OPTIMUM® GAT®: REVISITING THE VALUE OF SULFONYLUREA CHEMISTRY FOR TODAY'S WEED PROBLEMS. Bryan G. Young, Professor, Department of Plant, Soil, and Agricultural Systems, Southern Illinois University, Carbondale, IL 62901.

The sulfonylurea herbicides, and more broadly the ALS-inhibiting herbicides played critical roles in our ability to manage weeds in corn and soybean in the 1990s. The advent of ALS-resistant weeds and commercialization of glyphosate-resistant crops have reduced the use of these herbicides dramatically. Without argument, the use of glyphosate-resistant crops and associated applications of glyphosate have provided excellent overall weed control including ALS-resistant weed species. However, after a little more than a decade of adopting glyphosate-resistant soybean and corn the weed spectrum and herbicide sensitivity of weeds to glyphosate has evolved to the point where an integrated and diverse herbicide strategy is necessary to achieve successful weed management.

The eventual commercialization of Optimum GAT corn and soybean will allow for more flexibility in applying sulfonylurea herbicides with glyphosate to obtain more consistent weed control or even control of glyphosate-resistant weed species. In soybean, the use of chlorimuron in some market segments has proven valuable as it was the third-ranked herbicide for area treated behind only glyphosate and 2,4-D in 2006. In corn, the negative association with ALS-inhibiting herbicides has typically been focused on the crop safety aspect and to a lesser extent the herbicide activity on important weed species. Optimum GAT corn and soybean should provide the level of crop safety expected by growers and provide substantial improvements in weed control as offered by a host of herbicide active ingredients planned for commercialization as multiple herbicide premixes: chlorimuron, rimsulfuron, thifensulfuron, tribenuron, mesotrione, and flumioxazin. University research in Optimum GAT corn has shown that the combination of rimsulfuron, chlorimuron, and mesotrione can provide effective control of velvetleaf and ALS-resistant waterhemp in preemergence applications and mixtures of rimsulfuron, chlorimuron, and glyphosate are effective for postemergence control of morningglory. In Optimum GAT soybean, university research has shown that thifensulfuron, tribenuron, and chlorimuron in postemergence applications with glyphosate can improve control of non-ALS resistant giant ragweed and giant foxtail by 20 to 50% late in the season compared with glyphosate applied alone. Research conducted on glyphosate-resistant waterhemp supported the utility of mesotrione and flumioxazin as components of an integrated approach to weed management with the sulfonylurea and glyphosate combinations.

Optimum GAT corn and soybean can be used to control problematic weeds currently experienced by growers as well as certain glyphosate-resistant weeds such as horseweed. Adoption of the diverse herbicide components envisioned for use in Optimum GAT crops has the potential to mitigate resistance to glyphosate as well. Since the sulfonylurea herbicides do not currently play a major role in the management of volunteer corn or soybean, the use of Optimum GAT corn or soybean would not likely create any problems with volunteer management beyond glyphosate-resistant crops. Even though the sulfonylurea herbicides and rates in Optimum GAT crops may not impose any special crop rotational restrictions compared with traditional corn and soybean herbicides, the use of this technology and associated herbicide applications may be a concern in cropping systems that go beyond corn and soybean.

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