AGRONOMY

EVALUATION OF SURGE IRRIGATION AS A FUNGICIDE DELIVERY SYSTEM IN FURROW IRRIGATED PEANUT

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NO ONE HAS STUDIED FURROW IRRIGATION IN PEANUT. THE ACCEPTED THOUGHT IS OVERWATERING PEANUT WILL REDUCE YIELD. OUR TEAM IS EVALUATING TECHNIQUES TO OPTIMIZE PEANUT PRODUCTION IN A FURROW IRRIGATED ENVIRONMENT.

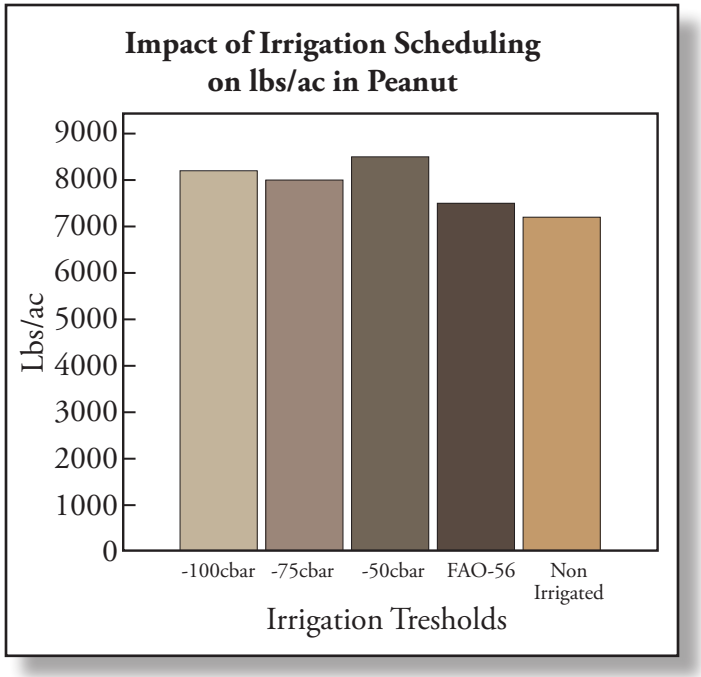
Multiple experiments were conducted at the Delta Research and Extension Center to determine the effect of furrow irrigation on peanut yield. In experiment 1, peanut yield as a function of three soil moisture sensor thresholds, i.e., -50, -75, -100 cbar, was compared to FAO-56 and a non-irrigated control. For experiment 2, we evaluated the effect of irrigation and fungicide on Southern Blight *(Sclerotium rolfsii)* infestation in peanut. In experiment 3, we evaluated the control of Southern Blight in furrow irrigated peanuts as a function of fungicide application timing (day vs night spray) and delivery system, i.e., conventional vs fertigation. Peanuts were planted May 5 and uniform stands were established. Water deficits were tracked using MSU climatic data, and irrigation was applied when a 2-inch deficit occurred or when soil moisture sensor thresholds were achieved. First generation *Sclerotium rolfsii* were raised on millet and research plots were inoculated uniformly. Disease ratings were completed to compare pressure between treatments. A preventative foliar fungicide regiment was established on a 14 day interval beginning 30 days after emergence to isolate any yield loss to Southern blight. At 60 and 90 days after emergence, plots were treated with Abound fungicide either as a day spray, night spray, 1x rate via surge irrigation, or a no spray control. Irrigation events did not increase the spread/growth of Southern blight, even with dense vegetative canopies and hot, humid weather.

In the first experiment, peanut yield was higher in sensor based treatments as compared to FAO-56 and the non-irrigated control. These data indicate that sensor based irrigation scheduling is superior to FAO-56, and that the optimum yield and water use efficiency for peanuts in a furrow irrigated environments occurs at an irrigation threshold of -100 cbar in silt loam texture soils (Figure 1).

In experiment 2, irrigated peanut yield was 49% greater than that of the non-irrigated control. For both irrigated and non-irrigated environments, the presence or absence of fungicide did not significantly affect yield or disease hits on the limbs and crown of the plants. Under conditions of this experiment, therefore, irrigation did not increase the occurrence of Southern Blight.

In experiment 3, peanut yield was not significantly different among fungicide timing or delivery method (Figure 2). Mean yield for treatments decreased in the order of night spray (6552 lbs/ac), surge (6323 lbs/ac), day spray (6153 lbs/ac), non-treated (6019 lbs/ac).

Figure 1: *Impact of irrigation scheduling on peanuts yield in 2015.*



Results of these experiments will improve peanut yield and water use efficiency by developing sensor-based thresholds for producers in furrow irrigated peanut environments. Preliminary data indicate potential to improve management recommendations for Southern blight disease in Mississippi.

Figure 2: *Impact of fungicide application method on peanuts yield in 2015.*