FMC Technical Bulletin:
Managing Weeds Under the New Seed Traits
A diversified pre- and post-emergent weed control program extends the life and effectiveness of new herbicide-tolerant seed traits.
With the U.S. EPA’s approval of Monsanto’s Roundup Ready 2 Xtend® and Dow’s Enlist Duo® herbicide-resistant seed traits, growers now have new tools to control weeds in season, including those weeds that have developed a resistance to glyphosate. The efficacy of these crop technologies could be short lived, however, if growers rely too heavily on them.

These traits allow for in-crop application of their companion herbicides. Monsanto’s Roundup Ready 2 Xtend trait works with Xtendimax™ and Engenia™ herbicides, which are reduced-volatility dicamba formulations and the only dicamba brands approved for use on dicamba-tolerant soybeans. Dow’s Enlist Duo® trait works with Enlist Duo herbicide with ColexD® technology, a premix of new 4-D choline and glyphosate.

However, with new options come concerns. These herbicides use the same sites of action, Groups 4 (synthetic auxins) and 9 (ESPS synthase inhibitor), to manage weeds. Overreliance on the same herbicide sites of action can quickly lead to resistant weeds.

**Documented cases of resistance to dicamba and 2,4-D.**

There is good reason to be concerned about resistance developing to these new products. Already, there are documented cases of dicamba and 2,4-D resistance in weeds such as waterhemp and kochia, demonstrating these traits are even more vulnerable than Roundup Ready technology was when it was introduced.

What strategies can slow the development of resistant weeds? Crop experts recommend a diversified approach to weed management, one that includes the use of both pre- and post-emergent herbicides.

The FMC lineup of Authority® brand pre-emergent residual herbicides and Anthem® MAXX residual herbicide introduces a different site of action to reduce the selection pressure on resistant weed populations. Keeping multiple effective sites of action in play is key to preventing herbicide resistance, which, in turn, ensures the new herbicide-tolerant seed traits remain effective.

“There are a couple of things I have been telling growers with regard to this technology. One is trait technology is a tool in the toolbox, not a silver bullet. Don’t buy into it thinking it is going to solve everything and all I have to do is spray this herbicide. That won’t work. Second, we have to use the same best management practices we are using now with these future production systems. Those include pre-emergence herbicides, which, in and of themselves, mean multiple modes of action and overlapping residuals as well.”

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To see what else Dr. Kevin Bradley says about managing resistance with these new seed traits, visit FMCAGUS.COM/WEED-RESISTANCE.
Early application key.

Both Xtendimax™ herbicide and Engenia™ herbicide labels stress treating weeds early, before they reach four inches in height. Weeds taller than four inches become difficult to control with a post-emergent herbicide. Authority® brand herbicides should be used as a pre-emergent base to reduce the risk of weeds getting beyond the optimum control height, especially if adverse weather conditions interrupt or delay the post application.

Overlapping Authority brand residual herbicides with Anthem® MAXX residual herbicide extends the window of weed control even further, making the whole herbicide program more effective. Authority brand herbicides and Anthem MAXX herbicide are the perfect residual partners with the new trait technologies, helping preserve the effectiveness of the new seed traits as well as the new herbicide products designed to work with them. To learn more about how you can incorporate these new technologies and manage resistance, visit FMCAGUS.COM/WEED-RESISTANCE.

Authority brand herbicides in dicamba-tolerant soybean herbicide programs¹

Trials conducted by the University of Missouri compared the performance of pre-emergent Rowel™ herbicide and pre-emergent Authority brand herbicides in a Roundup Ready 2 Xtend cropping system. Results show that Authority brand herbicides controlled 91 to 99 percent of weeds compared to 64 to 94 percent by Rowel herbicide. Authority brand herbicides also showed a 3 to 9 bu/A yield advantage compared to Rowel herbicide.

Roundup Ready 2 Xtend soybean trial, Mt. Vernon, IL

Residual herbicide performance. Photos taken 7/7/16

Plots treated with two overlapping residual herbicides stayed cleaner throughout the season than those treated with only a pre-emergent residual herbicide as shown by these photos.

¹ This was a research project. Ordinary glyphosate or dicamba formulations are not registered for commercial use on dicamba-tolerant soybeans.
Residual herbicides, applied pre- and post-emergence, controlled 98 to 99 percent of the large crabgrass, morning glory spp. and waterhemp. However, when the pre-emergent residual herbicide was skipped, control of waterhemp dropped significantly.

*Anthem MAXX herbicide is not yet approved for tank mixing with glyphosate and dicamba.

The use of pre- and post-emergence residual herbicides in a Roundup Ready 2 Xtend soybean system provided better weed control than a post-only application of dicamba and glyphosate.

Roundup Ready 2 Xtend soybean systems treated with a pre- and post-emergence herbicide averaged 6.5 bu/A more than those treated with dicamba and glyphosate alone.

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