

Resisting Resistance: Innovators Step Up Management To Fight Weeds

GREENSBORO, N.C.

Who says you have to lose the battle to win the war? Not Resistance Fighters. Since 2001, weed scientists and companies, like Syngenta, have been recommending various techniques to manage against glyphosate-resistant weeds. And, an army of revolutionary growers and retailers have been listening, taking notes and taking action.

"2008 has the potential to be an explosive year for glyphosate resistance," said Chuck Foresman, Syngenta technical brand manager for weed resistance. "Years of continued use of glyphosate, its increased market share in several crops and weather conditions could combine to create a perfect storm for resistant weed emergence."

According to Foresman, some experts expect the number of U.S. crop acres with glyphosate-resistant weeds to double this year to 10 million. There are currently nine weeds that have been confirmed resistant to glyphosate in the U.S., including Palmer amaranth, giant ragweed, common ragweed, waterhemp, Johnsongrass and marestail (horseweed). Many other weeds, including lambsquarters are under close scrutiny by weed scientists in various states.

"Proactive producers implemented steps to success years ago, and flexible growers adjusted their management plans when problems started," said Foresman. "If you haven't already done it, now is the time to join the fight."

A Pre is Pro

"When Roundup Ready® soybeans were first introduced, I asked 'If all we're spraying is this on our beans, what about weed resistance?'" said Ohio retailer Greg Spencer. "Not many saw it as an issue then."

Now general manager of Harvest Land Co-op Inc., in Pittsburg, Spencer is among those who are outsmarting the weeds that outsmarted glyphosate.

"We have always implemented another mode of action, some sort of a residual down ahead of a glyphosate application or in a tank-mix," he explained. "Products like Lumax® and Lexar® herbicides have contributed to less resistance and fewer weed problems altogether."

Garden City, Kan., grower Greg Stone also looks to a pre-emergence herbicide for resistance management, plus early season weed control.

"We don't have a lot of weed resistance issues. We have pigweeds, crabgrass, Kochia, velvetleaf and Johnsongrass, and using a pre-emergence treatment like Lumax on 100 percent of my acres helps to manage them. It provides superior broadleaf weed and grass control in one product."

Think Tank

Retailers like Dan Blanchard of Central Valley Co-op, in Austin, Minn., know there is more than one way to kill a weed.

"We recommend Callisto as a tank mix partner for glyphosate," he said. "Callisto has great residual control, and it also takes care of the weeds that glyphosate alone is not killing."

"It seems like there is a different weed every year that growers have trouble controlling with glyphosate alone. This is one of the main reasons we are encouraging growers to add Callisto to their glyphosate to vary the mode of action."

In Arkansas where soybeans are an important crop, Daniel Young also believes that fighting glyphosate resistance sometimes requires several steps.

"We rotate crops. We recommend growers don't go out with glyphosate alone and don't use cut rates. That's how we've always battled resistance," said Young, location manager for Agrilience LLC in Humphrey, Ark. "We tank mix all soybean glyphosate applications with Flexstar® which helps us control problem weeds."

Residuals: Not Just for Corn Anymore

As the threat of glyphosate resistance spread, Young and his team added another tactic to their strategy. "Our customers take resistance seriously in order to prevent bigger problems in the future."

"Now we're getting back to doing a lot of pre-plant chemical applications in the fall to carry over to spring, as well as crop year pre-plant applications of residual herbicides like Dual Magnum® herbicide," he said. "Our approach with the pre-plant works. Being proactive, we're not seeing any glyphosate-resistant pigweed thus far."

In Indiana, producers are battling marestail and giant ragweed, particularly in soybeans.

"There has been a bigger shift toward residual herbicide programs in this area as a result," said Brian Herr, a retailer based in Evansville, Ind. "We used quite a bit of Prefix™ herbicide on soybeans this year and had great results, even with as dry as it was."

"Prefix as a spring-applied residual herbicide is a great fit for our area, and we will continue to use it."

