1. Kochia control in sunflower and soybeans

The development of populations of kochia resistant to either ALS-inhibitor herbicides, glyphosate, and/or triazines in Kansas means that producers may have to put a little extra time and effort into controlling this tough summer annual broadleaf weed. Control can still be achieved in almost all cases in both sunflower and soybeans, especially if: (1) a combination of herbicides is used with different modes of action, and (2) control measures begin early in the spring.

Control in sunflower

It is important to plant sunflower into a weed-free seedbed. This will help in getting good season-long control of all broadleaf and grassy weeds. But it is especially important for getting good control of any weed populations, such as kochia, that may be resistant to glyphosate or ALS-inhibitor herbicides.

The best approach to kochia control in sunflower is to start with an early preplant burndown treatment in early April to control the early emerged plants. Although glyphosate-resistant kochia has been confirmed, it is a moderate level of resistance. Proper application timing, glyphosate rate, and the addition of ammonium sulfate are still important to provide as much kochia control and suppression as possible.

In the burndown treatment, use a minimum of 0.75 lb ae/a glyphosate in combination with ammonium sulfate when kochia is less than 2 inches tall. Combinations with other herbicides will also be beneficial, but labeled preplant options in sunflowers to control emerged kochia are limited. Aim is one herbicide that has good activity on small kochia and could be used as a tank-mix at the rate of 1 oz/A for enhanced early season control. 2,4-D could also be added to the tankmix to help with broadleaf control, but 2,4-D generally is not very effective for control of kochia. A waiting
interval of 30 days is required between 2,4-D application and planting sunflowers. An early April application should allow for enough time for timely sunflower planting.

The other burndown option to control emerged glyphosate-resistant kochia ahead of sunflowers would be Gramoxone Inteon. Gramoxone Inteon is a contact herbicide, so adequate spray volumes and thorough coverage are essential for good weed control. Gramoxone Inteon should be applied in combination with 0.5% v/v nonionic and on a warm sunny day for best results.

A second preplant herbicide application of glyphosate or Gramoxone Inteon plus Spartan plus either Prowl H₂O or Dual II Magnum should then be applied about two weeks prior to planting. Spartan herbicide can provide good residual control of germinating kochia as long as the herbicide is activated by moisture, but probably will not control emerged kochia. The Prowl H₂O or Dual II Magnum are primarily for residual control of grasses but Prowl H₂O in particular can enhance control of kochia compared to Spartan applied alone. Spartan Charge is a premix that contains Spartan and Aim for added burndown. Spartan Advance is a premix of Spartan plus glyphosate.

Postemergence control options are determined by the type of sunflower planted. There are no postemergence herbicide options labeled for kochia control in conventional sunflowers, although this should not be a problem if the two-pass preplant strategy above is used and the Spartan is activated by moisture.

If Clearfield sunflowers are used, producers can apply Beyond herbicide as a postemergence treatment. If Express sunflowers are used, producers can apply Express herbicide postemergence. Both of these herbicides are ALS-inhibitors. They will be effective in controlling kochia only if the kochia populations present are not resistant to ALS-inhibitor herbicides.

In most cases, the difficulty in getting good kochia control in sunflower comes when producers try to make just one preplant herbicide application instead of two. If producers try to do everything with one application about two weeks or so prior to planting, there can be some large kochia plants present by that time. It then becomes more difficult to get complete foliar control with the various preplant burndown options. If sunflower is not planted into a weed-free seedbed, weed problems are almost certain to crop up in-season and cause yield reductions or create a need for postemergence treatments, which may or may not be effective.

**Control in soybeans**

The presence and potential spread of glyphosate-resistant populations of kochia in western Kansas has created special problems for soybean producers in that region. Over-the-top applications of glyphosate are still the primary and most economical means of controlling broadleaf weeds and grasses in Roundup Ready soybeans, but it can no longer be the only weed control approach used where glyphosate-resistant weed populations are present.

The best management strategy for controlling kochia in soybeans is similar to sunflowers, but there are more herbicide options in soybeans than in sunflower. Glyphosate, Gramoxone Inteon, and Aim use guidelines in soybeans are the same as for sunflower.

Clarity up to 8 oz/acre can be applied preplant to soybeans, but requires a minimum accumulation of 1 inch of rain and a 14-day waiting interval before planting soybeans. Higher rates of Clarity up to
16 oz/acre require a minimum of 28 days prior to planting soybeans. Clarity should not be used as a preplant treatment in soybeans in areas with less than 25 inches of annual precipitation.

Sharpen at 1 oz/acre and OpTill (Sharpen + Pursuit premix) at 2 oz/acre can also be used to help burndown and provide early season kochia control. With these herbicides, it is essential to use methylated seed soil (MSO) at 1% v/v minimum of 1 pint/acre and AMS or liquid nitrogen. Both herbicides can be applied any time prior to soybean emergence.

