

Managing Weeds in Non-GMO Soybeans

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While Roundup Ready technology continues to dominate the soybean acreage in Kentucky, there are areas where premiums for Non-GMO soybeans have attracted growers. The non-GMO approach to weed management in soybeans requires a higher level of management skills compared with those used for Roundup Ready soybeans. Growers who are accustomed to using glyphosate solely for 'in-season' control of weeds will have to get reacquainted with some of the old and newer herbicide chemistries. Extension publication "Weed Control Recommendations for Kentucky Grain Crops" (AGR-6) is a good source to comparing specific products.

In order to ensure success in non-GMO soybeans, avoid fields with a high population of weeds. Fields with a history of poor control associated with resistance to ALS inhibitors (Acetolactate Synthase) or PPO (Protox) inhibitors should also be avoided.

Soybean injury can occur with certain herbicides, particularly when stressed from adverse environmental conditions. Also, be aware that certain additives can enhance injury from postemergence herbicides. Designated soybean varieties should be planted to avoid injury with some herbicides. For example, use STS-soybean varieties in fields to be treated with Synchrony XP herbicide.

Another factor to consider with a few soybean herbicides is their persistence in soil and potential injury to rotational crops. Rotational crop injury is generally not a problem in Kentucky; however, it can occur with herbicides containing chlorimuron (e.g. Classic or Canopy), imazaquin (Scepter), imazethapyr (Pursuit), and clomazone (Command).

BURNDOWN HERBICIDES FOR NO-TILL PLANTINGS:

Start with clean fields at planting. Therefore, use a burndown herbicide that controls a broad spectrum of weeds such as glyphosate, paraquat, or glufosinate (Ignite 280 SL) before or at planting. The addition of 2,4-D Ester at 0.5 to 1 lb ae/A will improve control of problem broadleaf weeds, such as marestail (horseweed). Observe label precautions for minimizing risk of injury to soybean, especially the minimum number of days between application and planting. Do not use 2,4-D ester if sensitive crops such as seedling tobacco occur in nearby greenhouses or float beds. Where it is not feasible to use 2,4-D ester, the addition of products containing chlorimuron or cloransulam helps in the burndown control of seedling marestail plants (providing marestail plants are not resistant to ALS- type herbicides).

SOIL - RESIDUAL HERBICIDES:

Soil-residual herbicides help control weeds over a period of time following application. In some instances soil-residual herbicides allow flexibility in the timing for applying a postemergence treatment. Furthermore, in some cases season-long weed control is provided without the need of a postemergence treatment. Many soil-residual herbicides also have foliar activity that provides burndown control of small weed seedlings, but will not control

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a broad spectrum of weeds.

When selecting a soil-residual herbicide, consider the mode or site of action and its potential to control problem weeds. Many of the soil-residual products used to control problem broadleaf weeds contain either an ALS inhibitor, PPO inhibitor, or both. Resistance of weeds to ALS and PPO inhibitors is a significant problem in a number of states. The fact Kentucky has not documented any cases of PPO resistance and only a few cases of ALS - resistant smooth pigweed, is good news for utilizing ALS and PPO inhibitor herbicides. However, it is important not to overlook the potential for developing ALS or PPO resistance which could severely limit options for managing problem broadleaf weeds that commonly occur in Kentucky. Growers need to observe and manage problems early before they spread on a large scale basis.

Soil - residual herbicides that are typically used to manage grasses in soybeans can be effective for controlling annual grasses such crabgrass, foxtails, and fall panicum but are not effective on controlling volunteer corn or johnsongrass.

POSTEMERGENCE HERBICIDES:

Post treatments used to control broadleaf weeds in non-GMO soybeans need to be timely and in most instances should be applied when weeds are approximately 4 to 6 inches in height. This may require some advanced planning, particularly if custom applicators are hired.

Many postemergence herbicides used for broadleaf weeds are also ALS or PPO inhibitors; therefore, use caution to minimize use of these modes of herbicidal activity in both soil-residual and postemergence programs. Alternating herbicide with different modes of action, even when planting RR-soybeans, should be a long-term goal to help limit the development of herbicide resistant weeds.

Assure II, Fusion, Poast, and Select MAX are examples of postemergence herbicides that control a broad spectrum of grasses including such problem weeds as volunteer corn and johnsongrass. Grass control is often reduced when these herbicides are applied as a tank mix partner with postemergence broadleaf herbicides. Consult product labels to determine if application rates for postemergence grass herbicides should be adjusted when tank mixed with other products.

The following table illustrates there are significant herbicide costs associated with managing weeds in non-GMO soybeans. While the cost of non-GMO soybean programs seems high, they are often comparable to those for Roundup Ready or Liberty Link soybeans when you factor in the additional cost of the seed trait royalties.

Table 1. Approximate Cost of Weed Management Programs for Non-GMO, Roundup Ready, and Liberty Link Soybeans

Non- GMO

Preplant Burndown + Preemergence + Postemergence (\$41 to \$77/A)

Roundup Ready

Royalty for Seed Trait + Burndown + Postemergence (\$43 to \$59/A)

Royalty for Seed Trait + Burndown + Preemergence + Postemergence (\$55 to \$75/A)

Liberty Link

Royalty for Seed Trait + Burndown + Postemergence (\$42 to \$50/A)

Royalty for Seed Trait + Burndown + Preemergence + Postemergence (\$54 to \$66/A)