Peanut Production and Crop Management Systems

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Summary

Three trials were conducted to evaluate foliar growth enhancement products effects on peanut. One trial was established to determine peanut seed size effects on yield and grade of Virginia peanut. Trials were conducted evaluate digger timings effects on Virginia and Valencia peanut yield and grade. No foliar growth enhancement product affected runner peanut yield or grade. Seed size did not affect Virginia peanut yield or grade. However, this first year of this study and seed size selection will be conducted again in 2008 to see if continued selection will affect yield. The fifth of six digging dates had a higher yield than all digging date except the final digging date for Virginia peanut. Grade was highest with the sixth date. The third and final digging date had the highest yield and grade for Valencia peanut. Seven Peanut Progress newsletters were published in 2007.

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Introduction

Growers throughout the state of Texas are affected by production problems that decrease production efficiency, limit yields, and ultimately reduce profitability. It is the role of both research and extension agronomy programs to develop and implement production management strategies to solve current problems, while anticipating new problems that might develop. Applied research aids in developing education programs and recommendations to aid in this decision making process. Applied research and education programs will be developed to assist growers in solving production problems in peanut. The focus of these programs will be to: evaluate the use of foliar fertilizers and other possible crop enhancing additives, evaluate the effects of seed size selection on yield and grade of Virginia peanut, evaluate the effects of digging time on yield and grade of Valencia and Virginia peanut (this project will also try to correlate physiological characteristics with proper digging time), and develop a in-season production newsletter. The applied research conducted will be the backbone in developing educational programs in peanut and educational programs will be conducted throughout the state. Implementation of information developed from these peanut management strategies and subsequent educational programming should improve profitability of Texas peanut production.

Discussion

Field studies were conducted in Dawson, Gaines, and Wilbarger counties during the 2007 growing season. Twelve treatments were applied at each location: untreated (no foliar product, Peanut Gro 4-2-1 at 1 qt pr/A POST3, CoRoN at 3 gal pr /A POST2, Elemax Nutrient Concentrate at 1 qt pr/A + CoRoN at 1 gal pr/A POST2, Tracite Iron 5%

1 qt pr/A POST3, Cotton & Peanut Mix 1 gal pr/A POST3, Quick Boost Ultra at 1 gal pr/A POST3, Humic Acid at 1 gal pr/A POST3, Fulvic Acid at 1 gal pr/A POST3, Liquid Chicken at 1 gal pr/A POST3, Humic Acid at 0.6 gal pr/A + Fulvic Acid at 0.1 gal pr/A + Liquid Chicken at 0.3 gal pr/A POST3, Humic Acid at 1 gal pr/A + Foliar (varied by location). The following spray regime was used: the first treatment was applied starting in the middle of June (corresponding with early bloom). POST2 applications would have received 2 applications, and POST3 applications would have received 3 applications (humic acid, fulvic acid and liquid chicken were applied 10 times in 2005). Follow up applications were applied on a 7 to 10 day schedule after the initial application applied in mid-June. All treatments were applied broadcast in 15 gallons per acre water carrier. All treatments were applied with a 0.25 % v/v non-ionic surfactant except Humic Acid, Fulvic Acid, and Liquid Chicken. No treatment applied affected yields or grades at any location when compared to where no foliar product was applied.

During the 2006 growing season foundation Gregory obtained from North Carolina was planted and harvested. Seed from this harvest was separated into three types and planted. The first treatment included all seed sizes from the harvest, the second treatment included only the ELK seed size, and the third was all of the seed minus the ELK. Yield and grade were not affected by seed size selection in 2007. Seed was separated again in 2007 and will be planted in 2008.

Trials were established at Ag-Cares in Dawson County (Virginia) and Lamb County (Valencia) to determine optimum time to harvest these two market-types of peanut. Peanut were first dug on September 6, 2007. This coincided with approximately 140 days after planting for the Virginia and 110 days for the Valencia. Peanuts were subsequently dug on a 7-14 day schedule with 6 timings for the Virginia (last digger timing – October 11, 2007) and 3 digger timings for the Valencia (last digger timing – September 19, 2007). The fifth timing had a higher yield than all of the other digger timings except the last digger timing for Virginia market-types. While the last timing had the highest yield. The highest yield and grade for Valencia peanut was with the last digger timing.