The use of residual herbicides containing either Authority- (same active ingredient as Spartan in sunflowers) or Valor-based products with the second burndown treatment closer to planting can provide good control of kochia into the growing season. There are several premix products that contain either Authority or Valor. Be sure to consult the label for pH restrictions and crop rotation guidelines with the various mixes. If glyphosate-resistant kochia is suspected, producers should consider using the higher labeled rates of these products for their specific soil types to enhance the length of residual control. Good kochia control in soybeans has been achieved with these products in research at K-State. Producers cannot use an Authority- or Valor-based product in conjunction with Sharpen or OpTill unless there is at least a 30-day period between application and planting soybeans.

Unfortunately, there are not many postemergence herbicides in soybeans that provide good kochia control other than glyphosate. Thus, controlling the kochia prior to planting and using a residual herbicide may be critical if glyphosate-resistant kochia is present. Pursuit or Raptor could be tank-mixed with glyphosate to help with control of non-ALS-resistant kochia. Using Ignite herbicide postemergence on Liberty Link soybeans would be another option. However, a good preplant residual weed control program would still be recommended in the Liberty Link program.

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2. New avenue for on-farm research in Kansas: Farmer Crop Database

With the advent of yield monitors in the field, many producers are doing their own side-by-side comparisons of plant populations, fertilizer treatments, planting dates or many other agronomic factors. These comparisons are useful to the producer, but it would be even more helpful to be able to find out what other producers in the area are doing as well.

For that reason, K-State Extension agronomists have developed the “Farmer Crop Database,” with a first-year goal to present the results of producers’ on-farm corn population tests across Kansas. If a producer is planting a comparison for himself or for a seed company, he or she can also enter the information into the database. This will allow everyone to view the results of all other population comparisons throughout the state.

If the pilot is successful this first year, we hopefully will be able to expand the database to all
crops with some outside support and make the database more interactive.

Interested producers can register and log into the website www.agronomy.ksu.edu/cropsdatabase.

We ask that if a grower is interested, he or she use at least four of the following corn seeding rates: 10,000, 12,000, 14,000, 16,000, 18,000, 20,000, 22,000, 24,000, 26,000, 28,000, 30,000, 32,000, 34,000, 36,000 or 38,000 seeds per acre. All planting information for the sites will need to be entered into the system by the end of June. Yield information will be entered in by the end of December. At the end of the year, everyone will be able to view all of the planting and yield information from each site.

Our ultimate goal is to help Kansas crop producers gain more information to make more informed decisions.

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3. Wheat conditions in south central Kansas

We inspected wheat fields in Sedgwick and Sumner counties on Thursday, March 24. For the most part, wheat is in very good condition in this area. Growth and development accelerated quickly during the early part of the week when daytime temperatures were in the 80s and nighttime temperatures were in the 50s. It was not uncommon in these counties to find the growing point between 1 and 2 inches above the crown, well into First Hollow Stem stage. In Montgomery County, the growing points were as much as 5 inches above the crown, based on field visits made on March 25.

Stage of wheat development in southern Sedgwick County on March 24, 2011. The growing point has extended more than an inch-and-a-half above the crown. Photo by Doug Shoup, K-State Research and Extension.
At this stage of growth, the maximum potential head size has been determined. Hopefully, all nitrogen that the producer had planned to apply has already been applied and is available in the root zone. Any cattle grazing should have come to an end well before now.

We found quite a bit of light green to yellowing wheat. In most cases, this is due to poor fall root development. Where root systems are still underdeveloped, the plants haven't taken up a lot of nitrogen yet. These symptoms should fade as growing conditions improve.

Wheat showing light green or yellowish areas in northern Sumner County on March 24, 2011. Poorly developed root systems have caused the plants to have a temporary nitrogen deficiency in these areas. Photo by Doug Shoup, K-State Research and Extension.

Not all yellowing is due to shortened root systems and temporary nitrogen deficiency, however. We also found some barley yellow dwarf.
Barley yellow dwarf symptoms in wheat in southern Sedgwick County on March 24, 2011. Photo by Doug Shoup, K-State Research and Extension.

With barley yellow dwarf, the tips of the leaves will usually be yellow, but may also be purplish on some varieties.

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4. Wheat Yield Contest entry deadline extended to April 8

Extreme weather conditions throughout Kansas have prompted the Kansas Wheat Commission (KWC) to postpone the entry deadline of the Kansas Wheat Yield Contest to April 8.

Justin Gilpin, chief executive officer of the KWC, says the extra time will allow farmers to evaluate their wheat stands and give the crop a chance to thrive, and thus make important management decisions to maximize yield.

