

AGRONOMIC Spotlight



Technology
Development
by MONSANTO ®

Preemergence Herbicide Damage to Corn and Soybeans in Cool, Wet Weather

Cool, wet weather in the spring can lead to crop injury when using preemergence (PRE) herbicides. This injury is usually temporary in most fields, and does not result in crop yield loss. Where significant herbicide injury occurs, it is usually associated with other stress factors that can reduce the crop's tolerance to the herbicide.

PRE Herbicides and Cool, Wet Weather

Corn and soybeans tolerate most labeled for use PRE herbicides by metabolizing or breaking them down into non-toxic compounds. The rate of metabolism depends on the herbicide, crop, soil moisture and temperature. When the crop is growing under favorable conditions, the herbicide is rapidly metabolized. However, when the crop is growing under stress, its ability to metabolize the herbicide can be slowed down enough that injury symptoms can develop.

Wet soil conditions can increase the amount of herbicide that is available for uptake by the plant. Cold soils and cool temperatures can slow the plant's ability to metabolize the herbicide. Under these conditions, the potential for crop injury can increase.



Other stress factors in cool, wet weather can produce injury symptoms that look like injury from PRE herbicides. Corn (left) was planted early in wet soil where crusting occurred, resulting in leafing out below ground, and after emerging, leaves were twisted and did not unroll properly. Soybeans (right) were planted too deep, resulting in stand reduction, stunting, crinkled and cupped leaves. These symptoms look similar to acetanilide (acetochlor, metolachlor) injury that can be produced in cool, wet weather.

Other factors can increase the risk of crop injury from PRE herbicides in cool, wet weather. These include soil compaction and soil crusting that can be caused by working wet soil, affecting a plant's root development and seedling emergence. Deep planting can cause plants to leaf out under ground and result in poor emergence. Soil-applied insecticides coming into contact with germinating seedlings can cause injury that is aggravated by cold, wet conditions. Organophosphate insecticides can slow down the crop's metabolic rate of some herbicides, especially sulfonylureas, causing herbicide injury. Seedling diseases under these conditions can also provide stress to the crop, increasing the potential for herbicide injury.

Crops with certain genetic backgrounds can also be more sensitive to crop injury under cool, wet weather conditions. Hybrids and varieties having poor seedling vigor can show a greater injury response and inability to recover under these environment-induced stress conditions.

Minimizing Injury in Cool, Wet Weather

It is important to ensure that soils are fit when fieldwork is conducted, to provide a good seedbed and a less stressful environment if conditions turn cool and wet. Removing residue over the row can be beneficial to help soils dry out sooner and warm up for good seed germination. When applying PRE herbicides, follow specific precautions on the herbicide label. Note when weather conditions can result in crop injury, and plan applications accordingly. Seed company information and herbicide labels can indicate if certain corn hybrids or soybean varieties may be sensitive to specific herbicides. Using seed treatments can help to minimize or reduce crop stress under these conditions.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Technology Development by Monsanto and Design® is a registered trademark of Monsanto Technology LLC. ©2011 Monsanto Company. 05032011TED