



RESPECT THE ROTATION

Preserving Herbicide Technology

The Challenge

- Glyphosate-resistant weeds cost growers exponentially.
 - Unplanned herbicide applications
 - Intensive manual labor
 - Reduced yields
 - Crop destruction or abandonment
- Glyphosate resistance threatens:
 - Efficient weed management
 - Conservation tillage
 - Land values
 - Profitable, sustainable production



Public Takes Notice

Killer Pigweeds Threaten Crops in the South

“I’ve never seen anything that had this major impact on our agriculture in a short period of time.”

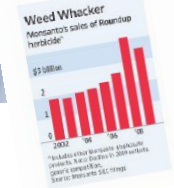
“I’m worried about our future ... if we don’t control this weed.”

“... this year they’re choking more than a million acres of cotton and soybean.”

Source: ABC World News, October 2009



Shift Happens!



The Cause

- Glyphosate-tolerant (GT) crops dominate the cotton, soybean and corn markets.
 - More than 1 billion acres have been treated with glyphosate during the past 13 years, according to the Weed Science Society of America (WSSA).
- Glyphosate-resistant weeds are spreading at an alarming rate.
 - 10 weed species confirmed in the U.S.
 - More than 20 states with confirmed cases.



Reality of Resistance

Pigweed Infestation 2009



Arkansas grower Sid Fogg faced the challenge of glyphosate-resistant pigweed head-on in 2009, spending about \$50/A on herbicides without the ability to fully control the weeds.

Pigweed Control 2010



University of Arkansas Program

1. Start clean
2. Pre-emergence herbicide
3. Dual[®] herbicide over-the-top with the first application
4. Ignite[®] herbicide or Flexstar[®] herbicide on 2-inch pigweeds

Photographs compliments of University of Arkansas Extension.

Ignite is a trademark of Bayer CropScience. Dual and Flexstar are registered trademarks of a Syngenta Group Company.

WSSA Benchmark Field Studies*

- Surveyed farmers randomly selected for 5-year, 6-state field study pairing grower practices vs. resistance management recommendations.
- Looked at continuous use and rotations of GT crops.
- Growers can employ recommended weed resistance practices with similar ROI as glyphosate-only programs.
 - Net returns on fields managed according to recommended practices are equal to or greater than the returns on those where glyphosate is used alone.
- Increased yields appear to offset any increase in costs.
 - Plus, provides long-term benefit of resistance management.

What is Respect the Rotation?

- An initiative to:
 - Elevate the importance of herbicide mode of action rotation.
 - Improve grower adoption of herbicide diversity through rotation of crops, traits and herbicide classes.
 - Promote IWM by highlighting an essential action to improve weed resistance management.
- Working together, Respect the Rotation can:
 - Motivate growers to manage the spread of weed resistance.
 - Steward current and future weed management technology.
 - Promote sustainable and profitable row crop production.
 - Preserve conservation tillage opportunities.

How to Respect the Rotation

- Herbicide mode of action (MOA) rotation is **essential** to improve resistance management.
 - **Rotate crops.** Crop rotation provides opportunity for herbicide diversity.
 - **Rotate herbicide-tolerant traits.** Alternate herbicide-tolerant traits or use herbicide-tolerant stacks for more efficient rotation of both nonselective and selective herbicides.
 - **Rotate modes of action.** Rotate MOA and use multiple MOA to reduce the selection pressure caused by overusing a single MOA.

Additional IWM Elements

- **Know your weeds, know your fields.** Closely monitor problematic areas with difficult-to-control weeds or dense weed populations.
- **Start with clean fields.** Proper tillage or the use of a burndown herbicide program should be used to control all emerged weeds prior to planting.
- **Apply herbicides correctly.** Ensure proper application, including timing, rates and spray volumes.
- **Control weed escapes.** Consider spot herbicide applications, row wicking, cultivation or hand removal to improve weed management for subsequent growing seasons.
- **Reduce the seed bank.** Do not allow surviving weeds to set seed, which will help decrease weed populations from year-to-year and prevent major weed shifts.
- **Clean equipment.** Prevent the spread of herbicide-resistant weeds and their seeds.

The Kick-Off

- More than 200 participants took part in a three-day July event in Memphis, Tenn.
 - Included the weed science community, consultants, growers, agribusiness, grower associations and organizations, federal agencies and media.
- Attendance*
 - Seed company meeting: 170
 - Field tour: 248
 - Workshop: 90



*includes Bayer CropScience participants

What's Next?

- Take Action
 - Ask your seed company or Bayer rep about alternatives to glyphosate-only programs.
 - Respect the Rotation on your farm.
- Talk About It
 - At local meetings or the coffee shop.
 - Online.
 - With University and Extension contacts.
- Tune In for More
 - Stay current on weed resistance.
 - Weedscience.org
 - Glyphosateweedscrops.org
 - Stay tuned to hear more about Respect the Rotation.



Thank you.

Respect the Rotation.