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eUpdate

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These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

eUpdate Table of Contents | 03/20/2015 | Issue 499

1. Winterkill and follow-up management

There have been several reports of winterkill injury of wheat in Kansas this year, mainly in the northern half of the state but also in parts of southwest Kansas. This injury has been compounded by very dry topsoil conditions in many areas. As wheat greenup progresses, any winter injury will become more apparent. Injured wheat may initially green up, then go backwards.

Figure 1. Winterkill injury in Central Kansas Extension District, March 2015. Photos by Tom Maxwell, Central Kansas Extension District Agent.

Figure 2. Another example of winterkill injury in Central Kansas Extension District, March 2015.

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Figure 3. Close-up of injured wheat plants.

Producers need to contact their crop insurance representative before making any management decisions on fields that have had partial or complete winterkill injury. It would not be feasible to replant these fields to wheat at this time of year – either winter wheat or spring wheat. The chances of getting any yield from wheat planted this late are negligible.

If there are large areas of the field with winterkill, but other areas are fine, it would be best to avoid applying topdress fertilizer to the bare areas where the wheat has died.

If fields are completely dead, it might be possible to plant these fields to a summer row crop or forage crop later this spring, depending on plant-back restrictions from any residual herbicides have been applied to the wheat.

Many of the commonly used sulfonylurea herbicides, including Ally, Ally Extra, Finesse, Glean, Amber, Peak, Rave, Maverick, Olympus, and PowerFlex are very persistent and have fairly long crop rotation guidelines.

In general, the most tolerant summer crop to residues of these herbicides is STS soybeans, followed by grain sorghum. Product labels tend to specify grain sorghum, but forage sorghum and sudangrasses would likely have similar levels of tolerance. One major exception to this guideline is sorghum and Maverick herbicide. Sorghum is extremely susceptible to Maverick and should not be planted for at least 22 months after application.

Producers who want to recrop to sorghum on their wheat acres that have received one of these sulfonylurea herbicides should wait as long as possible to plant. Ideally, sorghum should not be planted on these fields until mid-June.

Cotton and non-STS soybeans are generally intermediate in tolerance to these herbicides. Although most of these product labels generally recommend not planting cotton or non-STS soybeans until the following year, the Maverick and Olympus labels allow shorter recrop intervals in the case of catastrophic events if a field bioassay indicates it is safe to plant the crop. Research at K-State on lower pH soils has shown minimal injury of cotton or STS soybeans planted in early June from residues of Maverick or Olympus applied the previous fall. However, the grower assumes all risk of crop injury.

Corn, sunflowers, canola, and alfalfa tend to be the most susceptible crops to the sulfonylurea herbicides and have rotation guidelines of 12 months or longer. Corn is very susceptible to residues of these herbicides. Several herbicide labels make reference to shorter recrop intervals if planting IR corn. However, IR corn has been obsolete for many years and current Clearfield corn hybrids do not have the same level of cross resistance to sulfonylurea herbicides as did the IR corns.

Wheat fields that have been treated with Beyond herbicide can be recropped in the spring with any type of soybean or Clearfield sunflowers, but not to sorghum or corn.

Most other commonly used wheat herbicides in Kansas have very short crop rotation restrictions. In fields where herbicide carryover is a concern, it would be best to wait until later in the spring before

planting to allow as much time as possible for herbicide dissipation. Tilling the soil to try to "dilute" the herbicide residue likely will not have a great benefit and could offset the benefits of not tilling the soil.

Always refer to the specific herbicide label regarding crop rotation guidelines and restrictions. Label guidelines for crop rotation are often complicated by soil pH and geography. Some product labels have very rigid crop rotation restrictions, while other labels allow shorter intervals in the case of catastrophic crop failure, as long as the producer is willing to accept the risk of crop injury. Another confusing issue may be the existence of supplemental herbicide labels with shorter crop rotation guidelines than the regular label, or special footnotes to crop rotation tables in the label.

Effects of possible late spring freeze

Where wheat has been growing for a week or more, producers may wonder whether a return to freezing temperatures may hurt the wheat.

