

Non-Target Herbicide Injury on Plants

Introduction Herbicides are useful tools for managing weeds, but sometimes injury to desired plants can occur. This injury is referred to as non-target injury, or damage to plants other than the target weeds intended to be controlled by the herbicide application.

The Schutter Diagnostic Laboratory (SDL) at Montana State University (MSU) is a service provided through MSU Extension. One of our roles is assisting producers, weed management professionals, and home gardeners with diagnosis of non-target herbicide injury.

This issue is a continuing concern in Montana for farmers, gardeners, and anyone else concerned about plant health. For example, from 2013 through 2019, plant samples assessed for herbicide injury symptoms by the SDL have ranged between 60 and 125 samples annually.

Causes of Non-Target Injury Many different factors or situations can lead to non-target injury. Common causes include herbicide drift and herbicide carryover (photo, above), operator error and faulty application equipment, and environmental and plant factors that make herbicide injury more likely such as soil type or weather (e.g. frost, drought).

How to Diagnose Herbicide Injury Determining if non-target herbicide injury is the cause of a plant health issue involves assessing multiple types of evidence. The investigator sees the end result of an issue and must work backward to try to determine the cause. Diagnosing herbicide injury requires accurately describing symptoms and finding as much information about the situation as possible. In some cases, the cause of the problem may be very straightforward, and in other cases more investigation, research, and critical thinking is needed. It is important to ask questions about the site characteristics, weather, herbicides applied, and pattern of injury at the site and on plants. It is also important to understand herbicide symptoms and how different types of herbicide affect plants (photo, above). Finally, there are disease and insect issues that may look like herbicide injury symptoms, so these factors need to be ruled out as the cause of the problem.

How to Prevent Herbicide Injury The best way to prevent many instances of non-target herbicide injury is to read and follow label directions. Another way to prevent non-target injury is to apply herbicides using equipment that is calibrated and appropriate for the application setting. Finally, keep good records. Knowing what herbicide was applied, when it was applied, and at what rate can help to avoid unwanted injury to crops and other desired vegetation and may help explain injury if it does occur.

Even with the best practices to prevent non-target herbicide injury, it may still occur. For more information on how to diagnose non-target herbicide injury, see our new guide available at the MSU Extension publications website. The guide is available to [order as a hard copy](#), as a [downloadable PDF](#), and as an [HTML website](#).



Lentil field affected by herbicide carryover (photo: CG Ag Consulting).



Pea plants showing symptoms of sulfentrazone herbicide exposure (photo: Tim Seipel, MSU).

