Issue 457

K-STATE Research and Extension

Extension Agronomy

eUpdate

05/23/2014

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 | 05/23/2014 | Issue 457

1. Harvesting short wheat

In many areas of Kansas, prolonged drought has resulted in short wheat and thin stands. Harvesting wheat in these situations can be a challenge. Special attention needs to be given to cutting height, machine adjustments, and operator control. In short wheat, getting the heads into the combine with less straw will be a challenge. In some cases, the reel may not be able to effectively convey the wheat back from the cutter bar to the auger, nor hold it in place during cutting. Short cutting will also mean more contact potential with the ground and reduced levels of surface residue which can negatively impact cropping systems in water-limited environments.

In the case of material conveyance, stripper headers, air reels, and draper headers may be a great help.

Stripper headers

Stripper headers allow the grain to be harvested efficiently while leaving the maximum amount of standing residue in the field. Research has shown that this preservation of wheat residue can reduce evaporative losses of water after harvest, aid in the moisture retention of snow, and improve the yields of the next year's crop.

To properly use a stripper header, note the following:

Operators need to be aware of the rotor height and the relative position of the hood to the rotor. This position needs to be set correctly so that heads approach the rotor at the proper angle for stripping.

Keep the nose of the hood orientated so that the top of the wheat heads are even with, or slightly below, the forward point of the nose. This may require operating the header with the nose in a slightly lower-than-normal position relative to the rotor. However, it's important to note that running a stripper header lower than necessary will result in increased power consumption and finger wear.

Combine ground speeds should be kept high (above 4 mph) to maintain collection efficiency and minimize header losses.

Several people have reported that adjusting header height with a stripper header is not as critical as it is with a conventional header, and that a stripper header could easily be run by non-experienced people (see step 1).

Continue to adjust stripping rotor speed throughout the day as conditions change. If rotor speeds are too high, that will result in detachment of the entire head and unnecessary increases power requirements. Rotor speeds that are too slow will result in unstripped grain remaining in the head. In general, rotor speeds will be less in thin short wheat than in better stands.

Air reels

Air reels will also aid in the material conveyance from the cutter bar to the auger in reel-type units when crops are light or thin. These units are made in several different types including finger air reels, non-reel, and units that fit over existing reels. Examples of manufacturers are Crary (West Fargo, ND)

and AWS (Mitchell, Ontario Canada). Non-reeled units have the advantage of less eye strain from the continuously rotating header reel, but all units have collection efficiencies compared to conventional reels even in sparse or short crops. These units do not control the amount of wheat stubble left in the field and the operator still has to control the cutting height. In short wheat this may mean little to no field stubble will be left for next season's moisture collection and for these reason stripper headers may be better choice for certain areas of Kansas.

Draper headers and flex heads

Draper headers may also help with the conveyance of material since they have a very short distance between the cutterbar the conveyance belt. The ability to tip the cutterbar completely back will aid in keeping harvested crop material moving across the cutter bar and onto the belt as well as ensuring some stubble remains standing on the soil surface. Cleats on the belt need to be in good to new condition to maximize conveyance of crop material away from the cutterbar. Set gauge wheels properly to maximize cutting height and leave standing residue.

Flex heads will also help deal with the lower cutting heights and potential ground strikes. In thin stands of wheat it is even more important that sickles and guards are in good condition as there is not as much crop material to push, which would normally help ensure cutting by worn sickles and guards. On headers with finger reels it is quite likely that the short cut wheat will pass in between the fingers rather than being swept backward. Producers may consider adding material over or behind the fingers to act more as a bat to sweep the cutterbar clean. Plastic/vinyl materials or repurposed round baler belting have been successfully used for this purpose.

If harvesting with a draper or flex header, maintain the cutting height as high as possible to preserve standing stubble. Typically, cutting wheat at two-thirds of its full height will result in losses of less than 0.05 percent as any missed heads contain grain that will be lost as tailings during the harvesting process.

