National Peanut Board
Southeastern Peanut Research Initiative
Project Annual Report
January 1 - December 31, 2009

Project Leader: Barry J. Brecke

Title: Influence of foliar fertilizers and inoculants on peanut yield and grade - Florida Study.

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Florida:

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Objectives:
1. Examine several foliar fertilizers and soil inoculants to determine if they have yield enhancing qualities.
2. Determine if foliar fertilizers and soil inoculants improve peanut grade.
3. Determine if using foliar fertilizers and soil inoculants result in overall economic gain.

Progress Report

Studies were initiated in Florida during 2009 at the West Florida Research and Education Center, Jay, FL and Plant Science Research and Education Unit in Citra, FL. The field sites were maintained weed-free and under irrigation throughout the experiment. Products tested included BTN+, StimuPro, Optimize/Lift, BM 86, Chaperone, Actiguard, Solubor, Apogee, Accelegrow, Foliar Fertilizer 20-20-20, and Inoculaid (detailed in Table 1).

Florida 07 peanuts were planted in mid-May into a conventionally prepared seedbed. Herbicides were applied for weed control and were selected to insure that the peanuts were not injured. Hand-weeding was also employed to remove any weeds that escaped control with the herbicides. All plots received broadcast applications of foliar fungicides as appropriate.

Stand counts were recorded for all the at-plant in-furrow treatments. We also utilized multi-spectral sensing as part of the data collection process. Plant light interception influences plant growth. Light that is intercepted by the plant is either absorbed, transmitted, or reflected. When a plant is under stress, reflectance of certain wavelengths changes. Therefore, by quantifying the reflected light, multi-spectral sensing technology can detect the level of plant stress. As the

Table 1. Foliar Fertilizers and Inoculants

Treatment	Application Rate	Application Timing
BTN+	8qt/A 4qt/A	At Plant 21 days after plant
StimuPro	2 fl oz/A 4 fl oz/A 4 fl oz/A	At Plant At Pegging 14 Days After Pegging
Optimize/Lift	17.5 fl oz/A	At Plant
BM86	1 qt/A 1 qt/A	At Pegging 14 days after Pegging
Chaperone	5 fl oz/A	At Pegging
Actiguard	1 fl oz/A	4 times beginning 30 days after planting - 15 day intervals
Solubor	1 qt/A 1 qt/A	30 days after planting 45 days after planting
Apogee	7.25 oz/A 7.25 oz/A	50% row closure 100% row closure
Accelegrow	4 fl oz/A 4 fl oz/A	30 days after planting 45 days after planting
Foliar Fertilizer 20-20-20	4.5 lb/A 4.5 lb/A	45 days after Planting 60 days after planting
Inoculaid	16 oz/A	7 applications
Untreated Check		

Results:

Citra Location

After most of the treatments had been applied at the Citra site, the peanuts were unintentionally sprayed with a low rate of Roundup. The sprayer used for fungicide application had been previously used to apply Roundup. The sprayer was not completely emptied prior to mixing fungicide and the when the fungicide was applied, a low rate of Roundup was also applied. While the peanuts were not killed, enough damage was caused so that the study could not be completed. Therefore, no data was collected at the Citra site in 2009.

Jay Location

There were no noticeable differences between treatments in peanut canopy rate of growth or time to canopy closure. Apogee did cause a somewhat more upright growth habit but canopy width was not influenced. In 2009, none of the treatments had a significant impact on overall canopy growth.

The Optimize/Lift treatment improved peanut stand by 22% compared to the untreated 20 days after planting (Table 2). None of the other in-furrow treatments had an effect on peanut stand.

Peanut stress (calculated from light reflectance data) was measured several times during the growing season. None of the treatments affected peanut stress when measured 40 days after planting (Table 2). When measured 53 days after planting, however, Optimize/Lift treated peanuts were exhibiting significantly less stress than the untreated while BTN+ and Chaperone peanuts where under more stress than the untreated. By 83 days after planting none on the treatments were reducing peanut stress while BM86, Solubor and Accelegrow were increasing stress.

Peanut yield and grade showed no differences among treatments (Table 2). Regardless of in-season stress measurements, neither yield or grade was affected by any of the foliar fertilizers or inoculants tested. Differences in yield and/or grade may have been masked by the unusually poor harvest conditions which prevailed during the entire 2009 peanut harvest season. Peanut digging was delayed due to wet conditions as was harvesting the peanuts once they were dug. As a result, they may have been treatment differences that were not detected.

This study will be repeated in 2010 at Jay and Citra with the same set of treatments. Hopefully we will not encounter problems in 2010 as we did in 2009.

Table 2. Effect of Foliar Fertilizers and Inoculants on Peanut Plant Stress, Peanut Yield and Peanut Grade, 2009, Jay, FL.

Treatment	Stand Count[1.]	Peanut Stress[2] 40 days	Peanut Stress[2] 53 days	Peanut Stress[2] 83 days	Peanut Yield	Peanut Grade
	plants/5' row				lbs/A	
BTN+	13	0.561	0.410**	0.270	3704	72
StimuPro	15	0.540	0.380	0.261	3243	71
Optimize/Lift	22*	0.463	0.350*	0.265	3245	72
BM86	--	0.511	0.374	0.280**	2629	70
Chaperone	--	0.616	0.413**	0.266	3507	71
Actiguard	--	0.591	0.384	0.275	2990	71
Solubor	--	0.489	0.377	0.280**	3247	72
Apogee	--	0.470	0.359	0.267	2712	71
Accelegrow	--	0.545	0.387	0.280**	3075	71
Foliar Fertilizer	--	0.488	0.371	0.279	2540	71
Inoculaid	15	0.560	0.385	0.264	2991	70
Untreated	18	0.534	0.379	0.263	3154	71
LSD	3.6	NS	0.028	0.015	NS	NS

> difference in yield 5%

[1.] Stand count data collected 20 days after planting.

[2.] Peanut stress is calculated from the light reflectance data that was collected. The lower the value, the less stress, the higher the value, the more stress.

* = better than Untreated

** = worse than the Untreated