

Benchmark Study

Glyphosate Resistance Management

2009 – Report #5



University Weed Scientists Report on Grower Awareness and Perceptions on Weed Resistance to Glyphosate in Roundup Ready® Crops*

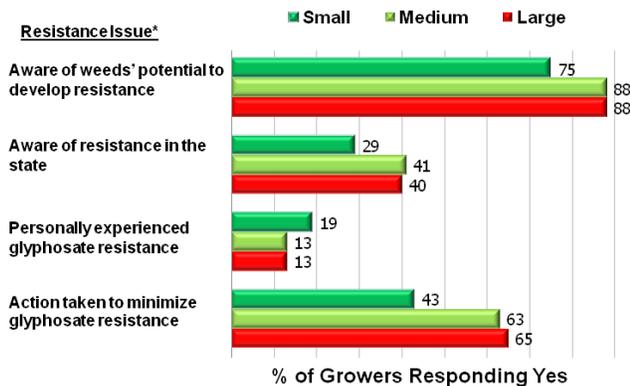
Rapid and wide-spread adoption of Roundup Ready cropping systems has occurred since their introduction in 1996 because it enables broad spectrum weed control, outstanding crop safety and flexibility and simplicity in weed management. Weed management programs which lower the potential risk of weeds to become resistant to glyphosate will probably improve the sustainability of the Roundup Ready system. Since growers ultimately select the weed management programs on their farms, it is important to understand the grower's awareness and perceptions regarding weed resistance to glyphosate. A grower survey was developed by a team of university scientists from six states. The survey was conducted with approximately 1200 growers in six states (approximately 200 per state in Iowa, Illinois, Indiana, Mississippi, North Carolina, and Nebraska) in the winter of 2005-2006.

Awareness for the potential of weeds to develop resistance to glyphosate herbicide ranged from 75 to 88% of growers depending on the farm size (Figure 1). Awareness and concern for glyphosate resistance was slightly greater for growers with medium to large

farms. Approximately 30 to 40% of the growers were aware of glyphosate resistant weeds in their state. However, only 30% or less of all growers surveyed believed glyphosate-resistant weeds were a serious agronomic issue (data not shown). A relatively low percentage of the growers (13 to 19%) had personally experienced glyphosate-resistant weeds on their farm. However, 43 to 65% of growers had taken actions to minimize glyphosate resistance.

University scientists have recommended several management practices in past years that can reduce or minimize the potential for weeds to develop resistance to herbicides. Growers were questioned on which of these actions or measures they were taking on their farm. The majority of the growers (71-78%) thought that

Figure 1. Grower Awareness and Perceptions of Glyphosate – Resistant Weeds as Influenced by Farm Size



*Only yes responses are shown in the table. Farmers were asked to rate the seriousness issue on a 1-10 scale – Ratings were grouped as 1-3 = Low, 4-7 = Moderate, and 8-10 = High. Large farms >1100 acres, Medium farms 550-1100 acres, and Small farms <550 acres.

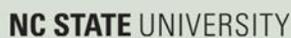
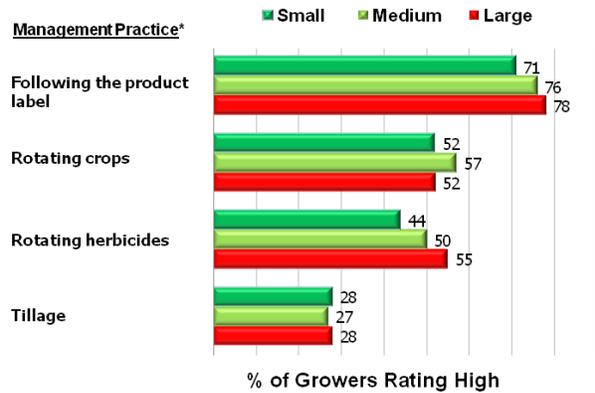


Figure 2. Grower Perceptions of Management Practices That Reduce Or Minimize Resistance as Influenced by Farm Size



following the herbicide product labeled rate was the most effective measure for minimizing glyphosate-resistant weeds (Figure 2). Only 44 to 57% of the growers believed that rotating crops or herbicides would be beneficial. Only 40 to 47% of the growers indicated that tank-mixing glyphosate with residual herbicides or including alternate herbicides with different modes of actions would be effective management practices for minimizing weed resistance (data not shown). Less than a third of the growers (27-28%) thought that tillage would be an effective resistance management practice. Grower opinion on effective

resistance management practices was not affected substantially by farm size.

A long-term field study is on-going to compare the current weed management programs of growers with programs recommended by university scientists. Researchers expect the university herbicide programs which include many of the management practices listed in Figure 2 will reduce the selection pressure of glyphosate and lower the potential risk of selecting weeds resistant to glyphosate herbicide. Results from this study will provide valuable data to develop weed management programs to improve the sustainability of weed management in Roundup Ready technology.

Summary of Awareness and Perceptions on Weed Resistance to Glyphosate in Roundup Ready Cropping Systems.

- The awareness for the potential of weeds to develop resistance to glyphosate herbicide ranged from 75 to 88% of growers with only 30% or less of the growers indicating that glyphosate-resistant weeds was a serious problem.
- Only 44 to 57% of the growers believed that rotating crops or herbicides would be an effective management practice for reducing the potential risk of weeds developing resistance to glyphosate.

*William G Johnson, Greg R. Kruger, and Stephen C. Weller – Purdue University; Micheal D. K. Owen – Iowa State University; Bryan G. Young – Southern Illinois University; David R. Shaw – Mississippi State University; Robert G. Wilson – University of Nebraska; and John W. Wilcut and David L. Jordan – North Carolina State University. 2009. Farmers Attitudes Toward Impending Problems with Genetically Engineered Glyphosate Resistant Crops May Endanger the Sustainability of Chemically Based Weed Management. Weed Technology Publication Pending.

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