161156                      | 84                | 37                 | 11.0                     | 2.2              | 3283*                              | 2335                              | 3006*                                              | -----                                              | 2360*                                             | -----                                             |
| 161164                      | 84                | 36                 | 11.0                     | 2.5              | 3089*                              | 2121                              | 2774*                                              | -----                                              | 2221                                              | -----                                             |
| 181017                      | 85                | 40                 | 14.0                     | 2.2              | 3408*                              | 2561*                             | 2850*                                              | -----                                              | 2259*                                             | -----                                             |
| 181020                      | 84                | 33                 | 10.0                     | 3.0              | 2620                               | 1820                              | -----                                              | -----                                              | -----                                             | -----                                             |
| 181021                      | 84                | 34                 | 10.0                     | 2.5              | 2794                               | 2102                              | -----                                              | -----                                              | -----                                             | -----                                             |
| K16136                      | 84                | 37                 | 14.0                     | 2.2              | 2643                               | 2467*                             | 2674*                                              | 2746*                                              | 2312*                                             | 2075                                              |
| K20234                      | 83                | 37                 | 11.0                     | 2.2              | 2824                               | 2104                              | -----                                              | -----                                              | -----                                             | -----                                             |
| <b>MEAN</b>                 | 84                | 36                 | 12.1                     | 2.5              | 2952                               | 2283                              | 2721                                               | 2712                                               | 2244                                              | 2048                                              |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                    | -----            | 430                                | 287                               | 391                                                | 291                                                | 288                                               | 225                                               |
| <b>CV</b>                   | -----             | -----              | -----                    | -----            | 12.2%                              | 10.6%                             | 17.3%                                              | 15.8%                                              | 13.3%                                             | 14.8%                                             |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 11. White kidney bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant<br>Height<br>(Inches) | Lodging<br>(1-5) | Montcalm<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|-----------------------------|------------------|------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <i>Beluga</i>               | 86                | 38                 | 14.0                        | 2.5              | 2161                               | 2448                              | 2116                                               | 2388                                               | 2296                                              | 2331**                                            |
| <i>ND White Tail</i>        | 85                | 38                 | 14.0                        | 3.0              | 2663                               | 2591                              | 2588                                               | -----                                              | 2346                                              | -----                                             |
| <i>Snowdon</i>              | 82                | 33                 | 10.0                        | 2.5              | 2988*                              | 2177                              | -----                                              | -----                                              | -----                                             | -----                                             |
| <i>Yeti</i>                 | 87                | 37                 | 14.0                        | 2.2              | 2678*                              | 2573                              | 2258                                               | 2774                                               | 2362                                              | 2004                                              |
| <i>K16924</i>               | 86                | 35                 | 11.0                        | 2.7              | 3098**                             | 2566                              | 3113**                                             | 3476**                                             | 2403                                              | 2177*                                             |
| <i>K19830</i>               | 85                | 40                 | 15.0                        | 2.0              | 2861*                              | 3038**                            | 2728                                               | -----                                              | 2697**                                            | -----                                             |
| <i>K19831</i>               | 86                | 40                 | 16.0                        | 2.0              | 2448                               | 2872                              | -----                                              | -----                                              | -----                                             | -----                                             |
| <b>MEAN</b>                 | 85                | 37                 | 14                          | 2.7              | 2699                               | 2609                              | 2561                                               | 2879                                               | 2421                                              | 2171                                              |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                       | -----            | 425                                | 118                               | 280                                                | 261                                                | 176                                               | 249                                               |
| <b>CV</b>                   | -----             | -----              | -----                       | -----            | 12.8%                              | 3.6%                              | 12.8%                                              | 18.4                                               | 6.7%                                              | 19.0%                                             |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.

