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Other Articles of Interest:

- Weed Control Guide for Ohio and Indiana
- Control of lambsquarter in Corn and Soybean.
- Management of Giant Ragweed in Roundup Ready Soybean Fields with a History of Poor Control
- Cressleaf Groundsel in Indiana
- Poison Hemlock Control in Corn and Soybean

When Should Weeds be Treated with Postemergence Herbicides?

Timing of postemergence herbicides for maximum efficacy is critical. While all fields cannot be sprayed at the ideal weed height according to the label due to rain, high winds, or not being able to get to a field on a timely basis, it is still critical to treat weeds as close to ideal times as possible. When the critical time period is missed, knowing how weeds respond to herbicides will allow you to predict the performance of that application. This can help in determining what additional management practices may be needed to achieve acceptable weed control.

Starting with a weed-free field at planting time; from a good burndown, early preplant herbicide, or tillage; provides the best chance of giving the crop a head start on weeds. When weeds emerge before or at the same time as the crop, maximum competition between the weeds and the crop comes in the second to fourth week after crop emergence. This time span will depend on the soil moisture and temperature available to the plants. Weed Scientists use a phrase “Critical Period for Weed Control” to describe the time when weeds should be controlled to keep

them from competing with crops. When a preplant or preemergence herbicide provides weed control at planting, the critical period is the time needed for the herbicides to provide control while the crops gets established, so that later emerging weeds will have minimum effects on crop yield. This period of control is usually the first four to six weeks in the life of the crop. Annual weeds that emerge after the critical period for weed control will not only have a minimum yield impact, but will also produce fewer seeds to replenish the soil seed bank. They can however, interfere with harvest efficacy, which may contribute to some yield loss or reduced grain quality.

The longer the herbicide application is delayed beyond the critical period for weed control, not only does competition increase, but also weeds are taller and more mature, making them harder to control. With delayed applications, environmental conditions become less favorable for herbicides to be absorbed and move to sites of action in the weeds to completely kill them. Older, taller weeds get less herbicide coverage and thicker leaf cuticles with dust on them decrease the absorption of herbicide solutions.

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Giant ragweed



Lambsquarter

For annual weeds, best results are seen when the applications are made to small plants growing under good environmental conditions and receiving complete spray coverage. Think of the control obtained when spraying a two to six inch tall giant ragweed compared to a two to three foot tall giant ragweed. For perennial weeds, which are usually found in a field at lower populations in patches, the best results occur with translocated herbicides when the plants are taller and transitioning from the vegetative stage to the reproductive growth stage. This is usually just prior to or during bloom stage of the plant. Treating small rapidly growing perennial plants usually only provides temporary top kill and regrowth occurs. Taller more mature plants provide a greater opportunity for the herbicide to translocate throughout the plant, increasing the chances of obtaining complete control.

Most postemergence herbicide applications are timed for annual grasses and broadleaf weeds that comprise the majority of the weed population in a field. Additional applications are needed for the

perennial weeds that are present. The following figures show the response of annual and perennial weeds to herbicides over the course of their lifecycle. These figures show how annual weeds are best controlled early in their lifecycle when they are small, while perennial weeds are more susceptible to translocated herbicides later in their lifecycle. The success of a translocated herbicide to control perennial weeds is dependent on timing the application to coincide the plant translocating food sources (sugars) to reproductive areas within the plant. The success of any herbicide to control annual weeds is timing the application to provide good coverage to the plants when they are small, prior to the time they begin to compete with the crop. In most cases, one application will be made to control both annual and perennial weeds present in that field with the timing of the application made for the annual weeds. This does not mean that perennial weeds will not be controlled; it only means that if the growth stage of the perennial weed is small, then the chances of regrowth is greater than if it were closer to the bloom stage.

Information listed here is based on research and outreach extension programming at Purdue University and elsewhere.

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