

DETERMINATION OF OPTIMAL TIMING FOR PEANUT IRRIGATION TRIGGER LEVELS

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Non-Technical Summary:

The main goal of this project was to utilize information from soil water tension sensors to aid in determining the optimal timing for triggering irrigation on peanut. Past studies have shown that peanut responds very well to irrigation being scheduled via soil water tension. However, there is limited information on what irrigation trigger level should be used to optimize growth, development, and yield.

Methods:

Four common varieties of peanut planted in the southeast (GA-06G, GA-12Y, TUFRunner 297 and TUFRunner 511) were planted in two rows of each variety in eight row irrigation treatment plots. Six irrigation treatments were compared to rainfed for total irrigation required, growth, development, and final yield achieved. The irrigation treatments were IrrigatorPro, a 20, 30, 40, 50, and 60 kPa soil water tension (SWT). SWT data was logged hourly and irrigation decisions were made by 8 a.m. each morning.

Results:

Unfortunately for an irrigation study there was 24.3 inches of rainfall received during the 2017 production season. Even though this season was characterized by a hurricane and tropical storm at the end of the season, there was uniformly distributed rainfall received during most of the season. The 20 kPa treatment was the only treatment that called for much irrigation, it triggered thirteen times during the season for a total irrigation application of 10.60 inches. The rest of the treatments called for four, four, three, three, and four irrigation events for the 30, 40, 50, 60 kPa and IrrigatorPro treatments respectively. As can be seen in Table 1 below there were no differences between the treatments from the yield perspective. The main difference in the treatments was between the amount of irrigation applied in between the 20 kPa treatment and the rest of the treatments.

Table 1. Mean yield results from each of the irrigation scheduling treatments.

Mean of All Varieties			
Irrigation Treatment	Irrigation Amount (in.)	Total Water (in.)	Yield (lbs/ac)
Rainfed	1.00	25.30	5875
20 kPa	10.60	35.90	6433
30 kPa	3.50	27.80	6450
40 kPa	3.35	27.65	6396
50 kPa	3.25	27.55	6157
60 kPa	3.10	27.40	6497
IrrigatorPro	4.00	28.30	6260

Conclusions

In conclusion the study had the potential to quantify the effects of varied irrigation triggers on the growth, development, and yield in peanut. However, the excessive rainfall that was received during 2018 masked the treatment differences. This is an important study that is working towards better irrigation management of peanut.