



Dealing with glyphosate-resistant grass

Although glyphosate has long been used to control unwanted weeds in general, and grassy weeds in specific, some of that control is waning as grasses develop resistance to the herbicide. This spreading resistance is prompting the use of herbicides with different modes of action.

1 Is glyphosate resistance spreading?

Yes. Rigid ryegrass was initially reported as being resistant to glyphosate in 1998¹ and now more than 30 weeds have been identified with glyphosate resistance globally.² This includes several types of grassy weeds found in multiple locations both across the U.S. and internationally. Some of these resistant grasses include annual bluegrass, goosegrass, barnyard grass, Johnsongrass, jungle rice and annual ryegrass.

2 How can glyphosate-resistant grass be controlled and why is it important?

Weeds have always been a challenge for farmers, as they steal water and nutrients from growing crops. The competition they create can also damage yields – even grasses with minimal density like giant foxtail can reduce corn yields by 13–14%.³

A range of control options can be used to address resistant weeds, including applying herbicides with multiple or different modes of action, rotating crops and using mechanical control practices. Scouting and keeping records of past herbicide applications can also be helpful. However, caution is needed because some herbicides that are used to kill unwanted grasses can also damage corn.

For example, FOP herbicides were not traditionally used to control glyphosate-resistant grasses in corn fields because conventional corn is susceptible to the herbicide. But new corn hybrids with tolerance to FOP herbicides – like PowerCore® Enlist® corn – are now available. In a field trial, FOP application provided 97–99% control of glyphosate/glufosinate resistant weeds but had no negative effect on corn with the Enlist® trait.⁴

3 Is corn with the Enlist® trait the only technology with FOP tolerance?

Yes. PowerCore Enlist corn is tolerant to 2,4-D choline in Enlist® herbicides, glyphosate, glufosinate and FOP herbicides. This specific group of tolerances is not available from any other technology on the market.

Tolerance to FOP herbicides is important, because they can be used to address unwanted, glyphosate-tolerant grasses providing another tool and an additional mode of action for farmers.⁵ FOP-family herbicides have a group one site of action, are lipid synthesis inhibitors and include quizalofop, fluazifop and diclofop.⁶

¹ Boerboom, Chris, and Michael Owen. "Facts about glyphosate-resistant weeds." *Glyphosate, Weeds, and Crops Series*. Purdue University Extension. December 2006.

² Heap, Ian and Stephen Duke. "Overview of glyphosate-resistant weeds worldwide." *Pest Management Science* 74, no.5 (May 2018): 1040–1049. <https://onlinelibrary.wiley.com/doi/10.1002/ps.4760>.

³ "Michigan's Worst Weeds: Giant Foxtail." Michigan State University Extension. Accessed March 15, 2022. <https://www.canr.msu.edu/weeds/extension/giant-foxtail>.

⁴ Striegel, Adam, Nevin Lawrence, Stevan Knezevic, Jeffrey Krumm, Gary Hein, and Amit Jhala. "Control of glyphosate/glufosinate-resistant volunteer corn in corn resistant to aryloxyphenoxypropionates." *Weed Technology* 34:3 (2020): 309–317. doi:10.1017/wet.2020.41.

⁵ Hartzler, Bob. "Why in the world is Enlist corn resistant to the Fop herbicides?" Iowa State University Extension and Outreach. Accessed March 15, 2022. <https://crops.extension.iastate.edu/encyclopedia/why-world-enlist-corn-resistant-fop-herbicides>.

⁶ "Corn and Soybean Herbicide Chart." *Glyphosate, Weeds, and Crops Series*. University of Wisconsin Extension. January 2013.

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