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

FINAL REPORT for WORK DONE UNDER RESEARCH AGREEMENT # 26-31-
RE671-387 GACCP NEW CULTIVARS BEASL

INSTITUTION: University of Georgia

PROJECT TITLE: Evaluation of Newly Released Cultivars for Adaptability to
Southeast Growers

RES. AGR. NO.: 26-31-RE671-387

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FINAL REPORT: The following trials were planted in the southeast in crop year 2007 evaluating cultivar response to various management factors.

1) Effect of Planting Date on Cultivars – Four sites in Georgia were selected in 2007 for establishing planting date trials. University of Georgia locations utilized for these trials were: Attapulgus Research and Education Center in Decatur County, the Coastal Plain Experiment Station in Tifton, and the Southeast Georgia Research and Education Center near Midville in Burke County. A fourth site utilized for the planting date trial was the Sunbelt Expo Farm in Colquitt County. The following cultivars were planted at all four locations: Georgia Green, Georgia-03L, Georgia-06G, AP-3, AT 3081R, and AT 3085RO. Florida-07 was planted at Tifton and Sunbelt Expo. AP-4 was planted at Attapulgus and Tifton. Carver and McCloud were planted at Sunbelt Expo and Andru II was planted at Midville. A late planting planting date trial was also initiated at Attapulgus with planting dates of June 11 and June 25. Cultivars in that trial were: Georgia Green, Georgia-06G, AT 215, and AT 3085RO. At the Sunbelt Expo Farm the following cultivars were planted on April 18 and May 16: Georgia Green, AP-3, Georgia-03L, AT 3081R, AT 3085RO, Georgia-06G, Carver, McCloud, and Florida-07. At the Southeast Georgia Research and Education Center near Midville the following cultivars were planted on April 17 and May 17: Andru II, Georgia Green, AP-3, Georgia-03L, AT 3081R, AT 3085RO, and Georgia-06G. At the Coastal Plain Experiment Station in Tifton the following cultivars were planted on April 19, May 11, and May 30: Georgia Green, AP-3, AP-4, Georgia-03L, AT 3081R, AT 3085RO, Georgia-06G, and Florida-07.

Plot width, six feet, was the same at each of the four locations. Length of each experimental unit or plot varied from location to location. At Attapulgus the plots were 50 feet in length, at Tifton they were 40 feet in length, at Midville they were 400 feet in length, and at the Sunbelt Expo Farm they were 330 feet in length. There were four

replications at each location. The experimental design was a split plot with planting date as the main plot and cultivars as the sub-plot. Planting dates are listed in Table 1.

Table 1. Planting dates for peanut cultivars at four locations in Georgia in 2007.

Locations	Planting Date 1	Planting Date 2	Planting Date 3
Attapulgus	April 10	May 9	June 11
Tifton	April 19	May 11	May 31
Midville	April 17	May 17	
Sunbelt Expo	April 18	May 16	

All locations were planted with a Monosem precision air planter. The twin row pattern was used at all locations and seeding rate was set at three seed per row-foot in each twin row. Planting depth was 2.25 inches and Thimet brand insecticide was applied in-furrow at the rate of 6 pounds per acre. Within 24 hours of planting, Sonolan (1 qt/acre), Strongarm (0.44 oz/acre), Valor (3 oz/acre) herbicides were applied and watered in with 0.5 to 0.75 inches of irrigation as the base weed management program. All locations were irrigated on an as needed basis. All other production practices, including disease and insect management, were based on University of Georgia recommendations.

Results and Discussion

Data collected were yield (pounds per acre), percent total sound mature kernels, tomato spotted wilt virus (TSWV) severity (%), and plant stand at 30 days after planting and when inverted. All data were subjected to analysis of variance (ANOVA).

TSWV was relatively light in 2007. The level of TSWV at Midville was low enough that ratings were not taken on the second planting date when the level was very low on the first planting date. The Tifton location had the highest level of TSWV, especially on the April 19th planting date.

Tifton location – RDC Pivot

Analysis of yield data indicated no interaction but a significant difference among cultivars and a significant difference between the three planting dates (Table 2). There was a significant interaction between planting dates and cultivars for percent total sound mature kernels (%TSMK). Statistical analysis also indicated a significant interaction for percent tomato spotted wilt virus severity (%TSWV).

Table 2. Response of peanut cultivars to timing of planting, Coastal Plain Experiment Station, Tifton, GA.