In the tillering stage, the growing point is near the soil surface during this stage and is protected against injury. Most damage at this stage occurs to leaves, which become twisted and light green to yellow in color and are burned at the tip within one or two days after freezing. A strong odor of dehydrating vegetation may be present after several days. Injury at this stage slows growth and may reduce tiller numbers, but growth of new leaves and tillers usually resumes with warmer temperatures.

In the jointing stage, wheat can usually tolerate temperatures in the mid to upper 20's with no significant injury. If temperatures get into the low-20's or lower for several hours, there can be some injury to the lower stems, the leaves, or the developing head. If it is windy during the nighttime hours when temperatures reach their lows, this increases the chance of injury.

Whether actual freeze injury takes place depends on the low temperature reached, how long the temperatures stayed that cold, temperatures gradients in the field, wind speed, canopy density, and other microclimate factors. Soil moisture is another factor that is usually important in determining freeze injury.

One general rule is that producers should not make any quick decisions about the condition of their wheat crop after a freeze. It will take several days of warm weather following the freezes to evaluate the condition of the crop and its yield potential. Even if some of the main tillers are injured or killed, producers should wait to see if enough other tillers have survived to compensate for the lost yield potential. Patience is the key.

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2. Spring musk thistle control

The musk thistle control season is now upon us. First found in Kansas in 1932, this statewide noxious weed is alive and doing well this spring. The Kansas Department of Agriculture reports that there are now nearly one million acres in Kansas infested by musk thistle. Nearly every county in Kansas has musk thistle. The species is known to occur on many sites, including rangeland, pasture, old alfalfa stands, fallow ground, fields, vacant lots, roadsides, railroad right-of-ways, and areas of disturbance.

Musk thistle is primarily a biennial or winter annual species. As a biennial, seed will germinate in the spring and plants remain as rosettes during the entire growing season. Upon surviving a winter, plants will bolt, flower, and produce seeds, thus taking parts of two growing seasons to complete their life cycle. Winter annuals emerge in the late fall with moisture. These plants will go through the winter, then produce seed the following year.

Young musk thistle plant. Photos by Walt Fick, K-State Research and Extension.

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Musk thistle reproduces only by seed. Thus, the goal of any control program is to reduce and/or eliminate seed production.

Control options include mechanical, biological, cultural, and chemical methods.

- Mowing at the bloom stage will prevent seed production, but it usually takes two or three mowings at 2-4 week intervals to kill musk thistle. Another option is to cut off individual plants 2-4 inches below the soil.
- The musk thistle head and rosette weevils can also help reduce seed production.
- Cultural control practices, including prescribed burning and good grazing management, can help keep musk thistle populations at reduced levels. Burning by itself will not kill musk thistle but can remove excessive amounts of litter than prevent good coverage when spraying. Areas with musk thistle should be sprayed about 10-14 days after burning. Proper burning can stimulate warm-season grasses that compete more favorably against musk thistle. Proper grazing that maintains and/or improves the vigor of competing vegetation can also help keep musk thistle populations down.
- Musk thistle plants are most easily controlled by herbicides applied during the seedling and rosette stages of growth. Common herbicides such as 2,4-D, dicamba, and picloram are very effective on rosettes. Products containing metsulfuron, chlorsulfuron, and aminopyralid are

also effective on musk thistle. Once plants begin to bolt, products such as picloram + 2,4-D (Tordon 22K + 2,4-D), metsulfuron + 2,4-D (Escort XP + 2,4-D), metsufuron + chlorsulfuron (Cimarron Plus), metsulfuron + dicamba + 2,4-D (Cimarron Max), or aminopyralid alone (Milestone) or in combination with 2,4-D (ForeFront HL or GrazonNext HL) are more effective. Products containing clopyralid (Curtail and Stinger) provide excellent control of bolted to bud stage thistles. Treat musk thistle before it starts to bloom. Although some herbicides such as metsulfuron have been shown to reduce seed viability when applied at the bloom stage it is unlikely that all seed production will be eliminated. It only takes one seed to keep the population going.

Herbicide recommendations for musk thistle control can be found in the *2015 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland* publications from K-State Research and Extension: http://www.ksre.ksu.edu/bookstore/pubs/SRP1117.pdf

Always read the label with particular attention to precautionary statements, grazing/haying restrictions, and rates of application.

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