**Table 12. Mayocoba/yellow bean agronomic and yield results.**

| VARIETY                     | Maturity<br>(DAP) | Flowering<br>(DAP) | Plant<br>Height<br>(Inches) | Lodging<br>(1-5) | Montcalm<br>(Lb. A <sup>-1</sup> ) | Tuscola<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Irrigated<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>2-year avg.<br>(Lb. A <sup>-1</sup> ) | Dry Land<br>3-year avg.<br>(Lb. A <sup>-1</sup> ) |
|-----------------------------|-------------------|--------------------|-----------------------------|------------------|------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <i>Claim Jumper</i>         | 85                | 39                 | 12.0                        | 3.7              | 2750*                              | 2560                              | 2414*                                              | 2576                                               | 2305                                              | 2029                                              |
| <i>Motherlode</i>           | 89                | 36                 | 14.0                        | 2.7              | 1756                               | 2161                              | -----                                              | -----                                              | -----                                             | -----                                             |
| <i>Patron</i>               | 80                | 37                 | 10.0                        | 4.0              | 2843*                              | 3223**                            | -----                                              | -----                                              | -----                                             | -----                                             |
| <i>SVS-0863</i>             | 80                | 38                 | 10.0                        | 4.0              | 3047**                             | 3146*                             | 2485*                                              | 2791*                                              | 2719**                                            | 2618**                                            |
| <i>Yellowstone</i>          | 86                | 37                 | 10.0                        | 3.5              | 2575*                              | 2501                              | 2541**                                             | 2845**                                             | 2182                                              | 2008                                              |
| <i>Y1608-14</i>             | 82                | 36                 | 11.0                        | 4.2              | 2408*                              | 1674                              | 2354*                                              | -----                                              | 1905                                              | -----                                             |
| <i>Y1702-22</i>             | 83                | 34                 | 11.0                        | 2.7              | 2922*                              | 2092                              | 2397*                                              | -----                                              | 2031                                              | -----                                             |
| <b>MEAN</b>                 | 84                | 37                 | 11.1                        | 3.5              | 2614                               | 2479                              | 2438                                               | 2737                                               | 2252                                              | 2218                                              |
| <b>LSD<sub>(0.05)</sub></b> | -----             | -----              | -----                       | -----            | 462                                | 232                               | 265                                                | 247                                                | 274                                               | 172                                               |
| <b>CV</b>                   | -----             | -----              | -----                       | -----            | 14.2%                              | 7.6%                              | 12.7%                                              | 12.8%                                              | 13.0%                                             | 10.4                                              |

\*\*Highest yielding variety within column.

\*Yield not statistically different from the highest yielding variety within column.



**Table 13. Irrigated navy bean yield results.**

| VARIETY                      | Montcalm<br>(Lb. A <sup>-1</sup> ) |
|------------------------------|------------------------------------|
| <i>HMS Bounty</i>            | 3037                               |
| <i>HMS Medalist</i>          | 2837                               |
| <i>Liberty</i>               | 3483**                             |
| <i>Victory</i>               | 2147*                              |
| <i>Armada</i>                | 3156*                              |
| <b>MEAN</b>                  | 3132                               |
| <b>LSD</b> <sub>(0.05)</sub> | 338                                |
| <b>CV</b>                    | 8.4%                               |

**Table 14. Irrigated black bean yield results.**

| VARIETY                      | Montcalm<br>(Lb. A <sup>-1</sup> ) |
|------------------------------|------------------------------------|
| <i>Adams</i>                 | 3049*                              |
| <i>Black Beard</i>           | 3072*                              |
| <i>Nimbus</i>                | 3306**                             |
| <i>Spectre</i>               | 2681                               |
| <i>Zenith</i>                | 2442                               |
| <b>MEAN</b>                  | 2910                               |
| <b>LSD</b> <sub>(0.05)</sub> | 630                                |
| <b>CV</b>                    | 17.0%                              |