Conventional headers

Still for many farmers, new equipment may not be an economical choice and you may have to make do with a conventional head on your combine. In this case, adjust the reel to get the best movement of the heads from the cutter bar to the auger. Combining in slighter wetter conditions may help prevent shatter and decrease losses. If wheat heads have flipped out of the header from the top of the auger, an extra "auger stripper bar" may necessary. A small strip of angle iron can be bolted slightly behind and below the auger to help with material conveyance. In thin stands of wheat it is even more important that sickles and guards are in good condition as there is not as much crop material to push and ensure cutting by worn sickles and guards.

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Combine adjustments

In addition to material conveyance and cutting height, lower yields and uneven crop flow may also require performing combine adjustments to the concave/rotor cage clearance, cylinder/rotor speed,

and fan speed. Follow the manufacturer's recommendations. The leading cause of grain damage under almost any harvesting condition is overly fast cylinder or rotor speed. This will especially be evident in harvesting short wheat as there will be less material in the concave or rotor cage to thresh against, increasing the likelihood of grain damage if cylinder/rotor speed is too high.

On conventional machines it may be necessary to reduce concave clearance to attain good separation. On rotary combines it may be advantageous to maintain a typical clearance to provide a more normal threshing condition while using less threshing area. The use of blanking plates on the rotor cage may improve separation. You may have to lower the fan speeds slightly to minimize grain losses. Once adjusted properly, try to keep material crop flow as constant as possible as most threshing and cleaning units work best under these constant flow conditions. As the amount of material passing through the combine decreases the response to various settings such as cylinder/rotor speed, concave/rotor cage clearance, and fan speed will be more sensitive than under more normal operating conditions.

Performing kill-stops during harvest will be especially critical in evaluating grain losses and identifying which stage of the harvesting process is the source. After performing a kill-stop the operator should look at shattered grain losses before the header, losses after the header and before the spread pattern of the combine, and losses in the tailings behind the combine. Losses can be quickly checked by looking at the number of seeds in the tailings and elsewhere around the combine.

Typically, 20 seeds per square foot is equal to 1 bushel per acre for a sampling area equal to the cutting width of the combine. For the tailings area, where the material is concentrated, multiple the 20 seeds per square foot by the header-to-tailings width ratio. For example, a combine with a 7-foot spreader width and 28-foot header would have a factor of 4, and 80 seeds per square foot would be the correct number for a bushel-per-acre loss. Also, a normal shoe length is typically one foot, so estimated measurements can be done with your foot. Individual field and header losses are determined by looking at areas before and under the combine. Actual combine threshing losses are determined by subtracting these numbers from the tailing loss.

Summary

Although this maybe a rough year for many farmers, some changes can be made to help maximize harvest efficiencies. If you have ever wanted to try an alternate header (stripper, flex-draper, etc.), this maybe the year for you. For those not wanting to buy, renting may also be an option.

Producers in dryland production systems need to keep in mind that in very low-yielding wheat years anything that can be done to preserve what little crop residue is present will have huge impacts on evaporative losses and productivity of the next crop.

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2. Controlling large weeds in Roundup Ready soybean fields

Controlling large weeds is often considerably more difficult than controlling smaller weeds. The following are some suggestions for controlling larger troublesome weeds in soybeans.

Marestail

Marestail has become one of our most troublesome weeds in no-till crop production, especially in soybeans. Marestail tend to be difficult to control even when the plants are small and in the rosette stage, but become even tougher when plants get more than 6 inches tall. That is why fall and early burndown treatments are critical to the long-term management of marestail. Unfortunately, that doesn't always happen. In addition, there are populations of marestail that have developed glyphosate resistance in many areas. However, some marestail populations are still susceptible to glyphosate, and even resistant plants are not completely immune to glyphosate.

The most effective herbicide treatment for controlling marestail in Roundup Ready soybeans is probably a tank-mix of glyphosate plus FirstRate. The combination of the two herbicides seems to work better than either herbicide alone, even on resistant plants. It is important to use the full labeled rates of glyphosate and recommended adjuvants, including ammonium sulfate, to optimize control and help minimize the risk of developing more resistance. Other tank-mixes to consider with glyphosate for controlling marestail would include Classic and Synchrony herbicides. Unfortunately, some marestail may also be ALS resistant, in which case FirstRate, Classic, and Synchrony would also be fairly ineffective. This just further emphasizes the importance of early spring weed control. Liberty 280 herbicide has also provided fairly good control of large marestail as a burndown treatment or postemergence in Liberty Link soybeans.

