k-state extension AGRONOMY e-Updates

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1. Corn weed control

For weed control in corn in Kansas, the most consistent herbicide programs in most cases start with some kind of preplant or preemerge residual product. This is true even if the producer is using a herbicide-tolerant hybrid, such as Roundup Ready corn, and planning to spray with a postemerge product.

With conventional corn, a preplant or preemerge residual herbicide is almost always needed for best control of broadleaf and grassy weeds until the corn has canopied. The only exception might be on fields with very low weed pressure, such as where good crop rotations with topnotch weed control have been used for maybe 10 years, along with no-till where the producer is not bringing dormant weed seed to the soil surface. In these cases, a single application of a postemerge herbicide may be all that's needed.

There are some good broad-spectrum postemerge herbicides for conventional corn (such as Celebrity Plus and Equip), and several herbicides that are effective on certain broadleaf or grassy weeds (2,4-D, dicamba, Accent, Beacon, Distinct, Exceed, Northstar, Option, Resolve, Resource, Status, Steadfast and others). The jury is still out on whether Impact can handle grass weeds well enough for broad-spectrum control. In all cases, these products are more effective if a residual herbicide is applied earlier to keep weed pressure under control for several weeks after planting.

With herbicide-tolerant corn (such as Roundup Ready, Liberty Link, or Clearfield), it's also a good idea in almost all cases to start the season with an application of a residual herbicide.

Why are residual herbicides needed when good postemerge herbicides are available? Three reasons.

1. Total postemerge herbicide programs require precise timeliness. Field corn is very sensitive to early-season competition from weeds. If weather conditions prevent the herbicide application from being made when the first flush of weeds is small (about 2 inches tall), then yield potential starts to decline.

2. The longer the post herbicide application is delayed beyond the optimal timing, the greater chance the weeds could become thicker and more difficult to control. A postemerge herbicide will not completely control dense weed infestations, even when sprayed at the appropriate weed size. The problem is that taller weeds can shelter smaller weeds from adequate herbicide coverage. Death of the taller weeds releases the smaller ones to grow more actively.

3. Herbicide-tolerant weeds are more likely to develop where only one herbicide, with one mode of action, is applied year after year. For example, a total glyphosate program on glyphosate-tolerant (GT) corn has some important disadvantages. For one, it strongly selects for weed biotypes that are tolerant to glyphosate. GT horseweed (marestail) has been confirmed in many states, including Nebraska. And GT waterhemp was recently confirmed just across the Missouri River. These GT weeds developed under a total glyphosate program.

These potential problems make the case for using either a full or reduced rate of residual herbicide. If a full rate is used, postemerge herbicides may not be needed at all.

In next week's e-Update, we'll discuss the options for full-rate and reduced-rate residual herbicide programs in detail.

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2. Applying topdress N to wheat after jointing

Despite the best of intentions, producers may not always be able to get their topdress nitrogen (N) applied as early as they'd like – primarily because of wet soils. Research in Kansas has shown that wheat yield response to applied N will be best if the N is in the root zone on or before jointing.

That doesn't necessarily mean that producers should avoid applying topdress N after jointing, however, if they could not get it applied earlier. If the crop has received only a portion of the planned nitrogen fertilizer, then an application made after jointing may still provide an economic yield response this year. Yield potential and wheat prices are good enough this year to justify it in most cases.

As the wheat continues to develop beyond the jointing stage, however, there is an increased chance that the topdress application could cause some mechanical injury to the wheat – unless it is applied aerially. After jointing, the growing point moves above the soil and can be damaged by tire traffic (or grazing cattle, for that matter).

Also, there is more chance that UAN solutions could cause leaf burn if they are applied under warmer conditions. If the upper leaves (flag leaf and leaves immediately below the flag leaf) are burned by UAN, some yield reduction may result.

If wheat plants are severely deficient in N, research has shown a yield response to fertilizer N applied as late as the boot stage. An application made this late is not likely to increase yields on wheat that is not severely deficient in N, however.

Keep in mind, however, that the effective date of topdress N applications is not the date the fertilizer is applied. The effective date of topdress applications is the date that the applied N is moved into the root zone with precipitation or irrigation.

In summary, producers may still get an economic yield benefit this year from topdressing N after jointing if timely moisture is received in order to move the N into the root zone. They should get their topdress N applied as soon as possible, however. By the time the flag leaf begins emergence, the potential for damaging the crop likely outweighs the possible yield benefit.

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3. Causes of poor wheat growth

In some cases, wheat is not coming out of winter well where the soils have warmed up in recent days. The plants may have died over the winter, or are greening up and growing very slowly while other fields are growing rapidly.

There may be several causes for poor wheat growth, such as:

* Drowning. Where water has ponded for 3 to 4 days or more under relatively warm conditions, wheat that had come out of dormancy and started to green up can die or be severely set back.

* Poor root growth. Soil conditions in much of Kansas were very dry until Christmas, and this caused many plants to have poor root development going into winter. This can cause plants to get off to a slow start this spring, and to show signs of nitrogen deficiency. It can also make plants more susceptible to winterkill or desiccation.

* Plants growing in loose, fluffy soils. In many cases, wheat with poor growth is being found this spring in soils that are loose and fluffy on the surface. It is more difficult for

roots to develop and grow normally under these conditions, causing topgrowth to be very slow.

* Shallow planting depth. Where the seed is planted to shallowly, the crown will be too close to the surface. This often results in poor early-season growth and development, and makes the plants more vulnerable to winter injury.

* Winter grain mites. Plants weakened by a heavy infestation of winter grain mites will be slower to recover this spring. In some cases, the mite infestations were heavy enough to either kill some plants or result in winterkill or desiccation losses.

There is often a combination of these factors at work in a given field, making it hard to tell which problem is most at fault. In any case, wheat that has lost most of its tillers and starts off growing very slowly in the spring will probably have reduced yield potential – although good conditions later this spring can help offset the problem.

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These e-Updates are a regular weekly item from K-State Extension Agronomy. 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 Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader
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