Slow waterhemp progression in soybean fields

"If waterhemp gets away from a farmer once, they'll likely pay the price in their soybean fields for the next decade," says Ron Geis, Market Development Specialist, Corteva Agriscience. Today, waterhemp is known as one of the worst weeds Midwest farmers have to tangle with each season, but it wasn't always this way. Native to North America, waterhemp was just a plant that kept more to marshy areas than farm fields. In the last 25 to 30 years, however, waterhemp populations have exploded.

"As we've become more reliant on herbicides for weed control, waterhemp populations have escalated," Geis says. "And for many years, our herbicides only utilized a single mode of action, which allowed waterhemp to adapt and become resistant to many products." Geis says there are three key attributes that have made waterhemp increasingly difficult to control:

1 **Prolificacy —** Waterhemp is a prolific seed producer and able to produce as many as 1.5 times more seeds than most other pigweed species. Waterhemp plants generally produce about 250,000 seeds per plant, although some plants can produce 1 million or more seeds under optimum conditions in noncompetitive environments.[1] "Imagine if every seed produced germinates the following year. If a farmer is lucky enough to have 99.9% control, that will still leave them with 100 survivors," Geis warns.

2 **Cross-pollination —** Because waterhemp is dioecious, meaning there are male and female flowers on separate plants, there is potential for greater genetic diversity within a population than for most agronomic weeds.[1]

Cross-pollination allows for healthier populations. If either the male or female plant develops resistance, the offspring will carry the resistant trait moving forward.

3 **Season-long emergence —** Waterhemp has an extended emergence period, which allows waterhemp plants to surface late in the soybean-growing season. "Plants that emerge in late August are still able to produce seed," Geis says. "Maybe not a million, but certainly several thousand—which keeps the waterhemp cycle going."

Slow the waterhemp evolution

The chances of waterhemp evolving resistance to herbicides that utilize a single mode of action is very high. That's why it's important to implement a program approach that incorporates multiple modes of action. In fact, Geis recommends using between seven and nine modes of action over a two-year rotation cycle.

A program approach means starting clean with a burndown, using powerful preemergence herbicides with residual activity and then using effective postemergence herbicides that also have residual activity.

In addition to using a strategic combination of herbicides, farmers can implement several cultural practices to control waterhemp, such as:

- Planting soybeans in narrow rows to promote earlier row shading and discourage the growth of waterhemp.
- Deep tillage to reduce the amount of waterhemp seeds that germinate by burying them at unfavorable depths.
- Planting fall-seeded cover crops like cereal rye. "Keeping weeds from going to seed is a farmer's best defense for long-term waterhemp management," Geis concludes.

[1] "Waterhemp," Take Action (United Soybean Board), accessed January 24, 2023, https://iwilltakeaction.com/weed/common-waterhemp.

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