MSU Weed Science

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Weed control in winter wheat: What do I need to consider?

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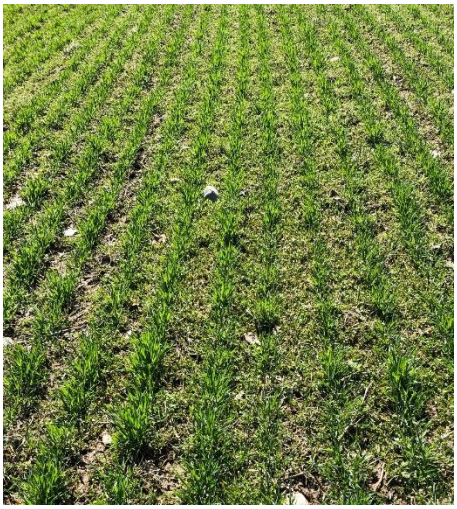
Over the next two weeks, many of Michigan's winter wheat acres will be treated with herbicides for weed control. Early weed and wheat growth from warm spring temperatures earlier this month will make these herbicide applications critical. While there are several herbicide options available for use in wheat, there are many factors that growers should consider prior to deciding when to spray and what products to use.

Cold temperatures. Over the last week colder temperatures have limited wheat acres from getting sprayed. Hopefully, in the next couple of days we will be moving past the cold temperatures and will be able to spray wheat. It is important to remember that most herbicides labeled for weed control in winter wheat have specific instructions that state herbicide applications should be made when *weeds are actively growing*. Herbicides should not be applied when the crop is under stress from very cold temperatures, when there are wide fluctuations in day/night temperatures, when a frost has occurred or when temperatures are below freezing prior to, at, or immediately following herbicide applications. ***A good rule of thumb*** is to only apply herbicides to winter wheat when the daily temperature is 50° F or higher. Following this rule of thumb helps avoid possible wheat injury from herbicide applications and improves weed control.



Spring herbicide applications on winter wheat frost-seeded with red clover. The time-honored tradition of frost-seeding red clover in winter wheat has regained prominence for many Michigan growers. However, one of the greatest challenges for growers who are frost-seeding clover in winter wheat is in finding a herbicide that can be applied for weed control without damaging the clover. While there are several herbicides that can be applied in the fall that have little impact on frost-seeded clover, the only broadleaf herbicide that can be applied in the ***spring*** without negatively impacting clover is ***MCPA***. ***Axial Bold*** is the only POST grass wheat herbicides that can be applied in the spring without affecting frost-seeded clover.

Horseweed (marestail) control. After last year's weed control failures in many prevent plant fields, we know herbicide-resistant horseweed (marestail) is going to be a challenge across the state.

In fact, right now farmers that have walked their wheat fields are reporting that horseweed and chickweed are the most prevalent weeds that they are seeing. While a good stand of wheat can go a long way in helping to suppress these weeds, it will be important to spray an effective herbicide for horseweed control. While there are several options in wheat that will provide effective control of horseweed, it is important to remember that most of the horseweed populations that we have in Michigan are resistant to the ALS-inhibiting or Group 2 herbicides. So, it will be important to use non-Group 2 herbicides for effective control. As farmers look to control herbicide- resistant horseweed and common chickweed, the herbicides ***Huskie, Talinor,*** or ***Quelex*** are all options that they can use to control these weeds. Keep in mind, these weeds are best controlled when small.

28% UAN (nitrogen) as a herbicide spray carrier. Spring conditions have generally been unfavorable for nitrogen applications to winter wheat this year. While in the next few weeks many growers will be applying nitrogen to wheat, some growers choose to split their nitrogen applications and apply a portion of their nitrogen with their herbicides. Several years ago we conducted research to determine: the effect of applying the herbicides Affinity BroadSpec, Huskie, and 2,4-D with 28% UAN (nitrogen) as a spray carrier on weed control and wheat tolerance. From this research we were able to formulate the following recommendations:

- ***2,4-D amine or 2,4-D ester at 1 pt /A can be applied with liquid nitrogen fertilizer solutions (28% UAN) as the spray carrier at 100% or a 50:50 28% UAN:water mixture.*** 2,4-D ester formulations generally mix easier with fertilizer solutions than 2,4-D amine formulations. When applying 2,4-D products with 28% UAN as the spray carrier, DO NOT include surfactant. The addition of other herbicides or fungicides to these mixtures will likely increase the risk for crop injury.
- ***MSU does not recommend applying Affinity BroadSpec or Huskie with 100% (56 lb actual N) 28% UAN as the spray carrier.*** The risk of crop injury and potential yield reductions is higher with these combinations. The full load of surfactant at 0.25% v/v used in these combinations was likely the cause for increased injury.
- ***Affinity BroadSpec and Huskie can be applied with 50:50 ratio of liquid nitrogen fertilizer solutions (28% UAN) and water (28 lb actual N).*** Reducing the surfactant rate in these mixtures to 0.125% v/v will also reduce the risk for crop injury. Wheat tolerance is also greater if applications of these combinations are made prior to wheat jointing (Feekes stage 6).
- ***Quelex:*** Quelex is a newer herbicide that can be applied in spray solutions containing nitrogen fertilizer. While this herbicide was not available while we were conducting our spray carrier research, we have applied Quelex with 100% UAN in a previous research trial and observed a slight increase in injury to wheat compared with Quelex applied alone. However, this injury was only temporary and did not impact wheat yield. It is important if using this practice not to add more than a 0.25% v/v surfactant.
- ***Talinor:*** We have never applied Talinor using 28% UAN as a carrier. However, since the use of ammonium sulfate (AMS) is prohibited on the label, our recommendations would be DO NOT apply Talinor with 28% UAN as the herbicide carrier.

Winter wheat growth stage and weeds controlled. All herbicides have a maximum wheat growth stages for application listed on the label. Late herbicide applications can lead to excessive crop damage that can cause kernel abortion and blank wheat heads that can ultimately reduce yield. Some

of the more restrictive herbicides that are used in winter wheat are the plant growth regulator herbicides including 2,4-D amine, 2,4-D ester, dicamba (Banvel or Clarity), MCPA, and Curtail (2,4-D amine + Stinger). The plant growth regulator herbicides are typically good on summer annual weeds like common lambsquarters, pigweed, and common ragweed, but vary in their control of some of the more common winter annual weeds like common chickweed. 2,4-D, MCPA, and Curtail will not control chickweed. All plant growth regulator herbicides need to be applied prior to winter wheat jointing (Feekes stage 6). Other herbicides that need to be applied prior to Feekes stage 6 are the grass herbicides, Osprey and PowerFlex. Both of these herbicides are effective at controlling annual bluegrass prior to flower and also common windgrass. However, Osprey has been more effective at controlling the newer grass weed problem roughstalk bluegrass. PowerFlex also has good activity on many of the broadleaf weeds encountered in wheat, including common chickweed. If winter wheat is at jointing these herbicides should no longer be used. Axial Bold is another herbicide that has good control on many grasses, including roughstalk bluegrass. Axial Bold should be applied up to the preboot stage of wheat.

The herbicides, Affinity BroadSpec, Harmony Extra, Harmony, Express, Huskie, and the newer herbicides Quelex and Talinor are not as restrictive as many of the plant growth regulator herbicides. These herbicides can be applied to wheat until just before the flag-leaf is visible (Feekes stage 7.9). Talinor can be applied up to Feekes stage 8. All of these herbicides also have better control of common chickweed than many of the growth regulator herbicides. Peak another herbicide is also an option for common chickweed control, however longer rotation restrictions (22-months) to many crops including soybean often restrict the use of this herbicide.

Buctril, Stinger, Starane, and Widematch (Stinger + Starane) are other herbicides that will control broadleaf weeds in winter wheat. These herbicides have the longest application window. They can all be applied to winter wheat up to the boot stage (Feekes stage 9). However, many of these herbicides have fairly narrow spectrums of weed control. Buctril provides better control of summer annual weeds and is not very effective against winter annuals. Starane has a very narrow weed control spectrum, but is excellent in controlling hemp dogbane. Stinger, on the other hand, provides excellent Canada thistle control.

For more information for control of winter and summer annual weeds including control windgrass can be found in Chapter 3 of the *MSU 2020 Weed Control Guide for Field Crops* (E-434) https://www.canr.msu.edu/weeds/extension/weed-control-guide/(Small%20grains)2020%20WEED%20CONTROL%20GUIDE%20FINAL%20E-434.pdf.