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1. Residual herbicide options for Roundup Ready soybeans

Some farmers have good reasons for wanting to apply something other than strictly glyphosate to their Roundup Ready soybeans. Producers may want to:

- Get early season control of weeds and grasses so that only one postemergence application of glyphosate is needed instead of two.
- Provide some residual weed control before and following the postemergence glyphosate.
- Provide some assistance to glyphosate in controlling certain hard-to-control or glyphosate resistant weeds.
- Use a second herbicide mode of action to prevent or delay the development of glyphosate-resistant weeds.

In developing an alternative to the exclusive use of postemergence glyphosate treatments on Roundup Ready soybeans, it is useful to know what weeds or grasses are being targeted. Some good options for the most common weed and grass problems include:

* Pigweeds (including waterhemp and Palmer amaranth). For early-season pigweed control, the Valor-based herbicides (Valor SX, Valor XLT, Gangster, Envive, and Enlite) and Authority-based herbicides (Authority First, Sonic, Authority Assist, Authority MTZ, and Spartan) can all provide very good to excellent control to supplement a postemergence glyphosate program. Prefix is another excellent “foundation” herbicide for residual pigweed control in soybeans. Intro, Dual, Outlook, and Prowl products can also provide early-season pigweed control, but generally are not quite as effective as those previously mentioned products.

* Velvetleaf. Glyphosate is not always entirely effective on velvetleaf. To assist in velvetleaf control, the Valor-based and FirstRate-based herbicides (Valor SX, Valor XLT, Gangster,

Authority First, and Sonic) are some of the most effective preplant and preemergence herbicides you can use.

* Cocklebur. The most effective preplant and preemergence herbicides to aid in cocklebur control are those that contain First Rate, Classic, or Scepter. Such products would include Authority First, Sonic, Gangster, Envive, and Valor XLT. Extreme, which is a premix of glyphosate and Pursuit, can also be used as a preplant or postemergence treatment in Roundup Ready soybeans to provide residual cocklebur control.

* Marestalk. There are populations of marestalk in Kansas that are resistant to glyphosate. Marestalk control in Roundup Ready soybeans should begin with a preplant burndown program that includes 2,4-D at least 1 week ahead of planting and before marestalk has started to bolt. A new option for marestalk control in soybeans without a preplant waiting interval is the pair of Kixor-containing products, Sharpen and OpTill. Sharpen is Kixor alone, while OpTill is a premix of Kixor and Pursuit. Both products can be used anytime before soybean emergence (cracking). To optimize marestalk control with Sharpen and OpTill, spray before marestalk gets too big, use an adequate spray volume to insure good spray coverage, and apply in combination with a methylated seed oil. Other residual preplant herbicides that can help with burndown and residual marestalk control include FirstRate-based herbicides, such as Authority First, Sonic, or Gangster. Marestalk is best controlled before soybean planting and the marestalk begins to bolt. FirstRate would probably be the most effective alternative to glyphosate for postemergence marestalk control in Roundup Ready soybeans.

* Morningglory. Glyphosate sometimes has trouble controlling morningglory. To help get better control, you can use either Authority-based or Valor-based herbicides preplant or preemergence.

* Crabgrass and other small seed grasses. Glyphosate usually gives good control of most grasses, but producers may want to apply a foundation herbicide to control grasses early, then make just one postemergence glyphosate application later. Prefix, Intro, Dual II Magnum, Outlook, and Prowl H2O can all provide good early season grass and pigweed control ahead of Roundup Ready soybeans. Of these, Prefix generally provides the best pigweed control, and Prowl H2O the least.

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2. Controlling problem broadleaf weeds in Roundup Ready corn

A postemergence application of glyphosate in Roundup Ready corn usually does a good job of controlling most broadleaf and grassy weeds. But there are times when control of certain broadleaf weeds with glyphosate is not adequate.

The following is a list of some of the most common broadleaf weed problems in Roundup Ready corn, both in eastern and western Kansas, and some of the most effective herbicides that can be tank mixed with glyphosate to help control each of these problem weeds.