Three $1,000 cash prizes and several potential bonus awards are at stake for wheat growers who enter the 2011 Kansas Wheat Yield Contest, sponsored by the KWC and Kansas Association of Wheat Growers.

Producers achieving the top yield receive a $1,000 cash prize and plaque. Contest winners will be announced next summer. The contest includes three regions: Region 1 (Western Kansas),
Region 2 (Central Kansas) and Region 3 (Eastern Kansas). Entry deadline for the 2011 Wheat Yield Contest is April 8.

New for 2011, farmers will be eligible to participate in a “Quality Initiative” of the Wheat Yield Contest. Each contest participant will be asked to submit a 5-pound sample of wheat from the contest field. The quality of that sample will be evaluated by the Kansas Grain Inspection Service for dockage, test weight and protein. Top scoring samples will be further tested at the Kansas State University Wheat Quality Laboratory, where milling and baking attributes will be evaluated. The sample with the top quality score will receive a $250 cash prize.

High yields may capture the spotlight, but high quality captures the market, according to Aaron Harries, KWC Director of Marketing. Good yields and quality can go hand in hand with the right management practices. Ultimately, good quality is what can differentiate U.S. wheat in a competitive global marketplace, he says.

For more details on the Wheat Yield Contest, and directions on how to enter the contest, see: www.kswheat.com

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5. Comparative Vegetation Condition Report: March 8 – March 21

K-State’s Ecology and Agriculture Spatial Analysis Laboratory (EASAL) produces weekly Vegetation Condition Report maps. These maps can be a valuable tool for making crop selection and marketing decisions.

Two short videos of Dr. Kevin Price explaining the development of these maps can be viewed on YouTube at:
http://www.youtube.com/watch?v=CRP3Y5N1ggw
http://www.youtube.com/watch?v=tUdOK94efxc

The objective of these reports is to provide users with a means of assessing the relative condition of crops and grassland. The maps can be used to assess current plant growth rates, as well as comparisons to the previous year and relative to the 21-year average. The report is used by individual farmers and ranchers, the commodities market, and political leaders for assessing factors such as production potential and drought impact across their state.

The maps below show the current vegetation conditions in Kansas, the Corn Belt, and the continental U.S, with comments from Mary Knapp, state climatologist:
Map 1. The Vegetation Condition Report for Kansas for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows snow continued to be a feature. The March 14 storm produced snowfalls ranging from an inch to up to nine inches in a narrow area of north central and northeast Kansas. Unfortunately, the snows in western Kansas did not translate to large amounts of precipitation. In the western divisions, this amounted to a quarter of the normal precipitation or less.
Map 2. Compared to the previous period at this time for Kansas, this year’s Vegetation Condition Report for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that the warmer temperatures and lower-than-average precipitation are resulting in below-average photosynthetically active biomass. Exceptions can be seen in parts of central Kansas as a result of the late-February moisture in that region.
Map 3. Compared to the 22-year average at this time for Kansas, this year’s Vegetation Condition Report for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows greater-than-average photosynthetically active biomass in south central Kansas. This is primarily due to warmer-than-average temperatures over the period.
Map 4. The Vegetation Condition Report for the Corn Belt for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows the snowpack retreating over the Illinois, Indiana, and southern Iowa regions. Parts of Kansas saw a late spring snowstorm. That snow quickly melted. By March 21, the end of the current period, snow was confined mostly to North Dakota and Northern Minnesota.
Map 5. Compared to the 22-year average at this time for the Corn Belt, this year’s Vegetation Condition Report for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows the area of dormant vegetation has moved further north. Increased photosynthetic activity can be seen in areas of western Iowa, north central Nebraska, and western South Dakota. Warmer-than-normal temperatures have also fueled greater photosynthetic activity in south central Kansas.
Map 6. The Vegetation Condition Report for the U.S. for March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows that brief snow across Kansas and central Missouri from the March 14 storm. By the end of the period (March 21) snowcover had retreated to North Dakota and Northern Minnesota, as well as areas of New England.
Map 7. The U.S. comparison to the 22-year average for the period March 8 – 21 from K-State’s Ecology and Agriculture Spatial Analysis Laboratory shows the retreating snowpack has moved the area of dormant vegetation northward. In Illinois, Indiana, and Ohio, flood warnings continue along the Ohio and Mississippi Rivers, which continues to slow vegetative photosynthetic activity. In Texas and Oklahoma, the drought impact can be seen with below-normal photosynthetic activity in these areas.

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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, or Jim Shroyer, Research and Extension Crop Production Specialist and State Extension Agronomy Leader 785-532-0397 jshroyer@ksu.edu