

Lessons in resistance

By CECIL H. YANCY JR.

DEALING with resistance is a learning experience, says Larry Steckel, a weed scientist with University of Tennessee Extension.

Take 2006, for example. A dry late March and early April hampered the activation of dicamba and led to large, glyphosate-resistant horseweed at planting. The weed had gotten its start the previous August and September. By the time cotton planting rolled around in west Tennessee, horseweed populations were 20 to 30 per square foot.

"The dicamba wasn't being picked up through the roots of the horseweed," Steckel says. "The horseweed sat there for six weeks and finally shook off the dicamba, which resulted in growers having to live with it."

The experience in 2006 led to a new recommendation of going earlier in March with the burn-down application and dicamba.

"I'm not opposed to late February, because earlier in the year horseweed is a lot smaller, and in early March the soils tend to be moist and wet," Steckel told growers over the winter.

Since horseweed first arrived on the scene in west

Key Points

- Tennessee has had glyphosate resistance since 2000.
- Researchers have continued to tweak their control approach.
- Experts suggest residuals and earlier application of burn-down.

Tennessee in 2000, there have been a lot of learning experiences from research.

Bob Hayes, now director of the West Tennessee Research and Education Center in Jackson, remembers a poster by Mark van Gessel, University of Delaware weed scientist, at the Weed Science Society of America meeting in 2000.

"I looked at his poster," Hayes recalls. "He had photos of what it looked like — resistant and susceptible types of horseweed. I came back to Tennessee in February and, lo and behold, we got a call from Jerry Parker, the Lauderdale County Extension director, saying one of his growers was having a problem with horseweed."

History in horseweed

Soon calls about glyphosate-resistant horseweed started coming in from other northern west Tennessee counties, including Gibson. Hayes remem-



VETERAN WEED-WATCHER: Bob Hayes was the University of Tennessee's weed scientist when glyphosate-resistant horseweed first emerged as a problem.

bers researchers and growers in other states referring to horseweed as a "Tennessee problem," and then it started cropping up in other places.

"You can go somewhere and hear a talk about a particular problem for growers in another area, but until you experience it yourself, it may not register with you," Hayes says.

A year later, it appeared at the research stations.

"If there's a positive to come out of this," Hayes says, "it has helped pave the way where people are more aware of glyphosate-resistant weeds."

The emergence of glyphosate-resistant horseweed followed a six-year period where glyphosate was used almost exclusively in cotton and other herbicide-tolerant crops. In short, widespread use of one chemical led to selection pressure among weed species — the classic definition of weed resistance.

Work at research stations in Jackson and Milan led to a recommendation of using Roundup in combination with Clarity. "We looked at just about every-

thing that could work," Hayes adds. Those recommendations have since been tweaked to include residuals, along with fall application. "We're beyond the Roundup era to the Roundup-plus-something era."

In the past six years, researchers have continued learning more about the biology and management of horseweed. For example, crop residue has an effect on horseweed emergence.

"Small-seeded broadleaves need light, so you might keep that in mind when switching to corn this year," UT's Steckel says. "We should have less horseweed pressure next year."

"You can live with a few horseweeds," Steckel says. "The threshold is five plants per square foot of row." Left unchecked through the two-leaf stage, however, horseweed can chop yields 40%. Leave horseweed to itself through first bloom and the yield reduction increases to 70%.

Three years ago, weed resistance caused no-till acres to drop in Tennessee. No-till acres have since rebounded.

Agrisure RW raises doubts

By WILLIE VOGT

A new corn trait approved for grain planted in the U.S. this season is getting a lot of attention. While industry sources worry over Agrisure RW and its lack of approvals in key export markets, farmers have snapped up hybrids with the trait, helping maker Syngenta Seeds have a first-year sellout. The product, which offers another approach for controlling corn rootworm, was approved by USDA in March.

Corn with the trait would be planted on less than 0.5% of corn acres this year, Syngenta reports. Yet, a wide range of industry, trade, food and even transportation organizations have delivered a resounding message: Great technology, but wait for Japan's approval or take responsibility for managing the repercussions of its release.

At press time, the grain from Agrisure RW was not approved for import in any export market including Japan, Mexico, Korea and Canada, although all are pending.

Syngenta, which has invested heavily in the technology, delivers a different message: "Why let another country's regulatory program delay our growers' use of technology?" says Chuck Lee, head of Syngenta corn products. The trait developer says farmers have the ability to channel this grain and keep it out of the export market by selling it to feed users and to dry-grind ethanol plants that don't export their coproducts. Syngenta contends the market has changed thanks to rising demand for corn.

"The market has not changed," says Martin Barbe, chairman of the National Corn Growers Association Biotech Working Group. The Illinois farmer worries that putting this new trait into the field without approval by a major corn customer could hurt business. "If a grower makes a mistake with this, there will be trouble. These countries have zero tolerance [for traits that are not approved]. We aren't letting another country control our use of technology; we are delivering what our customer wants."

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NO-TILL ZONE: Tillage is not always successful at controlling glyphosate-resistant horseweed, says Larry Steckel, University of Tennessee Extension.

Cotton especially vulnerable to weed resistance

WEEED scientists say the success in managing glyphosate-resistant horseweed was a matter of choice. Growers had options from which they could choose residuals that work well with glyphosate.

With glyphosate-resistant pigweed, however, that's not the case. Beyond glyphosate, which at one time was the choice for pigweed control, there are not

a lot of control measures. Ninety-percent control of pigweed still looks like a forest. Multiple resistance to glyphosate, ALS and DNA herbicides makes pigweed a monster. Noted Arkansas weed scientist Ford Baldwin says glyphosate-resistant pigweed will make soybean rust look insignificant.

Georgia has a major problem with glyphosate-resistant pigweed. Tolerant

populations have been identified in Tennessee and Arkansas. Researchers are concerned about the unknowns presented by pigweed and pigweed hybrids that are developing.

With the farm bill debate shining a light on cutting programs, cotton is in an especially vulnerable position, says Bob Hayes, director of the West Tennessee Research and Education Center.

Multiple weeds with resistance mean increased control costs. In Georgia, for example, control costs for glyphosate-resistant pigweed range from another \$45 to \$92 an acre in severe cases where hand-hoeing is necessary.

"The question is, if our cotton program is cut significantly, can we still grow cotton competitively?" Hayes asks.