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Evaluation of Foliar Fertilizer and other Additives on Peanut Crop Response and Economic Returns

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Summary

Five trials (2 runner, 2 Spanish, and 1 Virginia) in 2005 and 4 trials (2 runner, 1 Valencia, and 1 Virginia) in 2006 were conducted to assess the effect of foliar additives on yield and grade of peanut. Products tested included Peanut Gro 4-2-1, CoRoN, Elemax Nutrient Concentrate + CoRon, Tracite Iron 5%, Cotton & Peanut Mix, Quick Boost Ultra, Humic Acid, Fulvic Acid, Liquid Chicken, Humic Acid + Fulvic Acid + Liquid Chicken, and Humic Acid + Foliar (varied between locations). No foliar product effected yield or grade at any of the locations when compared to where no foliar product was used.

Evaluation of Foliar Fertilizer and other Additives on Peanut Crop Response and Economic Returns

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Introduction

Producers annually apply various combinations of yield enhancing agents including foliar fertilizers and other plant growth regulators in the hopes of improving plant growth and performance. The products often include the addition of a micronutrient (especially iron). Iron chlorosis is commonly observed across the peanut growing region of Texas. Growers will often apply a foliar fertilizer containing iron and in many cases other micronutrients. In addition, plant growth regulators may be applied to boost early season plant vigor and growth. While these applications may temporarily improve plant growth and/or appearance they may not benefit peanut yield or quality. Many of these products have never been tested in a replicated experiment by an unbiased representative, especially over multiple years and locations. Therefore, there is little or no data to determine if the products actually improve a producer's bottom line. As peanut profitability continues to tighten it is imperative that each input applied by a producer provides an economical return. Location and environment will most likely effect the performance of these products. Therefore, the goal of this project through multiple year and location testing is to determine when and where these products might be most economically and effectively applied.

Discussion

Field studies were conducted in Dawson, Gaines, Lamb, Terry, and Wilbarger counties. 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 foliar product in 2004 at AG-CARES and Wilbarger was Elemax Nutrient Concentrate at 1 qt pr/A + CoRoN at 1 gal pr/A POST2, at Lamb-1 was Peanut Gro 4-2-1 at 1 qt pr/A POST3, at Lamb-2 was Tracite Iron 5% 1 qt pr/A POST3, and at Terry was Cotton & Peanut Mix 1 gal pr/A POST3. The exception to this list was that Tracite Iron 5% and Quick Boost Ultra were not applied at the Wilbarger 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.

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Foliar Product Evaluation Trials - 2005

Treatment	Rate	Timing	Yield				Wilbarger
			AG-Cares	Lamb-1	Lamb-2	Terry	
Untreated			4825	4211	3469	1373	6496
Peanut Gro 4-2-1	1 qt/A	POST3	4558	4175	3267	1114	6774
CoRoN	3 gal/A	POST2	4935	3630	3509	1668	6141
Elemax Nutrient Conc	1 qt/A	POST2	4599	3775	3469	1163	6387
CoRon	1 gal/A						
Tracite Iron 5%	1 qt/A	POST3	4809	4175	3630	1239	
Cotton & Peanut Mix	1 gal/A	POST3	4643	3630	3428	1015	6976
Quick Boost Ultra	1 gal/A	POST3	4716	4610	3549	1007	
Humic Acid	1 gal/A	POST10	4375	4683	3711	1245	5955
Fulvic Acid	1 gal/A	POST10	4187	4501	3307	1045	5824
Liquid Chicken	1 gal/A	POST10	4386	4283	3791	1365	5917
Humic Acid	0.6 gal/A	POST10	4072	4175	3590	1447	6103
Fulvic Acid	0.1 gal/A						
Liquid Chicken	0.3 gal/A						
Humic Acid	1 gal/A	POST	4842	4574	3590	1193	5579
+ Foliar							
LSD (P=.10)			NS	NS	NS	NS	NS
Standard Deviation			454	570	301	456	663
CV			10	14	9	37	11
Test Mean			4579	4202	3526	1240	6215