## 2021 Sourcing Information

| Entry | Market Class | Source                    |
|-------|--------------|---------------------------|
| 11413 | LRK          | ProVita                   |
| 12039 | NA           | ProVita                   |
| 14068 | NA           | ProVita                   |
| 14078 | NA           | ProVita                   |
| 14084 | NA           | ProVita                   |
| 14164 | GN           | ADM <sup>a</sup> /ProVita |
| 14531 | BL           | ProVita                   |
| 15610 | BL           | ProVita                   |
| 15619 | BL           | ProVita                   |
| 15916 | LRK          | ProVita                   |
| 15923 | LRK          | ProVita                   |
| 15977 | DRK          | ProVita                   |
| 15978 | DRK          | ProVita                   |
| 16590 | BL           | ProVita                   |
| 16648 | BL           | ProVita                   |
| 16686 | SR           | ProVita                   |
| 16756 | CR           | ProVita                   |
| 16758 | CR           | ProVita                   |
| 16760 | CR           | ProVita                   |
| 16764 | CR           | ProVita                   |
| 16775 | CR           | ProVita                   |
| 16776 | CR           | ProVita                   |
| 16816 | CR           | ProVita                   |
| 16998 | LRK          | ProVita                   |

| Entry               | Market Class | Source                |
|---------------------|--------------|-----------------------|
| 17715               | BL           | ProVita               |
| 17751               | BL           | ProVita               |
| 17837               | SR           | ProVita               |
| 17839               | SR           | ProVita               |
| 17875               | SR           | ProVita               |
| 151011              | DRK          | ProVita               |
| 151093              | CR           | ProVita               |
| 161082              | LRK          | ProVita               |
| 161156              | DRK          | ProVita               |
| 161164              | DRK          | ProVita               |
| 181017              | DRK          | ProVita               |
| 181020              | DRK          | ProVita               |
| 181021              | DRK          | ProVita               |
| AAC Scotty          | CR           | Meridian Seeds        |
| Adams (B18504)      | BL           | MSU <sup>b</sup>      |
| Aries               | GN           | ProVita               |
| Amaranto (SV3709GC) | CR           | Seminis Seeds         |
| Apex                | NA           | Treasure Valley Seeds |
| Argosy              | NA           | Hensall Co-op         |
| Armada (13068)      | NA           | ProVita               |
| B19309              | BL           | MSU                   |
| B19330              | BL           | MSU                   |
| B19344              | BL           | MSU                   |
| B20547              | BL           | MSU                   |



| Entry              | Market Class | Source                   |
|--------------------|--------------|--------------------------|
| B20597             | BL           | MSU                      |
| B3036381           | BL           | ADM                      |
| Bellagio           | CR           | MSU                      |
| Beluga             | WK           | MSU                      |
| Big Red            | LRK          | ProVita                  |
| BL1726-2           | BL           | USDA <sup>c</sup>        |
| Black Bear         | BL           | ProVita                  |
| Black Tails        | BL           | ProVita                  |
| BlackBeard (14506) | BL           | ProVita                  |
| Blizzard           | NA           | ProVita                  |
| California Early   | LRK          | University of California |
| Cayenne            | SR           | MSU                      |
| Charro (P16901)    | P            | MSU                      |
| Chianti            | CR           | Seminis Seeds            |
| Claim Jumper       | MY           | ProVita                  |
| Clouseau           | LRK          | Seminis Seeds            |
| Coho (K15601)      | LRK          | MSU                      |
| Draco              | GN           | ADM                      |
| Dynasty            | DRK          | Hensall Co-op            |
| Eclipse            | BL           | NDSU <sup>d</sup>        |
| Eiger (G16351)     | GN           | MSU                      |
| Epic               | DRK          | ProVita                  |
| Etna               | CR           | Seminis Seeds            |
| EX1802-N           | NA           | Treasure Valley Seeds    |
| EX1803-N           | NA           | Treasure Valley Seeds    |
| EX1804-N           | NA           | Treasure Valley Seeds    |
| G19611             | GN           | MSU                      |
| G19613             | GN           | MSU                      |
| Gallantry          | DRK          | Hensall Co-op            |
| HMS Bounty         | NA           | ProVita                  |
| HMS Medalist       | NA           | ProVita                  |
| Jester             | CR           | ProVita                  |
| K16136             | DRK          | MSU                      |
| K16924             | WK           | MSU                      |
| K17703             | LRK          | MSU                      |
| K19610             | LRK          | MSU                      |
| K19830             | WK           | MSU                      |
| K20234             | DRK          | MSU                      |
| K20734             | LRK          | MSU                      |
| K20743             | LRK          | MSU                      |

