# WSSA Supports NRC Findings on Weed Control

The National Research Council (NRC), in its April 2010 report on the impact of biotech crops on farm sustainability, has made two critically important recommendations regarding weed control and agricultural sustainability. First, combating weed resistance is essential to preserve the significant environmental and economic benefits of herbicide-resistant crops. And second, continued progress against weed resistance requires a stronger emphasis on management, new tools and quality research.

The Weed Science Society of America (WSSA) agrees with the NRC that it is important that farmers adopt more diverse weed management strategies that can prevent weeds from developing resistance to herbicides such as glyphosate and glufosinate, the main ingredients used in herbicide-resistant cropping systems. It also is important to develop and implement effective resistance management strategies for other herbicides that are essential tools in the fight against weed resistance. The ultimate goal is to ensure that growers continue to have a suite of practices and chemistries available to enable appropriate integrated pest management (IPM) on the farm. Integrated weed or pest management considers all available practices – cultural, chemical, mechanical, genetic and biological – and uses the best combination for the specific problem.

However, we do not agree with the NRC report and subsequent media coverage that a diversified weed management program includes the use of "more toxic herbicides." All herbicides must pass a rigorous set of safety tests prescribed by the U.S. government before they are approved for use. When used according to label directions, these tools provide important benefits to mankind and help make U.S. farmers more productive with minimal risks to health and the environment. The agricultural economy and the environment will be best served if all weed control options remain viable, including use of herbicide-resistant crops.

Weed scientists know that the best defense against weed resistance is to proactively use a combination of agronomic practices, including the judicious use of herbicides with alternative modes of action either concurrently or sequentially. This was true before the development of herbicide-resistant crops and is a fundamental tenet of sound IPM. Throughout the history of weed control in agriculture, weeds have developed resistance to the most important herbicide classes and cultural methods used by farmers. It is important to note that weeds often develop resistance to their environmental challenges, whether natural or man-made; this is a natural process. The key to successful, sustainable management is an integrated weed management program.

In spite of weed resistance to many herbicide classes, products with known resistance remain important to agriculture. Farmers routinely use combinations of these products with other herbicides having different modes of action to control resistant weeds and to combat further resistance. In the same way, farmers are increasingly using glyphosate in combination with other herbicides in herbicide-resistant cropping systems.

Use of a single product or mode of action for weed management is not sustainable. Some of the best and most sustainable approaches to prevent resistance include diversified weed management practices, rotation of modes of action and especially the use of multiple product ingredients with differing modes of action. Growers can either use diversified weed management practices now to preserve the benefits of herbicide-resistant crops or they must use these techniques reactively after resistance has occurred.

Now is the time to act. Since only about 6% of the total planted corn, soybean and cotton acres are estimated to have a presence of weeds resistant to glyphosate[1]. Now is the time for growers to accelerate adoption of diversified weed management programs with multiple modes of action and other practices to prevent the spread of resistance. Importantly, weed science research will be critical to developing workable and effective regimens that will facilitate adoption.

Much progress has been made, but continued research is needed. In a market research study that surveyed 350 growers in 2005 and again in 2009, in response to the question, "are you doing anything to proactively minimize the potential for resistance to glyphosate to develop," 67% said yes in 2005 and 87% said yes in 2009.[2] This significant increase in proactive resistance management demonstrates that growers are gaining awareness of the benefits of diversified weed management programs. In a 2007 survey of 400 corn, soybean and cotton growers, resistance management programs were often or always used by 70% or more of all three grower groups.[3] Product developers also are responding to the challenge by developing new herbicide-tolerance traits that will be combined together in the same herbicide-resistant crops, allowing easier use of multiple modes of action to manage or prevent weed resistance. In the long-run, this will not be enough, as resistant weeds will continue to evolve and impact long-established cropping systems unless new integrated weed management programs are developed and adopted to slow or prevent the occurrence of resistance.

At the same time that NRC is calling attention to the need to protect environmentally and economically important weed control practices, public funding of weed science research is declining. Over the last decade, the number of Weed Scientists on staff at land-grant universities has declined steadily. This trend must be reversed, and we very much support the addition of a Foundational program within the Agriculture and Food Research Initiative (AFRI) to address weedy plant biology, ecology and management. We also suggest the restoration of funding for integrated activities under the Section 406 Legislative Authority. Section 406 supports integrated weed management research through initiatives like the Regional IPM Centers, Risk Avoidance and Mitigation Program, Crops at Risk and Organic Transitions Program. Funding for these programs was eliminated in the President's FY 2011 budget.

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[1] Ian Heap, 2010; Personal communication

[2] David R. Shaw, 2010; Personal communication, manuscript in preparation.

[3] Frisvold *et al.*, 2009; Hurley *et al., 2009*

Sound science is important to help expand public and governmental understanding of weed control and its role in ensuring abundant food, feed and fiber. Second only to weather, weed pressure is the major threat to agricultural productivity – more so than any other pest[4]. Ensuring that we have an effective suite of tools to use against weeds must be a national priority. We need to maintain those tools with desirable health and environmental benefits, while developing new, sustainable approaches to integrated weed management protocols that leverage all approaches.

WSSA
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[4] Oerke E C. 2006