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Preventing early-season weed competition

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Abstract
Controlling weeds with a total postemergence program can be accomplished consistently in both corn and soybean with the highly effective herbicides available. However, achieving both effective weed control and maximum yields requires good management and Mother Nature's cooperation. This article focuses on the importance of application timing in controlling weeds that emerge with corn.

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Weeds, such as foxtail, that emerge with corn can affect yields quickly if control is delayed.

The critical period for early-season competition defines how long weeds can remain in the field before they begin to impact crop yields. The critical period varies widely, depending on specific conditions (for example, weed species and density, emergence timing of weeds, environment, soil fertility, and row spacing). Michigan State University researchers reported that corn yield losses occurred when applications were delayed beyond weed heights of 4 and 6 inches. The weeds reached this stage 20 and 25 days after planting, respectively. In a north central regional project involving 22 sites, the critical period for early-season giant foxtail competition ranged from a height of 4 to 12 inches. The corn stage at which yield losses reached 5 percent in several Ontario, Canada, experiments ranged from the 3- to 12-leaf stage (includes leaves emerging from whorl). In terms of days after planting, the 5 percent yield loss occurred between 12 and 50 days.

Steve Knezevic (University of Nebraska) recommends basing postemergence application timing on corn stage rather than weed height. He reported that the time when yield losses reached 5 percent ranged from V1 to V7. The critical period was affected by nitrogen application, with shorter critical periods occurring with low amounts of nitrogen, implying that farmers relying on sidedress nitrogen need to control weeds earlier in the season than those who apply their nitrogen before planting.

Our inability to predict when weeds begin to affect crop yields places farmers using total postemergence programs at a certain level of risk. However, the risk of early-season yield losses can be minimized by making applications early to small weeds, or by using an integrated approach of a preemergence treatment followed by a postemergence application or a split postemergence program. Some growers "willingly" accept early-season yield losses by delaying postemergence applications to minimize problems with late-emerging weeds.
A simple method of reducing risks of early-season competition is to plan on making applications when weeds emerging with the crop approach 2 to 3 inches in height. This timing should protect yields in all but the worst scenarios. Applications made at this stage fall within label recommendations for weed size on almost all products and reduce problems associated with reduced spray coverage of larger weeds. In addition, planning on early treatment provides the applicator flexibility in situations where weather (wind and rain) prevents getting to the field.

The importance of not waiting until early-emerging weeds reach larger sizes to spray is due to their rapid growth. Although initial weed growth is relatively slow, they reach the stage of rapid growth much more quickly than crops. Under ideal conditions foxtail can grow from a 2- to 4-inch height in only 3 days. Waiting for weeds to reach a 4- to 6-inch height to treat puts the applicator in a situation where unfavorable weather can create real problems, especially in situations where weeds emerge with the crop. If weeds emerge later than the crop, application delays may not threaten yields but may reduce herbicide effectiveness.

Total postemergence programs can provide effective weed control and optimum yields with careful management. However, relying totally on post herbicides creates a narrow window of application to protect crop yields from early-season competition, especially in fields with high weed pressure. Targeting applications for weeds at the 2- to 3-inch height provides applicators some protection when adverse weather delays applications.

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