

Weed Management During a Drought

HERBICIDE EFFECTIVENESS AND MECHANICAL MEASURES

Dry weather after planting causes many concerns, including the impact of weeds on annual crops. Many herbicides lose effectiveness during dry periods; growers who use herbicides on corn and soybean crops are likely to be affected. Fortunately, an awareness of herbicide effectiveness and the aggressive use of mechanical weed control measures can make a difference.

SOIL-APPLIED HERBICIDES

- ◆ *Preplant incorporated herbicides.* These are applied before planting and mixed into the soil. They work best when:
 - a) the product is mixed uniformly with soil to the depth recommended by the manufacturer;
 - b) soils have reasonable moisture levels after incorporation has been completed.

If the soil is only slightly dry, incorporated herbicides generally perform adequately. Seldom is it so dry early in the season that incorporated treatments fail. In a true drought, however, they may not give acceptable weed control. Therefore, be prepared to cultivate if weeds appear.

- ◆ *Pre-emergence herbicides.* These depend totally upon rainfall after applications to “activate” the product. Rainfall positions the chemical in the upper soil surface where the weed seeds germinate; there is no chemical change as perhaps the term “activate” suggests. To obtain adequate herbicide activity, however, rain must fall within 10 to 14 days after the seedbed was prepared. Without such precipitation, pre-emergence herbicides generally fail to give acceptable weed control even if a true drought does not develop. Therefore, mechanical weed control may become critical within weeks of planting. Two examples:
 - a) If a field is prepared to plant on April 30, corn is planted on May 1 and a pre-emergence herbicide is applied on May 2, rainfall of at least one-quarter to one-half inches is needed within 10 to 14 days to assure adequate performance. If rainfall does not occur by May 12, the grower should begin rotary hoeing.
 - b) If a field is prepared on April 30 and corn is planted on May 10, followed by pre-emergence herbicide on May 11, plan to rotary hoe on May 12 unless rainfall is very likely in the immediate future.

As illustrated above, when planting and spraying are close to the field preparation time (example a), there is more time to get the needed rainfall to make a surface-applied herbicide perform adequately. As time between field preparation and spraying increases (example b), there are fewer days after an application to get a timely rain. Thus, rotary hoeing becomes necessary sooner.

ROTARY HOEING

Rotary hoeing kills weeds that have germinated but have not yet emerged. These weeds are in the “white root” stage of development. After weeds emerge, rotary hoeing is less effective. Rotary hoeing also helps place the herbicide in the upper soil surface so that when rains do fall, the herbicide is in a better position to be quickly taken up by weed seedlings and hopefully kill them. If it has not rained within seven days of the first rotary hoeing, make a second pass with the rotary hoe to kill the next generation of weeds.

POST-EMERGENCE HERBICIDES

Post-emergence herbicides also may fail in dry weather. These treatments work best when weeds are actively growing. When weeds are stressed by lack of adequate soil moisture, chemical control declines. If you decide to apply post-emergence herbicides under very dry conditions, be aware that crop injury may occur and weed control will be poor.

CULTIVATION

In all situations, be prepared to cultivate once or twice following rotary hoeing. Some growers mistakenly believe that soil loses more moisture when cultivated. But remember that weeds transpire water into the atmosphere every day they are in the field; the longer weeds live, the more soil moisture is lost and unavailable for the crop, and the harder they are to eradicate. So it is always a wise decision to cultivate weeds early on.

- ◆ Cultivate when the weeds are relatively small and the crop is large enough (at least 4 inches tall) to allow you to roll some soil into the row without covering the crop.
- ◆ The crop should be at least three times as tall as the weeds when the first cultivation is done (for example, the crop is 6 inches tall and the weeds are 2 inches or less tall). This way, the weeds in the row can be covered with minimal effect on the crop.
- ◆ The cultivator need not be set any deeper than a couple of inches to dislodge the weeds; little if any moist soil will be brought to the surface.
- ◆ A second cultivation can be done when the crop is 14 to 18 inches tall. This requires timely mechanical practices, but keep in mind that in drought years, a few uncontrolled weeds cost more in reduced yield than in years with ample moisture.

Additional resources:

Your county agricultural agent

Related publications:

UW-Extension publication “Reduced Herbicide Rates: Aspects to Consider,” (A3563).