NATIONAL PEANUT BOARD / SOUTHEAST PEANUT RESEARCH INITIATIVE

Final Report for work done under project agreement entitled:
“Evaluating peanut cultivar response to agronomic management and planting date and
irrigation impacts on new peanut cultivars, yield, grade, aflatoxin and water requirements
and use of drone technology for management decisions”.

NPB Project # 463
BID # 1460
SID # GA-180

INSTITUTION: University of Georgia
Principle Investigator: Dr. W. Scott Monfort, R. Scott Tubbs, Wesley Porter
EXPIRATION DATE: 30 June 2017
SPRI CONTACT: Hannah Jones
NPB CONTACT: Bob Parker

Quarterly Report:

Peanut research trials were conducted to evaluate cultivar response to differing agronomic
practices in Georgia. Numerous cultivar trials were conducted to evaluate the yield and
grade potential of newly released peanut cultivars compared to the industry standard
Georgia-06G. Several trials were planted to evaluate the response of cultivars to row
configuration in both conventional tillage/reduced tillage and dryland/irrigated situations.
New planter technologies were also evaluated to determine utility in crop growth and
yielding potential. Numerous plant growth regulator trials were conducted to determine if
reduced rated could be utilized on runner peanuts to help reduce vine growth along with
enhancing yield potential. All trials were planted from late April to late May and harvested
in September and October.

Yield data has been collected, and grade data were collect and analyzed. Data analysis
indicated Georgia 06G performed the most consistent across cultivars at all locations with
other cultivars like TUFRunner 297, GA-12Y, GA-09B, Florun 107, and GA-13M yielding
very similarly. Leafspot was found to still be a problem for TUFRunner 511 and GA-13M.
For the first year in a row, the tillage trial at the Tifton RDC field showed more than a 500
lb/A advantage to conservation tillage compared to conventional tillage. This was a direct
correlation to the increased evapotranspiration rates in 2016 compared to previous years.
The conservation tillage conserved more moisture thus increase productivity. Results from
the twin and single row comparisons showed little variation between the two row
configurations. This can be contributed to higher yielding and resistant cultivars to TSWV
being grown today. Large block trials on growers’ fields confirmed that we have yet to find
another cultivar that can out-perform GA-06G across the many environmental situations we
have in Georgia. Large block growth regulator trials showed significant reduction of vine
growth across all cultivars with 7 of 10 cultivars having a significant increase in yield.

Please see data slides below:
Conventional Tillage X Reduced Tillage X Row Configuration X Cultivar Trials

**Plot Plan | TF16.01**

RDC Pivot, Southeast Quadrant, Conventional Tillage

**Production Practices | TF16.01**

RDC Pivot, Southeast Quadrant, Conventional Tillage

**Planting Date:**
May 16th, 2016

**Digging Date:**
October 4th, 2016

**Harvest Date:**
October 13th, 2016

141 DAP

**Cultivars:**
Georgia-06G, Georgia-07W, Georgia-09B, Georgia-12Y, Georgia-13M, FloRun™ '157', FloRun™ '157', TUFRunner™ '297', Tif NV Hi-OL, TUFRunner™ '727'

**Row Pattern:**
Twin and Single Rows
**NET YIELD | TF16.02**
RDC Pivot, Southeast Quadrant, Conservation Tillage

![Yield Graph](Image)

**GRADE (TSMK) | TF16.02**
RDC Pivot, Southeast Quadrant, Conservation Tillage

![TSMK Graph](Image)
High Oleic Peanut Cultivar Trial
Midville Research Station

PRODUCTION PRACTICES | MV16.07
Midville Research & Education Center

Planting Date: May 26th, 2016
Digging Date: October 21st, 2016
Harvest Date: October 27th, 2016

148 DAP

Cultivars: Georgia-06G, Georgia-07W, Georgia-09B, Georgia-12Y, Georgia-13M, Georgia-14N, FloRun™ '157', TUFRunner™ '297', TUFRunner™ '511', TUFRunner™ '727'

