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## National Peanut Board / Southeast Peanut Research Initiative

**EXECUTIVE SUMMARY** for 2012 NPB Project # 310, entitled “Fertilization, Tillage, and Phorate Interaction on Thrips and TSWV Incidence in Early Planted Peanuts” – Univ. of Georgia, by R. Scott Tubbs.

As a result of tomato spotted wilt virus (TSWV) becoming a severe disease threat in southeastern peanut production in the last 15 years, management has been altered to account for this disease. However, the release of highly TSWV resistant cultivars may bring opportunities to shift more acreage to earlier plantings once again to aid the whole farm enterprise by providing a larger optimal planting window. Yet, this shift to earlier plantings would not depend entirely on cultivar resistance; it would need to be coupled with proper management strategies. The data supporting the Peanut Disease Risk Index shows reduced incidence in TSWV when conservation tillage management and phorate insecticide is used in-furrow at planting. But, it may be possible to strengthen young root systems, enhance early season growth, protect the plants from unfavorable environmental conditions, and potentially decrease the susceptibility of plants to various pests throughout the growing season by the addition of a starter fertilizer. Starter fertilizers are typically not necessary in peanuts in normal to later planting dates, but in theory could be more effective for early plantings to quickly establish a healthy plant and minimize the effect of early pest pressure.

A field experiment was established to evaluate peanuts planted using two tillage systems (conventional and strip-till following a rye cover crop), with and without starter fertilizer (10.9 gal / ac of 10-34-0) in a 2x2 placement at planting (two inches below and to the side of the seed), and with or without phorate insecticide in-furrow at planting (5 lb / ac). For the third consecutive year, starter fertilizer had no effect on peanut results. In addition, yields were higher in conventional tillage compared to strip-till for the third consecutive year. However, white mold was strongly influenced by tillage for the second time in three years, which likely had a large impact on yield. Even with fungicide application, these data indicate that in field with heavy white mold pressure, conventional tillage would be a preferred management option than strip-till to assist with residue and inoculum burial. Strip-till did reduce TSWV compared to conventional tillage, but the high levels of resistance in GA-06G and the potential to yield well despite infection had little, if any impact on yield, especially with a more yield-limiting variable present. Inclusion of phorate likewise reduced TSWV compared to its absence. There was nearly a 400 lb/ac yield difference between where phorate was used vs. not applied, which would be positive net revenue for the farmer. However, this did not constitute a statistical difference in yield, so this may not be a consistent trend for farmers. Thrips feeding was extremely low during the sampling period in this year of the trial. Plant emergence was delayed this year because of a drop in soil temperatures after planting.

There continues to be no data in multiple management scenarios to support use of starter fertilizer (N) on peanut in Georgia under standard rotation and production practices – it is just an added expense with no benefit. Decisions on use of tillage and phorate can have impact on final output and net revenue for the grower, so those are management tools that a grower should evaluate when planting peanut, especially early in the season.

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**NATIONAL PEANUT BOARD / SOUTHEAST PEANUT RESEARCH  
INITIATIVE**

**Final Report** for work done under project agreement entitled:  
“Fertilization, Tillage, and Phorate Interaction on Thrips and TSWV Incidence in Early  
Planted Peanuts”.

NPB Project # 310  
GPC Budget # 4-976-653-5  
UGA Account #25-21-RF328-887

INSTITUTION: University of Georgia

Principle Investigator: Dr. R. Scott Tubbs

EXPIRATION DATE: 31 December 2013

SPRI CONTACT: Jamison Cruce

NPB CONTACT: Bob Parker

**Final Report:**

A field experiment was established to evaluate peanuts planted using two tillage systems (conventional and strip-till), with and without starter fertilizer (10.9 gal / ac of 10-34-0) in a 2x2 placement at planting (two inches below and to the side of the seed), and with or without phorate insecticide in-furrow at planting (5 lb / ac). A rye cover crop (‘Wrens Abruzzi’) was planted at 90 lb / ac on November 7, 2011. Cover crop was terminated with glyphosate (Roundup Weathermax at 2 qt/ac) on April 2, 2012 with biomass determined on April 3, 2012. Strip-till plots were subsoiled on April 19. Conventional tillage plots were turned and bedded on April 25. ‘Georgia-06G’ peanut was planted in all plots on April 26 at 6.0 seed / ft of row. A split plot design was used with the two tillage management schemes as the main plot treatment effect, and the starter fertilizer and phorate applications as the sub-treatment effects arranged in a randomized factorial. Herbicide applications of Prowl 3.3EC (1 qt/ac) + Strongarm (0.45 oz/ac) + Valor (3 oz/ac) immediately followed planting and were watered in within 24 hours to activate. Thrips sampling occurred on May 14, and 21 for this location. Plots were dug on September 10, after TSWV ratings (Sept. 7) and before white mold ratings, and were harvested on September 13, 2012.

There were no two-way or three-way interactions of tillage, starter fertilizer, and phorate application for yield, plant stand, or white mold. There were also no differences for any variable with respect to starter fertilizer application.

Table 1. Plant stand, yield, white mold, and Tomato spotted wilt virus (TSWV) data for tillage, starter fertilizer, and phorate variables, Tift County, GA, 2012.

Tillage	Emerged Stand Count (plant/ft)		Pod Yield (Lb/Ac)	% White Mold		% TSWV	
Strip	4.1	A <sup>x</sup>	3748 B	31.7	A	4.2	B
Conventional	4.4	A	5292 A	10.6	B	7.9	A
<b>Starter Fertilizer</b>							
None	4.3	A	4709 A	20.3	A	5.1	A
N + P	4.3	A	4332 A	22.1	A	6.9	A
<b>Insecticide</b>							
None	4.5	A	4334 A	20.9	A	8.9	A
Phorate	4.1	A	4707 A	21.4	A	3.2	B

<sup>x</sup> Means followed by the same letter within a column are not significantly different according to pairwise t-tests.

For the third consecutive year, starter fertilizer had no effect on peanut results. In addition, yields were higher in conventional tillage compared to strip-till for the third consecutive year. However, white mold was strongly influenced by tillage for the second time in three years, which likely had a large impact on yield. Even with fungicide application, these data indicate that in field with heavy white mold pressure, conventional tillage would be a preferred management option than strip-till to assist with residue and inoculum burial. Strip-till did reduce TSWV compared to conventional tillage, but the high levels of resistance in GA-06G and the potential to yield well despite infection had little, if any impact on yield, especially with a more yield-limiting variable present.

Inclusion of phorate likewise reduced TSWV compared to its absence. There was nearly a 400 lb/ac yield difference between where phorate was used vs. not applied, which would be positive net revenue for the farmer. However, this did not constitute a statistical difference in yield, so this may not be a consistent trend for farmers. Thrips feeding was extremely low during the sampling period in this year of the trial. Plant emergence was delayed this year because of a drop in soil temperatures after planting, thus the first thrips sample date was not even possible. The second sample date resulted in only a few thrips captures in the entire test. Further combined analyses with other years of the test will be needed to determine the impact of thrips numbers and timing of capture on peanut production.