Seven peanut in-season production newsletters were published during the 2007 growing season. These were distributed through the web and various e-mail distribution list. Topics included production management issues, crop updates, weed control, disease issues, insect updates, and rhizobium scounting.

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Table 1. Effects of foliar growth inhancers on runner peanut

Treatment	Rate	Unit	Stage	Dawson County Yield		Dawson County Grade		Gaines Yield		Gaines Grade		Wilbarger Yield		Wilbarger Grade	
				lb/A		%		lb/A		%		lb/A		%	
Untreated				6260	a	79	a	5120	a	74	a	1980	a	71	a
Peanut Gro 4-2-1	1.0	qt/A	POST3	5790	a	81	a	4490	a	73	a	2030	a	73	a
CoRoN	3.0	gal/A	POST2	5460	a	79	a	5140	a	75	a	2160	a	73	a
Elemax Nutrient Conc	1.0	qt/A	POST2	5710	a	79	a	4900	a	72	a	2030	a	74	a
+ CoRon	1.0	gal/A													
Tracite Iron 5%	1.0	qt/A	POST3	5940	a	81	a	5590	a	75	a	2470	a	72	a
Cotton & Peanut Mix	1.0	gal/A	POST3	5630	a	80	a	5620	a	77	a	2430	a	74	a
Quick Boost Ultra	1.0	gal/A	POST3	5330	a	79	a	4730	a	75	a	2670	a	73	a
Humic Acid	1.0	gal/A	POST3	5760	a	80	a	4900	a	75	a	2070	a	72	a
Fulvic Acid	1.0	gal/A	POST3	5540	a	80	a	5430	a	75	a	2320	a	72	a
Liquid Chicken	1.0	gal/A	POST3	6080	a	80	a	4620	a	74	a	2160	a	73	a
Humic Acid	0.6	gal/A	POST3	5600	a	80	a	4180	a	74	a	2060	a	73	a
+ Fulvic Acid	0.1	gal/A													
+ Liquid Chicken	0.3	gal/A													
Humic Acid	1.0	gal/A	POST3	5740	a	79		4560	a	74	a	2240	a	72	a
+ Varied by Location*	3.0	gal/A	POST3												
LSD (P=.10)				NS		NS		NS		NS		NS		NS	
Standard Deviation				490		1		1210		2		560		2	
CV				9		2		24		3		26		3	

*Dawson - CoRon, Gaines - Tracite Iron 5%, Wilbarger - CoRon + Elemax

LSD = least significant difference; SD = standard deviation; CV = coefficient of variation; NS = not significant.

Means within a column which differ by more than the LSD are statistically different at the 0.10 level of significance.

Means followed by same letter do not significantly differ (P=.10, LSD)

Table 2. Effects of seed size selection on Virginia peanut.

Treatment	Yield		Grade		ELK	
	lb/A		%		%	
Gregory All Seed	6300	a	69	a	59	a
Gregory ELK only	6170	a	68	a	59	a
Gregory minus ELK	6150	a	67	a	57	a
LSD (P=.10)	NS		NS		NS	
Standard Deviation	190		2		3	
CV	3		2		5	

LSD = least significant difference; SD = standard deviation; CV = coefficient of variation; NS = not significant.

Means within a column which differ by more than the LSD are statistically different at the 0.10 level of significance.

Means followed by same letter do not significantly differ (P=.10, LSD)

Table 3. Effects of digger timing on Valencia and Virginia peanut.

Treatment	Valencia				Virginia			
	Yield		Grade		Yield		Grade	
	lb/A		%		lb/A		%	
Digger Timing 1	4040	b	74	b	3110	e	68	c
Digger Timing 2	4300	b	75	b	4090	d	68	c
Digger Timing 3	4810	a	77	a	4440	cd	70	bc
Digger Timing 4					5080	bc	71	b
Digger Timing 5					6020	a	70	b
Digger Timing 6					5430	ab	73	a
LSD (P=.10)	480		1		690		2	
Standard Deviation	350		1		560		2	
CV	8		1		12		2	

LSD = least significant difference; SD = standard deviation; CV = coefficient of variation; NS = not significant.

Means within a column which differ by more than the LSD are statistically different at the 0.10 level of significance.

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