| Entry                | Market Class | Source                |
|----------------------|--------------|-----------------------|
| LaPaz                | P            | ProVita               |
| Liberty (15095)      | NA           | ProVita               |
| Merlin               | NA           | ProVita               |
| Montcalm             | DRK          | MSU                   |
| Motherlode (191274)  | MY           | ProVita               |
| N18103               | NA           | MSU                   |
| N19226               | NA           | MSU                   |
| N19246               | NA           | MSU                   |
| N19253               | NA           | MSU                   |
| N19285               | NA           | MSU                   |
| N20388               | NA           | MSU                   |
| N20404               | NA           | MSU                   |
| Nautica              | NA           | Hensall Co-op         |
| ND Falcon            | P            | NDSU                  |
| ND Palomino          | P            | NDSU                  |
| ND Pegasus           | GN           | NDSU                  |
| ND Twilight          | BL           | NDSU                  |
| ND White Tail        | WK           | NDSU                  |
| Nimbus               | BL           | ProVita               |
| P19103               | P            | MSU                   |
| P19713               | P            | MSU                   |
| Patron               | MY           | Ohio State University |
| Pink Panther         | LRK          | Seminis Seeds         |
| Powderhorn           | GN           | MSU                   |
| R17604               | SR           | MSU                   |
| R20627               | SR           | MSU                   |
| R20667               | SR           | MSU                   |
| Rampart (09434)      | DRK          | ProVita               |
| Red Cedar            | DRK          | MSU                   |
| Red Dawn (09363)     | LRK          | ProVita               |
| Red Hawk             | DRK          | MSU                   |
| Red Rover            | DRK          | Seminis Seeds         |
| Rogue                | NA           | Hensall Co-op         |
| Ronnie's Red (09360) | LRK          | ProVita               |
| Rosetta              | PI           | MSU                   |
| Rosie                | LRK          | NDSU                  |
| Ruby                 | SR           | ProVita               |
| S18904               | PINK         | MSU                   |
| Shock                | NA           | Hensall Co-op         |
| Snowdon              | WK           | MSU                   |



| Entry                | Market Class | Source                |
|----------------------|--------------|-----------------------|
| Spectre (14497)      | BL           | ProVita               |
| SV1893GH             | NA           | Seminis Seeds         |
| SV6139GR             | P            | Seminis Seeds         |
| SVS-0863             | MY           | Treasure Valley Seeds |
| Valiant (08077)      | NA           | ProVita               |
| Vero                 | CR           | ADM                   |
| Victory (15094)      | NA           | ProVita               |
| Vigilant             | NA           | ProVita               |
| Viper                | SR           | ProVita               |
| Virgo (13172)        | GN           | ADM                   |
| Windbreaker          | P            | Seminis Seeds         |
| Y1608-14             | MY           | USDA-ARS <sup>e</sup> |
| Y1702-22             | MY           | USDA-ARS              |
| Yellowstone (Y16507) | MY           | MSU                   |
| Yeti                 | WK           | Hensall Co-op         |
| Zenith               | BL           | MSU                   |
| Zorro                | BL           | MSU                   |

<sup>a</sup> ADM = Archer-Daniels-Midland

<sup>b</sup> MSU = Michigan State University

<sup>c</sup> USDA = U.S. Department of Agriculture

<sup>d</sup> NDSU = North Dakota State University

<sup>e</sup> USDA-ARS = USDA Agricultural Research Service