* Waterhemp and Palmer amaranth. Waterhemp and Palmer amaranth are vigorous weeds, with multiple buds on a plant. This requires thorough spray coverage. These are small-seeded

pigweeds that emerge throughout the summer, unless there is a thick crop canopy to shade the ground. Some populations of waterhemp have become resistant to glyphosate. Callisto, Impact, Laudis, and Capreno contain HPPD-inhibiting (mode of action) herbicides that can be tank-mixed with glyphosate to help control waterhemp and Palmer amaranth. Lumax or Lexar, which contain Callisto, and Corvus or Balance Flexx are other HPPD-inhibiting herbicides effective for pigweed control. Lumax and Lexar contain S-metolachlor and atrazine, and Corvus contains Balance Flexx and thienencarbazone-methyl (a grass herbicide), which also will provide good grass control. Apply Corvus or Balance Flexx with atrazine only when applied postemergence (up through 2-leaf stage) to corn. These herbicides will provide varying degrees of residual control for late-emerging waterhemp and Palmer amaranth. Status, which is Distinct with an added crop safener, will also help control waterhemp and Palmer amaranth. Status will provide a little residual activity. Instead of applying glyphosate alone or with a tankmix herbicide, you could also make a single application of Halex GT, a premix that includes a high rate of glyphosate along with some Callisto and S-metolachlor.

* Velvetleaf. Velvetleaf is sometimes not controlled adequately by glyphosate alone. This may be due to the time of day glyphosate is applied, poor choice of AMS replacement product in the glyphosate, the condition of the plants, or other factors. As with the pigweeds, adding Callisto, Impact, Laudis, Lumax, Lexar, Capreno to the glyphosate can help with velvetleaf control. Corvus or Balance Flexx must be applied preemergence up through 2-leaf corn. Another option is to tank mix glyphosate with Cadet, Aim EW, or Priority (a premix of Aim EW and Permit, an ALS herbicide). One of the concerns about a tankmix of Aim and glyphosate, however, is that the Aim might reduce the ability of glyphosate to translocate to the growing points in the plant.

* Morningglory. This is another broadleaf weed that is not always controlled well with glyphosate. Adding Status (Distinct plus a crop safener) to glyphosate is one of the best ways to improve morningglory control in Roundup Ready corn. Aim EW and Priority can also help with morningglory control. Callisto, Impact, and Laudis may not be the best choice if morningglory is a severe problem, although if a pound of atrazine is added, these herbicides can be very effective. Actually, 2,4-D is very good on morningglory as well.

* Kochia. Kochia is like Palmer amaranth in some ways. It is a small-seeded broadleaf weed that can emerge all through the summer. This weed can escape control with glyphosate alone unless it is actively growing and is thoroughly covered by the spray. To improve control and gain a little residual control, producers can tank mix glyphosate with Status, which is Distinct with a crop safener added. Status will also give excellent control of pigweeds, and good control of velvetleaf. Another option would be to tank mix glyphosate with Callisto, Impact, Capreno, Laudis, Lumax, or Lexar. If Corvus and Balance Flexx plus atrazine are applied preemergence or early post, they can be very effective in controlling kochia.

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3. Checking wheat for winter injury

The recent severe cold in Kansas may have some producers concerned about winter injury on their wheat. It's normal for well-established wheat to look a little "ragged," or show some wear and tear from being under severely cold temperatures for several days. This can cause the leaves

to be purple or they may be brownish or yellowish, but this is just cosmetic damage most of the time and not a source of concern.

The biggest concern would be for the crown of the wheat if soil temperatures get too low. The following situations would be most likely to cause concern:

- * Where wheat is very small and poorly developed for this time of year – which would typically be the wheat planted very late.
- * Where there is no snow cover.
- * Where the soils are dry.
- * On ridge tops and north-facing slopes.

Typically, we don't start to worry too much about winter survival of wheat until temperatures at crown level (usually 1-2 inches deep) get below 10-12 degrees F. Where there is snow cover, soil temperatures will not get that cold. Where there is no snow cover, soil temperatures will depend on how much moisture is in the ground, how cold it gets, and how long it has been cold.

Where the wheat does not have snow cover right now, it might be a good idea to monitor soil temperatures at the 1-2 inch depth if you can starting this weekend. If you are concerned about the possibility of winter injury, wait until the weather warms up above freezing and dig up some plants from different fields. Put the plants in pots and bring them inside. After a week or so inside, the plants should start to green up. If plants do not green up after 10 days or so, you should go out and take more samples before making any decisions.

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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