

# Volunteer corn creates control challenges

Extensive corn lodging caused by high winds and thunderstorms can leave behind a weed problem that may take some growers by surprise—volunteer corn. Ignoring this weed is costly, particularly when soybeans are planted. Volunteer corn is very competitive, stealing moisture, fertility, sunlight and yield from both soybeans and corn. Even worse, volunteer corn left in the field past silking can encourage western corn rootworm and gray leaf spot disease to invade a subsequent corn crop.

Research by South Dakota State University, the University of Minnesota and the University of Nebraska–Lincoln (UNL) show volunteer corn ranging from 800 to 13,000 plants per acre can steal up to 54% of soybean yield and 13% of corn yield. Clumps of volunteer corn from dropped ears are more competitive. UNL research found 3,500 corn clumps per acre reduced soybean yields by 40%, while the same population of single plants cut yields by 10%.

Additionally, since most hybrid corn carries corn rootworm (CRW) resistance traits, a heavy population of volunteer corn in soybeans can nullify crop rotation benefits to help manage the insect. If it's not controlled early, late-pollinating volunteer corn is highly attractive for CRW beetles to feed and lay eggs. Sub-lethal doses of *Bt* toxins in volunteer corn plants can also increase resistance evolution to *Bt*-CRW traits.

## Crop rotation considerations

Volunteer corn is easier to control in soybeans than in corn thanks to more grass herbicide options in soybeans. The challenge becomes keeping track of the traits used before soybeans to build the best control plan.

For growers with volunteer corn issues in soybeans that rotate to corn, or for those who desire continuous corn after a severe volunteer corn infestation, there are some key strategies to follow, depending on trait use.

"The widespread adoption of glyphosate and glufosinate-resistant elite hybrids make both of these popular herbicide compounds ineffective for controlling volunteer corn the following year," says Amit Jhala, UNL Extension Weed Management Specialist.

If it's certain the volunteer corn from the previous year contained only the glyphosate-resistant trait, glufosinate can be applied to control the volunteer corn if a glufosinate-resistant hybrid is planted. Glufosinate will not be effective if glyphosate and glufosinate traits exist in the volunteer corn.

## Other options

Given typical continuous-corn production in Nebraska, Jhala and colleagues conducted research in 2018 and 2019 to determine if the integration of Enlist® corn could control glyphosate + glufosinate-resistant volunteer corn. Enlist corn is resistant to 2,4-D, glyphosate and the aryloxyphenoxypropionate herbicides (FOPs) and is commonly integrated into glufosinate-resistant germplasm. Research objectives were to evaluate volunteer corn control with quizalofop (Site of Action Group 1 FOP herbicides) and the effect of early-versus late-postemergence application.

"Our studies showed very effective control of glyphosate + glufosinate-resistant volunteer corn with quizalofop, both early-post and late-postemergence control," Jhala says. "We saw 94% to 99% control of volunteer corn at two weeks after early-post application, and 97% to 99% control at 28 days after early-post and late-postemergence applications, all with no Enlist corn injury."

Jhala notes that rotation to soybeans after Enlist corn is important—because FOP herbicides will not control Enlist volunteer corn. However, DIM-based herbicides such as clethodim or sethoxydim can effectively control Enlist corn volunteers in soybeans.

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