Foliar Product Evaluation Trials - 2005

Treatment	Rate	Timing	Grade (%)				Wilbarger
			AG-Cares	Lamb-1	Lamb-2	Terry	
Untreated			76	72	74	76	71
Peanut Gro 4-2-1	1 qt/A	POST3	76	70	73	76	70
CoRon	3 gal/A	POST2	76	71	75	76	71
Elemax Nutrient Conc	1 qt/A	POST2	77	73	73	75	72
CoRon	1 gal/A						
Tracite Iron 5%	1 qt/A	POST3	77	71	72	75	
Cotton & Peanut Mix	1 gal/A	POST3	76	72	72	75	72
Quick Boost Ultra	1 gal/A	POST3	76	71	74	75	
Humic Acid	1 gal/A	POST10	76	72	73	76	71
Fulvic Acid	1 gal/A	POST10	76	71	73	75	72
Liquid Chicken	1 gal/A	POST10	77	70	73	76	71
Humic Acid	0.6 gal/A	POST10	76	72	73	76	72
Fulvic Acid	0.1 gal/A						
Liquid Chicken	0.3 gal/A						
Humic Acid	1 gal/A	POST	7	7	7	7	73
+ Foliar							
LSD (P=.10)			NS	NS	NS	NS	NS
Standard Deviation			1	1	1	1	1
CV			1	2	2	2	2
Test Mean			76	71	73	76	72

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Foliar Product Evaluation Trials - 2006

Treatment	Rate	Timing	Gaines	Hockley	Terry	Wilbarger
			Yield (lb/A)			
Untreated			6900	3111	6377	5641
Peanut Gro 4-2-1	1 qt/A	POST3	7225	3275	6403	5472
CoRon	3 gal/A	POST2	6780	3130	6473	5777
Elemax Nutrient Conc + CoRon	1 qt/A + 1 gal	POST2	6731	2984	6627	5870
Tracite Iron 5%	1 qt/A	POST3	6531	3093	6640	5913
Cotton & Peanut Mix	1 gal/A	POST3	6954	2911	6468	5663
Quick Boost Ultra	2 gal/A	POST3	7042	3093	6307	6196
Humic Acid	3 gal/A	POST3	7140	3421	6420	5559
Fulvic Acid	4 gal/A	POST3	7077	3530	5934	5663
Liquid Chicken	5 gal/A	POST3	6902	3348	6049	4982
Humic + Fulvic + Liq Chicken	0.6 + 0.1 + 0.3 gal	POST3	6709	2948	6424	5543
Humic Acid + Foliar	1 gal/A	POST	6845	3166	6808	5227
LSD (P=.10)			NS	NS	NS	NS
Std. Deviation			428	280	427	644
CV			6	9	7	11
Test Mean			6903	3168	6411	5626

Foliar Treatments: Gaines = Peanut Gro 4-2-1, Hockley = Tracite Iron 5%, Terry = Cotton & Peanut Mix; Wilbarger = CoRon

Foliar Product Evaluation Trials - 2006

Variety	Grade (%)			
	Gaines	Hockley	Terry	Wilbarger
Untreated	82	71	79	75
Peanut Gro 4-2-1				74
CoRoN				73
Elemax Nutrient Conc + CoRon				74
Tracite Iron 5%				73
Cotton & Peanut Mix				75
Quick Boost Ultra				74
Humic Acid				73
Fulvic Acid				74
Liquid Chicken				74
Humic + Fulvic + Liq Chicken				73
Humic Acid + Foliar				74
LSD (P=.10)	NS	NS	NS	NS
Std. Deviation	1	1	1	1
CV	1	2	1	2
Test Mean	82	72	79	74

Foliar Treatments: Gaines = Peanut Gro 4-2-1, Hockley = Tracite Iron 5%, Terry = Cotton & Peanut Mix; Wilbarger = CoRon