SURVEY OF COMMON WATERHEMP RESISTANCE TO PROTOX- AND ALS-INHIBITING HERBICIDES. Jeanne S. Falk*, Douglas E. Shoup, Kassim Al-Khatib, and Dallas E. Peterson, Graduate Research Assistant, Graduate Research Assistant, Professor, and Professor, Department of Agronomy, Kansas State University, Manhattan, KS 66506.

A population of common waterhemp in northeast Kansas was confirmed resistant to protoporphyrinogen oxidase (protox)- inhibiting herbicides in 2001. In 2002, seed was collected in a 16 km radius from the confirmed resistant population to determine the extent of protox resistance in common waterhemp populations throughout this area. Waterhemp seed from multiple plants was collected from 28 fields, including 20 soybean, five corn, two wheat stubble and one sorghum field. A composite sample of waterhemp seed from each field was germinated and grown under greenhouse conditions for herbicide screening. At seven to 13 cm in height, eight common waterhemp seedlings were treated with 210 g ai ha^{-1} acifluorfen, 70 g ae ha^{-1} imazethapyr, or 1060 g ai ha^{-1} glyphosate. Plants were evaluated for visual injury at one, two, and three weeks after treatment (WAT). Common waterhemp plants from 10 of the 28 sites exhibited resistance to acifluorfen. These sites were randomly scattered throughout the sampling area. Protox resistant waterhemp was initially injured by acifluorfen, however injured plants generally recovered within 2 WAT. These plants were stunted, but produced several branches. All sites exhibited resistance to imazethapyr. In addition, all of the sites tested were susceptible to glyphosate. These findings show that protox- resistance is present in 10 of the 28 fields sampled and ALS- resistance is present in most of the waterhemp populations throughout sampling area. Therefore, herbicides with these modes of action may not be viable tools for common waterhemp control in northeast Kansas.

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