Science Societies

Sensitivity of Kansas Palmer amaranth to commonly used herbicides

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Mike Eckroat (former ag technician) collecting Palmer amaranth seeds from a sorghum field (left) and Vipan Kumar (weed scientist) observing a Palmer amaranth population treated with mesotrione in a greenhouse at Kansas State University Agricultural Research Center, Hays, KS (on right).

Palmer amaranth is one of the most troublesome summer annual broadleaf weed species in the U.S. Some herbicide-resistant Palmer amaranth has previously been reported in Kansas; however, the sensitivity response of Palmer amaranth populations over a wide geography of Kansas to the most commonly used herbicides is unknown.

New research in *Agronomy Journal* reports on the sensitivity of 28 Palmer amaranth populations randomly collected from cropland in south-central Kansas to field-use rates of glyphosate, chlorsulfuron, 2,4-D, dicamba, atrazine, and mesotrione. Researchers also characterize the sensitivity levels to these herbicides in two Palmer amaranth populations.

The team found that 47, 36, 7, 75, and 32% of all tested populations were less sensitive to glyphosate, chlorsulfuron, 2,4-D, atrazine, and mesotrione herbicide, respectively. In addition, the KW2 and PR8 populations showed 2.0- to 10.6-fold less sensitivity to 2,4-D, chlorsulfuron, atrazine, and mesotrione compared with a susceptible population in dose-response bioassays.

Reduced sensitivity to herbicides observed in Palmer amaranth populations will pose a serious management challenge for growers. This study clearly suggests that growers should quickly adopt integrated and more diversified weed control methods (chemical, mechanical, cultural, and biological) to manage these difficult-to-control Palmer amaranth populations on their production fields.

Dig Deeper

Kumar, V., Liu, R., & Stahlman, P.W. (2020). Differential sensitivity of Kansas Palmer amaranth populations to multiple herbicides. *Agronomy Journal*, *112*.

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