

**Title: Determination of Optimal Timing for Peanut Irrigation Trigger Levels a Continuation**

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**Background:** The standard recommended soil water tension trigger point for peanut in sandy loam soil (most predominate soil type across southern Georgia), is 45 kPa. This value has been used in research for over the past five years and has aided in maximizing yields when compared to other irrigation scheduling methods. However, there is evidence (such as primed acclimation) that suggest that the trigger level of peanut could be adjusted to better match the water requirement. Thus this study aims to utilize varied irrigation trigger levels to aid in maximizing yield.

**Objectives:**

- To utilize soil moisture information to determine the optimal timing for triggering irrigation on peanut.
- Use commonly planted varieties to Georgia and the surrounding region such as Georgia-06G, -12Y, TUFRunner™ ‘511’ TUFRunner ‘727’ to determine optimum irrigation trigger points for each variety.
- Evaluate the varied irrigation timing effects on final crop yield.

**Materials, Methods, and Results:**

Plots were established at SIRP under a variable rate lateral irrigation system capable of independently controlling water applications within eight row wide by 40 ft long plots. This field has a total of 27 plots, or enough area for nine treatments to have three replications each. Peanuts were be planted on the 11 of May and harvested on October 1, 2019. Yield was collect from each variety and plot. Soil water tension sensors were installed in the plots approximately 4 weeks after emergence and data were collected hourly. Since a trigger level of 40-45 kPa was used with success in past studies, two lower, and two higher trigger levels were selected. The selected trigger thresholds were in the range of 20 and 30 kPa for the lower, and 50 and 60 kPa for the higher levels. Utilizing trigger thresholds over this range should have provided a significant spread in soil water tension from what can be considered to be generally wet all year to what could be considered to be dry for the soil type at the test site. The total amount of irrigation applied and yield data can be viewed in Table 1. Unfortunately there were 32.6 inches of rainfall received from May 11 until October 1. This is an unusually high amount of rainfall for the average peanut production season in Georgia. Due to the high amount of rainfall there were very little separation in irrigation treatments. As can be viewed in Table 1 below, there were very little differences between irrigation applied between the treatments except for the Checkbook treatment. There was a yield increase for irrigating during 2018, however, there was no benefit for excessive irrigation in treatments such as the Checkbook or the 20 to 30 kPa treatments. In conclusion, the plan is to run this trial again during 2019 to see if we happen to have a drier year at the research site and can get a response from irrigation treatments.

Table 1. Irrigation treatment, irrigation applied and final yield.

Treatment	Irrigation Applied (inches)	Yield (lb/ac)
20 kPa	6.25	5846.5
30 kPa	5.50	5728.8
40 kPa	4.00	5899.5
50 kPa	4.75	6047.1
60 kPa	4.75	5862.0
Checkbook	9.25	5650.3
50% Checkbook	5.92	5767.1
IrrigatorPro	4.00	5625.1
Rainfed	2.50	5491.8