INFLUENCE OF PHOTOSYSTEM II-INHIBITING HERBICIDE RATES ON PALMER AMARANTH CONTROL AND CROP INJURY

C. E. Starkey
J. K. Norsworthy
D. B. Johnson
University of Arkansas
Fayetteville, AR

Abstract

Herbicide-resistant Palmer amaranth (*Amaranthus palmeri* S. Wats) has produced limited control options in cotton (*Gossypium hirsutum* L.). The objective of this study was to evaluate photosystem II-inhibiting herbicides as a preemergence herbicide to control Palmer amaranth in cotton on a silt loam and a clay soil in Arkansas. In 2011, six rates of fluometuron (Cotoran 4L) and prometryn (Caparol 4L) and five rates of diuron (Direx 4L) and linuron (Linex 4L) were evaluated. In Fayetteville, AR on a silt loam soil, 1400 and 1680 g ai/ha of diuron injured cotton from 36 to 25% at 26 days after treatment (DAT), respectively. Prometryn caused injury ranging from 4 to 40% at 897 and 3137 g ai/ha at 26 DAT. Linuron at 2790 and 3360 g ai/ha injured cotton 76 to 96% at 26 DAT on a silt loam soil while providing the highest crop injury of 76 and 93% injury on a clay soil in Keiser, AR. Diuron at 1120 to 1680 g ai/ha provided 75% control of Palmer amaranth on a clay soil at 45 DAT. Prometryn control of Palmer amaranth was less than 65% by 45 DAT. By 38 DAT, none of the herbicides controlled Palmer amaranth greater than 87%, except linuron which was the most injurious to the cotton.