According to Foresman, Prefix can provide a more flexible window of application for a post Touchdown® pass and help reduce early season weed competition that limits yield.

Rotate GT and Conventional Crops

Across the country, more and more acres are being planted with glyphosate-tolerant corn, but this complicates crop rotation.

"You need to hit weeds with vastly different types of chemicals to slow down their ability to evolve," said Southwestern Ohio grower Donald Tharr. "If growers continue to plant glyphosate-tolerant corn after Roundup Ready® beans, it's way too much use of that chemical. It's not going to work."

Tharr farms 1,500 acres of corn and soybeans between Cincinnati and Dayton, where many producers battle lambsquarters and giant ragweed. "In corn, I always use a pre-emergence herbicide like Bicep® II Magnum herbicide or Lumax before my post program."

Chuck Knapp of Charles City, Iowa, also chooses to use a pre-emergence herbicide. "We've been using Lumax on our conventional corn since it was introduced," he said. "Last year was the first year we planted glyphosate-tolerant corn, but we still used Lumax on everything. We won't quit using a residual pre-emerge program, it's just not an option for

Knapp said they have yet to notice any resistance issues, but they are not about to take chances.

"By using Lumax, we have peace of mind that we are doing what we should to manage resist-



Chuck Foresman, Syngenta Technical Brand Manager for weed resistance



Greg Spencer, Ohio retailer

ance because we have different modes of action out there working on the weeds," Knapp added. "Lumax has paid off consistently year after year giving me a return on my investment."

By using a residual herbicide, Foresman said growers are limiting early season weeds, which take away valuable nutrients, water and fertilizer from corn plants, ultimately stunting yield.

Get Physical

To complement a stepped up herbicide plan, some growers add in mechanical methods for additional control. Tharr uses physical techniques like manual tillage for winter kill and controlled field burn to "narrow down the war zone."

Do the Math

Some producers believe fighting resistance now is too expensive. But successful industry leaders and experts say a little extra now, saves more in the long run.

"In the short term you'll benefit from having weed-free fields. Less competition for moisture and nutrients, means more yield," Young said. "Long term you're just making resistance issues for that field. There's a considerable amount of return on putting a pre-emerge residual herbicide ahead of your glyphosate. You can make that expense up easy, especially with the price of commodities today."

Recent studies found that losses in U.S. crops due to any uncontrolled weeds, resistant or not, exceed \$7.5 billion annually. "Knowing the heavy economic weight that weeds have, it is hard to imagine the cost of wider spread herbicide resistance," said Foresman.

In the case of several resistant species, a grower could expect herbicide costs to double just to manage weeds, according to a recent presentation by Bill Johnson of Purdue University. Johnson and his colleagues studied a field in Indiana with glyphosate resistant giant ragweed and marestail, and tolerant lambsquarters. The grower's annual herbicide inputs skyrocketed from \$19 per acre to \$37 per acre due to glyphosate resistance.

Communication & Education

"Not all the answers are applied with a sprayer," Foresman stressed. "We need to stay ahead of the curve if we want to continue resisting resistance and preserve glyphosate for as long as we can. All of us – agricultural companies, researchers, retailers and growers – need to communicate to find the best management practices in every given situation."

For example, growers turn to a variety of sources for information from web sites to classes to consultants. Tharr said he works with various salespeople. "We really rely on those guys to bring us the information."

And that's exactly what Spencer and Harvest Land try to do. Their team of agronomists train and educate staff, plus employees are required to take CCA courses in pest and weed management.

As a retailer, Spencer turns to his company representatives, like those of Syngenta. "Our rep was here today, and he is no farther away than a phone call," Spencer said. "He can always answer any questions surrounding these topics."

For more information on glyphosate resistance management or to customize a Resistance Fighter™ herbicide plan, visit www.resistancefighter.com <<http://www.resistancefighter.com/>> . Δ