

AFFECTS OF IRRIGATION TYPE AND TIMING ON HERBICIDE PERFORMANCE**Jason K. Norsworthy****University of Arkansas****Fayetteville, AR****Jason Bond****Mississippi State University****Stoneville, MS****Abstract**

Cotton grown in the Midsouth is often furrow or sprinkler irrigated to enhance yield potential of the crop. The effectiveness of furrow irrigation relative to sprinkler irrigation on activation of residual herbicide for controlling Palmer amaranth is not known. Furthermore, the amount of rainfall needed to activate a residual herbicide and the number of days a herbicide can lay on the soil surface prior to a rainfall event without reducing control are questions often asked by cotton growers. Furrow irrigation trials were conducted at Keiser, AR on a clay soil, at Marianna, AR on a silt loam, and at Stoneville, MS on a sandy loam. Additionally, sprinkler irrigation trials were conducted at Keiser and Stoneville. Trials were conducted at Fayetteville, AR on a silt loam soil to answer the later two questions. In all trials, Reflex, Valor, Caparol, Direx, Cotoran, Prowl H20, Warrant, and Dual Magnum were evaluated at rates appropriate for the soil type. In the furrow-irrigated trials, Palmer amaranth control was evaluated on top of the bed and in the furrow at approximately 20 and 200 feet from the polypipe that was used for irrigation. All furrow-irrigated trials were irrigated once weekly beginning immediately after application unless a rainfall event of more than 1 inch occurred, at which time the irrigation scheduling was reset. A similar system was used in sprinkler-irrigated plots which received 1 inch of irrigation weekly. Herbicides generally became less effective sooner near the polypipe, likely as a result of soil movement with each furrow irrigation event. On the clay soil at Keiser, the furrow irrigation was effective in activating the herbicides on top of the bed, but as soils became increasingly coarse, such as in the trial at Stoneville, furrow irrigation was ineffective in wetting the top of the beds, in turn failing to fully activate the residual herbicides. Across soil types, sprinkler irrigation was more consistent in activating residual herbicides. At least 0.5 inches of rainfall was generally needed to activate most residual herbicides, and most herbicides needed a rainfall event (1 inch) within 7 days of application to maximize activity of the herbicides.