

FALL APPLIED HERBICIDES FOR WEED MANAGEMENT IN NO-TILL SOYBEAN. Romina Güeli and Reid J. Smeda, Graduate Research Assistant and Assistant Professor, Department of Agronomy, University of Missouri, Columbia, MO 65211

Glyphosate resistant crops have been one of the most rapidly adopted technologies in agriculture since their commercial release in 1996. Weed control programs in soybean have shifted dramatically to postemergence applications, reducing the use of preplant and preemergence products. Lack of residual activity has contributed to winter annuals developing in fields late in the summer.

Field experiments were conducted at two Missouri locations (central and northeast) to evaluate the efficacy of fall applied versus conventional spring burndown and preplant herbicide programs for winter and summer annual weed control and soybean yield. Fall treatments were applied in mid-November 2001, and included: different rates of sulfentrazone (0.081, 0.114, and 0.15 kg ai/ha) and chlorimuron (0.017, 0.023, and 0.03kg ai/ha) plus tribenuron-methyl (0.0053 kg ai/ha); sulfentrazone, chlorimuron, tribenuron-methyl plus thifensulfuron (0.0017 kg ai/ha); and glyphosate alone at 0.84 kg ae/ha. Also in the fall, 2,4-D at 0.56 kg/ha a.i. plus crop oil crop concentrate was added for initial broadleaf control. Spring treatments included preplant applications of glyphosate alone at 0.84 kg ae/ha or with sulfentrazone plus chlorimuron. All plots received an application of glyphosate five weeks after planting or when weeds were 10-20 cm tall, to allow early but not late-season weed competition.

Percent weedcontrol was evaluated for winter and summer annual weeds in early March, April, May and two weeks after soybean planting (early May). Henbit, horseweed, field pennycress, shepherd's purse, and common chickweed control was 90 to 100% and similar for most applied treatments up to early May. However, control of summer annuals such as giant foxtail, common lambsquarters, and Pennsylvania smartweed in early May was inconsistent. The presence of winter weed residues together with wet conditions delayed soybean planting in central Missouri, and led to high populations of summer annual weeds following planting. Delayed planting also led to variable results with soybean yield. At Bradford, use of sulfentrazone plus chlorimuron and tribenuron-methyl, and glyphosate alone provided yields among fall applied treatments that were 17% higher than spring and pre-plant applications. Yields for spring applied glyphosate plus sulfentrazone and chlorimuron were 16% lower than some fall applied treatments at Novelty and up to 60% lower than the same fall applied treatments at Bradford. At Novelty, yields of pre-plant applications of glyphosate were the highest and comparable to the highest yielding fall applied treatments. Overall winter annual weed pressure at planting was 50 % greater at Bradford compared to Novelty.