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Weed management in a dry spring

Robert G. Hartzler
Iowa State University, hartzler@iastate.edu

Brent A. Pringnitz
Iowa State University, bpring@iastate.edu

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Abstract
To be effective, preemergence herbicides need to be moved from the soil surface into the soil zone where most weed seeds germinate, typically the upper inch of soil. The majority of farmers rely on rainfall to accomplish herbicide placement within the profile. Most herbicides will require at least a half-inch of rain for incorporation; the specific amount varies with soil type and initial soil moisture.

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This article presents some considerations for early-season weed management during dry springs.

Preemergence herbicides

To be effective, preemergence herbicides need to be moved from the soil surface into the soil zone where most weed seeds germinate, typically the upper inch of soil. The majority of farmers rely on rainfall to accomplish herbicide placement within the profile. Most herbicides will require at least a half-inch of rain for incorporation; the specific amount varies with soil type and initial soil moisture. In a dry year the likelihood of control failures due to herbicide remaining on the surface obviously will increase, especially with herbicide applications made near planting. This risk can be reduced by applying the herbicide several weeks ahead of planting, therefore increasing the probability of receiving sufficient rainfall before weed emergence. If seedbed preparation tillage is conducted after herbicide application, it should not incorporate the herbicide greater than 2 inches in depth.

Preemergence herbicides are less active in dry soils than in soils at or near field capacity, even when placed at the proper position within the profile. As soils dry, a greater proportion of the herbicide is adsorbed to soil colloids and less is available to plants. Thus, the importance of scouting in the first few weeks after crop emergence is more important in years with limited moisture than in springs with ample moisture following planting.

Winter annuals

The weather conditions the past few years have favored the development of winter annual weeds, and this year is no different. These weeds (e.g., shepherd's purse, field pennycress, downy brome) can be especially damaging in dry years because they deplete soil moisture reserves and may hinder crop establishment. Fields with a high density of winter annuals may benefit from an early burndown application rather than waiting for planting. Controlling winter annuals now will conserve soil moisture and reduce the amount of vegetation present at planting. Winter annuals under water stress will require higher rates of burndown herbicides to be controlled.

Winter annuals can deplete soil moisture and hinder planting operations.

Rotary hoeing

The rotary hoe is the forgotten implement for too many farmers. Timely rotary hoeing can overcome the negative effects of dry weather on preemergence herbicides and eliminate the need for unplanned postemergence herbicides. Timing of the rotary hoe is based on stage of weed development--it should be conducted after weed seeds have germinated but before shoots have emerged (white root stage). The only way to determine this is to get out in the field and sift through the soil. The old rule of rotary hoeing 5 to 7 days after planting may not work due to the earlier planting dates that most farmers use today.

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