Velvetleaf

Velvetleaf has sometimes been difficult to control with glyphosate. There are no confirmed cases of glyphosate-resistant velvetleaf, but it is not extremely susceptible to glyphosate. Several application factors can affect control, including time of day, hard water, ammonium sulfate, and environmental conditions. Velvetleaf control with glyphosate can be optimized by using full rates of glyphosate and ammonium sulfate (17 lb/100 gal of spray), spraying during the daylight hours, and spraying when the plants are under minimal drought stress. Herbicide tank-mix partners with glyphosate that may enhance velvetleaf control would include Resource, Cadet, Marvel, FirstRate, Harmony, and Synchrony.

Waterhemp and Palmer amaranth

These pigweed species used to be some of the most common weeds in soybean fields prior to Roundup Ready soybeans. Glyphosate applied early, and possibly again as a follow-up treatment was effective for many years, but because of the heavy reliance on glyphosate for weed control, glyphosate-resistant waterhemp has become fairly common in eastern Kansas and glyphosate-resistant Palmer amaranth has now been documented in several fields in central Kansas and appears to be rapidly increasing.

The best way to manage these pigweeds in soybeans is to use effective preemergence herbicides followed by postemergence treatment. However, if the preemergence herbicides weren't applied or didn't get activated in a timely manner, early-emerging pigweeds may not have been controlled and

can grow-0000000000p wild. Flexstar, Cobra, Marvel, and Ultra Blazer can be fairly effective for controlling small pigweed, but are less effective as the pigweed gets larger, especially Palmer amaranth. These herbicides also provide some residual weed control, so tank-mixes of these herbicides with glyphsosate should be applied within 3 to 4 weeks after planting to optimize performance. Pursuit and Harmony were once fairly effective for pigweed control and can still provide good control of susceptible populations, but many fields now have ALS-resistant waterhemp and Palmer amaranth.

Sunflower and Cocklebur

Fortunately, sunflowers and cocklebur are quite susceptible to glyphosate. However, these weeds are fast growing and often have multiple flushes of germination. It is important to use the full rate of glyphosate and get good spray coverage when trying to control larger sunflower and cocklebur. Tank-mixing Scepter or Classic herbicide with glyphosate may improve control and help provide residual control of later-emerging plants.

Conclusion

If weeds have gotten large, it's always best to start with the highest labeled rate of glyphosate, with the proper adjuvants, and add other herbicides as needed, depending on the weed species present. In most fields, there will be a combination of one of more of the weeds listed above, so producers will have to see how the herbicide options match up and select the best combination.

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3. Wheat head armyworms found in some Kansas fields

Wheat head armyworms are becoming more common, and thus more conspicuous, throughout north central and south central Kansas. This insect is only a very minor pest most years, but there are always a few (>1%) infesting most wheat fields.

They are not usually a problem; however, occasionally populations can occur to such an extent as to cause some damage to kernels in the field. Sometimes their feeding on the kernels may even result in wheat being downgraded by the buyers because of what they refer to as "insect-damaged kernels" (IDK).

Some of the fields sampled this week had numbers of these larvae that are a little higher than usual. The typical feeding position of these larvae is seen in photos 2 and 3 below, where they are feeding directly on the grain.

These pests are not common enough to have caused us to develop any kind of management or control recommendations. They also occur late enough relative to the development of the wheat that insecticide applications would be rather "iffy" and the post-harvest interval (PHI) of any insecticide selected would need to be carefully monitored to ensure label compliance.

Figure 1. Wheat head armyworm larva. Photos by Holly Davis-Schwarting, K-State Research and Extension.

Figure 2. Wheat head armyworm on wheat awn.

Figure 3. Closeup of wheat head armyworm on head of wheat.

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