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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT
RESEARCH INITIATIVE
FINAL REPORT FOR WORK
DONE UNDER RESEARCH AGREEMENT

Final Report

October 8, 2009

INSTITUTION: University of Georgia

PROJECT TITLE: Potential Water and Energy Savings from Use of Precision
Irrigation, Scheduling, and Conservation Tillage

RES. AGR. NO.: PROJECT LEADER: Dr. James E Hook
GACCP Control NO.: 4-894-653-5

EXPIRATION DATE: December 31, 2008 NPB CONTACT: Marie Fenn or M Mehok
NPB Control NO. : Project# 236

FINAL REPORT:

I have complete this final series of research efforts on irrigation management for peanut with the harvest of peanuts plots this past week. The final results are described below. During the upcoming winter I will work to put together a publication detailing the findings and recommendations for the peanut industry.

With my retirement from the University of Georgia effective last May, I want to take this opportunity to thank the Georgia Peanut Commission and the National Peanut Board for their support of this and my earlier research in support of Southeastern peanut growers.

Field studies were carried out at the Stripling Irrigation Research Park in Camilla and at the Lang Farm at Tifton.. This year's treatments focused on timing of irrigation with treatments that delay irrigation from optimal and that withhold the early irrigation. One looked at irrigation delays that inevitably result from system failures, power shutoff during high heat days, and competing farm activities. The second looked at extending the early season stress further in hopes of stimulating root growth and saving irrigation. This study, which was planted into conservation tillage (rye winter cover).

<u>Treatment</u>	<u>Description</u>	<u>Irrigation(in.)</u>	<u>Ranfall</u>	<u>Total H2O</u>	<u>Yield(lbs/a)</u>	<u>Irr Diff</u>
1	Non Irrigated	0.76	24.63	25.39	4876	
2	Easy Pan	6.55	24.63	31.18	4593	-283
3	Irrigator Pro	5.97	24.63	30.6	5035	159
4	Delay 2 days	8.29	24.63	32.92	5385	509
5	Fixed Irrigation	5.39	24.63	30.02	5059	183
6	Delay 3 days	6.46	24.63	31.09	5057	180
7	Spare - 2 irr after pegs	3.9	24.63	28.53	5255	379
8	SM Watermark Trigger	8.14	24.63	32.77	5310	434
9	SM CProbe Trigger	5.11	24.63	29.74	5684	808

Lang Farm, Tifton loamy sand
Yield is based on wet weight.

<u>Treatment</u>	<u>Description</u>	<u>Irrigation(in.)</u>	<u>Ranfall</u>	<u>Total H2O</u>	<u>Yield(lbs/a)</u>	<u>Irr Diff</u>
1	Non Irrigated	0.3	21.58	21.88	5589	
2	Easy Pan	5.66	21.58	27.24	5276	-312
3	Irrigator Pro	6.74	21.58	28.32	5363	-226
4	Delay 2 days	8.76	21.58	30.34	5684	95
5	Fixed Irrigation	4.18	21.58	25.76	5209	-380
6	Delay 3 days	7.71	21.58	29.29	5378	-211
7	Spare - extra waterings	16.57	21.58	38.15	4993	-596
8	SM Watermark Trigger	7.64	21.58	29.22	5427	-162
9	SM CProbe Trigger	4.71	21.58	26.29	5900	311

Stripling, Orangeburg loamy sand
Yield is based on wet weight.

As evidenced by the non-irrigated yields, 2009 wasn't a good year to test the effects of irrigation delays. Rainfall frequently interceded and made up for any deficiencies. Much of the rainfall shown came in two events, so there were still periods when soil sensors (Watermark, CProbe), evaporation sensors (Easy Pan), and models (IrrigatorPro, Fixed) triggered irrigation.

Perhaps the most important finding is something we have observed before, especially in wet years - you can over-irrigate and lower yields. Disease incidence was low in all of the plots in 2009, so it wasn't likely a disease interaction. But with plenty of water peanut tend to grow more vine and set fewer blooms or pegs. All of the yields would be acceptable to growers, but the extra expense for added water would lower profits and to some extent yields.