

DISCOVERY OF A COMMON LAMBSQUARTERS POPULATION RESISTANT TO ALS INHIBITORS IN MICHIGAN. Steven A. Gower and Donald Penner, Academic Specialist and Professor, Diagnostic Services and Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824.

Unacceptable common lambsquarters control was observed in a central Michigan field following at least fourteen consecutive annual applications of an acetolactate synthase (ALS)-inhibiting herbicide. Greenhouse experiments were conducted to (1) determine whether this population of common lambsquarters was resistant to ALS-inhibiting herbicides and (2) determine the magnitude of resistance and cross-resistance to ALS-inhibiting herbicides.

Initial experiments of foliar-applied imazamox and thifensulfuron at 87 and 8.7 g ai ha⁻¹ (2X standard field rate), respectively, provided 26 and 19% control of the resistant population compared with 90 and 93% control of a susceptible population, respectively. Atrazine foliar-applied at 4.5 g ai ha⁻¹ (2X standard field rate) provided complete control of the resistant population, indicating that this population was susceptible to triazine herbicides.

Comparison of the foliar herbicide rate required to reduce plant fresh and dry weight 50% (GR₅₀) between the resistant and susceptible population was conducted to obtain resistance ratios. Resistance ratios for imazamox were 26 and 27 for fresh and dry weights, respectively. Resistance ratios for thifensulfuron were > 244 and > 355 for fresh and dry weights, respectively. Data indicate resistance in common lambsquarters to both imidazolinone and sulfonylurea herbicides in Michigan.