



Battling Glyphosate-resistant Weeds

Experts recommend alternative methods for weed control.

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Photo courtesy Weed Science Society of America

Weeds such as ragweed have developed a resistance to glyphosate, a commonly used herbicide. In a recent presentation to the EPA, representatives from the Weed Science Society of America reported nine U.S. weed species to have developed a resistance to glyphosate, the most widely used weed-control method for farmers and gardeners.

Many farmers rely almost exclusively on glyphosate throughout the growing season. However, using a single herbicide increases the odds that the weed population will shift to resistant plants that are able to escape treatment and compete with crops for moisture and nutrients, the WSSA warns.

Unfortunately, it is too late to prevent glyphosate resistance from developing," said David Shaw, WSSA president. "It's a problem that is already with us. The challenge now is to adopt effective management techniques that can keep resistance from spreading.

"A common recommendation offered by university scientists for preventing or managing resistance is to rotate herbicides used. Shaw says farmers initially were slow to recognize the seriousness of glyphosate resistance and adopt rotation methods."

"One issue may have been the mistaken perception that adopting resistance-management practices will cost more since glyphosate tends to be very affordable," he said.

Harriet Behar, an organic specialist at the Midwest Organic and Sustainable Education Service, also recommends farmers test their soil for nutrient imbalances, including in trace minerals.

"Many weeds are actually indicators of soil that is not in balance," Behar said. "When [farmers] start balancing their soils, they end up not having as many of those weeds."

By increasing the amount of organic matter in the soil, farmers and gardeners can achieve a better nutrient balance as well as make the soil looser and loamier so that weeds can be more easily pulled by hand, she said.

In a four-year research project now underway in six key agricultural states (Illinois, Indiana, Iowa, Mississippi, Nebraska and North Carolina), researchers are comparing the economics of herbicide-resistance management programs with the use of glyphosate as an exclusive treatment for weed control. As of the end of the third year of the study, researchers say the net returns on fields managed according to recommended best practices are equal to or greater than the returns on those where glyphosate is used alone. Increased yields appear to offset any increase in herbicide costs.

When glyphosate was first introduced for weed control, its unique way of inhibiting protein synthesis and growth in plants led many to believe that resistance would not be an issue," Shaw said. "Obviously that prediction was wrong. However, best management practices can slow the development of resistant weeds, and one effective approach is to rotate glyphosate with herbicides that work very differently."

According to Behar, for those who decide to implement organic methods of weed control, the soil also becomes more resilient under weather stresses, such as drought, also leading to higher crop yields.

Small-scale farmers and gardeners who use Roundup or other brand-name herbicides that contain glyphosate should adopt a broad set of weed management techniques, the WSSA recommends.

"By rotating the types of herbicides used and by complementing them with hoeing, hand-pulling, black plastic and other nonchemical weed control measures, we can prevent or delay resistance and preserve glyphosate as an effective weed control tool," Shaw said.