Feed your crop, not the weeds

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If you have weed problems in your cropping system, will adding nutrients just feed the weeds?

Not necessarily, say Clain Jones and Fabian Menalled, Extension specialists in the Department of Land Resources and Environmental Sciences at Montana State University.

"Generally, if you fertilize a weed-infested crop, then the weeds often benefit more than the crop," Jones said. "However, cultivation practices and select timing and placement of nitrogen and phosphorus fertilizer can be used to control weed populations and reduce the inputs required to control weeds."

Minimizing soil disturbance helps reduce germination of some weed species, but encourages others, so repeated years of minimal or no till practices with the same crop can cause a gradual increase in weeds.

Crop rotations help reduce weed populations, Menalled said, as do planting the crop at high seed density and close row spacing to promote higher crop yields at the expense of weeds.

"The trick," Jones added, "is to find the density and spacing pattern that optimizes yield without the crop competing too much with itself."

One way to feed the crop and not the weeds is to place nutrients where the crop has better access.

"Side-banding, seed-placing or injecting liquid fertilizer gets the nutrient to the crop roots, so the crop has first access," Jones said. "These are much better options than broadcast fertilization to help with weed control."

This is supported by work done by Robert Blackshaw and colleagues with Agriculture and Agri-Food Canada in Lethbridge, Alberta. In-soil bands of nitrogen generally decreased the competitive advantage of cheatgrass, foxtail barley and wild oat in spring wheat. This may be even more important with phosphorus than nitrogen, as the study found many weed species responded more to increases in available phosphorus than nitrogen.

The results vary with the crop and weed species, said the specialists. They added that the key is to get a "pop-up" effect by supplying nutrients at seeding in the crop root zone so the crop seedling gets a head start and can out-compete the weeds. New slow-release fertilizers may be another tool in weed control, as they can be placed with the seed at much higher rates than conventional fertilizers.

Timing of fertilization also influences weed populations.

"Applying nitrogen in the fall rather than spring sometimes increases opportunistic weeds, such as winter annuals, and can also favor perennial weeds if there is sufficient rain to move that nitrogen deeper in the profile," Jones said.

However, that does not mean you should only apply fertilizer in the spring. It means that it helps to know the feeding habits of your specific weeds and crops, say both specialists.

Spring applications are best done right before the beginning of the crop's period of high demand. In wheat, Jones said, this suggests fertilizing

before tillering. Later applications benefit weeds such as annual rye, which feeds heavily throughout the growing season.

The specialists added that cultivation, crop rotation, and timing and placement of fertilizer all offer options to nurture crops rather than weeds in an integrated weed management system that increases crop yields and decreases costs of weed control.

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