Row Pattern: Single Rows

PLOT PLAN | MV16.07
Midville Research & Education Center

The University of Georgia
Extension Peanut Agreement
Late Season Cultivar Trial
ABAC Farm

PLOT PLAN | TF16.12
ABAC Farm

PRODUCTION PRACTICES | TF16.12
ABAC Farm

Planting Date: May 26th, 2016
Digging Date: October 10th, 2016
Harvest Date: October 14th, 2016

137 DAP

Cultivars: Georgia-06G, Georgia-07W, Georgia-09B, Georgia-12Y, Georgia-13M, Georgia-14N, FloRun '107', FloRun '157', TUFRunner™ '297', TUFRunner™ '511', Tifguard, OR14, 752, 914, 37, 38

Row Pattern: Single Row
Cultivar x Plant Growth Regulator Trial

PLOT PLAN | DW16.11
Sunbelt Expo

PRODUCTION PRACTICES | DW16.11
Sunbelt Expo

Planting Date:  May 5th, 2016  |  Digging Date:  September 19th, 2016  |  Harvest Date:  September 33rd, 2016

136 DAP

Cultivars: Georgia-06G, Georgia-07W, Georgia-09B, Georgia-12Y, Georgia-13M, Georgia-14N, FloRun '107', FloRun '157', TUFRunner™ '297', TUFRunner™ '511'

Row Pattern: Single Row
Planter Technologies

This portion of the study was conducted to evaluate the latest planting technology for improving seed placement and evaluating seedling vigor which ultimately translates to crop emergence rates for peanuts. Downforce technology on planters has gained a lot of traction recently due to its potential of increasing crop emergence by ensuring correct seeding depth providing optimum seed-to-soil contact and ideally providing near-perfect field conditions. Downforce is an important component on the planter when setting seed depth and is often neglected by producers. Downforce can also vary with at-planting field conditions due to in-field variability which can create seeding depth variations throughout the field. This study was conducted at University of Georgia’s Ponder farm located in Tifton, GA. A 4-row John Deere planter equipped with pneumatic downforce technology was used for planting a GA-06 variety at three different seed depths utilizing three different downforce values. Selected seed depths were 1.5”, 2.5” and 3.5” with downforce values of low, medium and high corresponding to 50, 100 and 150 lbs force on individual row units. These downforce-depth settings were selected to evaluate the possible combinations to see if a particular downforce has the opportunity to provide a better crop emergence at the selected seeding depth. After planting, stand counts were taken in 10-ft sections within each plot at 1, 2 and 3 weeks after planting to evaluate the effect of downforce treatments on crop emergence. Plant samples in 1-m sections were also destructively harvested at 3 and 5 weeks after planting to assess the effect of planter downforce on crop vigor and growth.

Initial results from the study indicate low crop emergence (about 30%) for all the treatments contrary to the crop emergence values (60-70%) typically obtained for most peanuts. The low germination was initially attributed to a seed germination problem, however further investigation suggested it was a planter issue. This was a major concern, as feedback from the control system during the field operation did not provide an indication of malfunctions or low seeding rates during planting. These findings suggest the importance of verifying planter performance by checking seeds behind the planter to ensure correct seeding rates, seed spacing and depth. The figure below shows the emergence data collected at 3 weeks after planting. Although no significant differences were observed between the emergence values between the treatments, visual observations during planting showed significant soil compaction when seeds were planted using high downforce values irrespective of seed depth. Field observations during data collection also indicated uneven and delayed crop emergence in the field. This can be caused by the difference in downforce treatments as high downforce can cause delayed or uneven emergence in peanuts. These differences will be depicted in the crop growth data that is currently being analyzed. Yield data will also be analyzed after harvest to evaluate any yield differences between study treatments. The study findings are also used to improve and expand the current planter research to investigate the possible planter parameters that can affect seed placement, vigor and crop emergence in peanuts.