

WARRANT: A NEW TOOL FOR WEED MANAGEMENT IN COTTON**T.S. Morris****Texas Tech University****Lubbock, TX****P.A. Dotray****J.W. Keeling****J.D. Reed****Texas A&M AgriLife Research****Lubbock, TX****Abstract**

Warrant™ is an encapsulated formulation of acetochlor for postemergence (over-the-top) use in cotton (*Gossypium hirsutum* L.), corn (*Zea mays* L.), and soybean (*Glycine max* L. Merr.), and for preplant incorporated and preemergence use in sorghum (*Sorghum bicolor* L. Moench). Warrant has good activity on several annual grass and broadleaf weeds including Palmer amaranth (*Amaranthus palmeri* S. Wats.), tall waterhemp (*Amaranthus tuberculatus* Moq. Sauer), common lambsquarters (*Chenopodium album* L.), and black nightshade (*Solanum nigrum* L.) following “activation” prior to weed seed germination and emergence. The objectives of this study were 1) to evaluate Palmer amaranth control when Warrant is applied at differing rates, application timings, and tank mix combinations; and 2) determine crop response and lint yields in cotton.

Field experiments were conducted in 2011 and 2012 near Halfway, TX (clay loam soil) and near Lamesa, TX (fine sandy loam soil) in 2012. Plots, 4 rows by 30 feet replicated four times, were arranged under center pivot irrigation systems at both locations. Herbicide applications were broadcast applied using a CO₂-pressurized backpack sprayer containing TurboTee 110015 spray tips calibrated to deliver 15 gallons per acre (GPA) in 2011 and 12 GPA in 2012 at Halfway and 10 GPA at Lamesa in 2012. Cotton response and weed control was estimated visually based on a standard scale of 0 to 100%, where 0 = no injury or weed control and 100 = crop death or complete weed control.

At both locations in 2011 and 2012, cotton injury ranged from 0 to 11% following Warrant at 48 oz/A applied PP, PRE, and PP followed by (fb) PRE. Warrant applied PP or PRE at 96 oz/A was more injurious than at 48 oz/A at either timing. No injury was observed at the end of the growing season. Roundup Powermax + Warrant (48 oz/A) applied PP or PRE controlled Palmer amaranth 90 to 100% six weeks after planting. Roundup Powermax + Warrant (48 oz/A) applied PP fb PRE improved late-season control of Palmer amaranth compared to either PP or PRE applications alone. A sequential application of Roundup Powermax + Warrant (48 oz/A) applied early-postemergence (3-leaf cotton) controlled Palmer amaranth 88% late-season compared to Warrant (48 oz/A) applied PP or PRE alone (30 to 59%). This control was similar to Roundup Powermax + Warrant (48 oz/A) applied PP fb PRE. Cotton lint yield ranged from 877 to 1061 lb/A at Halfway (2012) and no differences were observed relative to the non-treated (weed-free) control (993 lb/A). Cotton lint yield ranged from 1012 to 1349 lb/A at Lamesa and no differences were observed among treatments.