Planting Date	Yield (lbs/A)	% TSMK	% TSWV
April 19	4652	71	14
May 11	5803	74	4
May 31	4350	76	NA
LSD (0.05)	196	1	1

Attapulugus location – Attapulugus Research and Education Center

Analysis of yield data at Attapulugus indicated significant interactions between planting date and cultivars for yield and percent TSWV. There was no interaction for percent TSMK but there was a significant difference among cultivars and between planting dates. The yield data are presented in Table 3.

Table 3. Yield response of peanut cultivars to planting date, Attapulugus Research and Education Center, Attapulugus, GA.

Cultivars	Planting Dates		
	April 10	May 9	June 11
Georgia Green	3561	4549	3775
AP-3	3238	4716	3395
Georgia-03L	3657	4556	4148
Georgia-06G	3868	5424	5039
AT 3081R	3939	4574	4138
AT 3085RO	4101	4831	4234
AP-4	4020	5215	4383
LSD (0.05) = 449			

Georgia-06G had the highest overall yield at the May 9th planting date and June 11th planting date. AT 3085RO had the highest yield at the April 10th planting date.

Sunbelt Expo location – Colquitt County

Data analysis of this location indicated a significant interaction between cultivars and planting dates for yield and percent TSMK. There was a significant difference among cultivars and between the two planting dates for percent TSWV, but no interaction between planting dates and cultivars. The yield data are presented in Table 4.

Table 4. Yield response of peanut cultivars to planting date, Sunbelt Expo Farm, Colquitt County, GA.

Cultivars	Planting Dates	
	April 18	May 16
Georgia Green	3540	3145
AP-3	3982	3779
Georgia-03L	4163	3709
Georgia-06G	4703	4778
AT 3081R	4143	4170
AT 3085RO	4538	4191
Carver	5085	3818
McCloud	3732	3982
Florida-07	NA	4259
LSD (0.05) = 681		

At the Sunbelt Expo location the average yield over all nine cultivars for the April 18th planting date was 4236 lbs/acre compared to 3981 on May 16th. This was the only location of the four in which yields were higher for the early planting date. Wet weather

late in the year on the poorly drained soils can explain part of the yield reduction for the May 16th planting date.

Midville location – Southeast Georgia Research and Education Center

Analysis of the yield data from this location indicated no interaction between planting dates and cultivars. There was, however, a significant difference between planting dates when averaged over cultivars and there was a significant difference among cultivars when averaged over the planting dates. Analysis of percent TSMK indicated an interaction between cultivars and planting dates. Due to very low levels of tomato spotted wilt virus, ratings were taken only at the first planting date. Data from this location is provided in Table 5 below.

Table 5. Response of peanut cultivars to timing of planting, Southeast Georgia Research and Education Center, Midville, GA.

Planting Date	Yield (lbs/A)	% TSMK
April 17	3782	72
May 17	5017	75
LSD (0.05)	334	1

Overall, the data from all locations indicated that planting in the April 10-20 time frame produced lower yields and total sound mature kernels than planting in the May 10-20 time frame. This is consistent with previous planting date research. Because 2007 was a relatively light year for spotted wilt virus, the one location with any appreciable level of TSWV (Tifton) indicated higher levels of TSWV in the April planted peanuts compared to May planting.

2) Cultivar Response to Irrigation Strategies – Three cultivars were planted at the University of Georgia’s Stripling Irrigation Research Park and were irrigated comparing two water amounts of an experimental irrigation strategy against a dryland comparison. The experimental irrigation strategy is based on physiological growth stage and water requirement. The three cultivars were: Georgia Green, AP-3, and Georgia-02C. The irrigation regimes were: non-irrigated, 1.5 inch maximum on the growth stage/water curve method, and 2.0 inches maximum on the growth stage/water curve method. The objective was to determine if cultivars respond differently to the irrigation regimes. The 1.5 and 2.0 inches maximum were applied during weeks 10-17 after planting (August 3 – September 28). During that 8-week period, the research site received 9.06 inches of rainfall. The trial was planted on May 25. Plots were two rows by 55 feet in length. The experimental design was a randomized complete block. There were 10 border rows between treatments and 35 foot alleys to account for the irrigation applications without overlap.

Statistical analysis of the data indicated no interaction between cultivars and irrigation for yield. There was no significant difference in yield for the irrigation amounts or among the cultivars. The same was true for total sound mature kernels. The lack of yield response difference was partially due to the fact that there was 9 inches of rain during the critical period of pod fill and maturation.

3) Cultivar Response to Plant Growth Regulator Trial – At the UGA Attapulgus Research and Education Center three cultivars were compared for yield and grade response to Apogee plant growth regulator. The cultivars were Georgia Green, Georgia-03L, and Georgia-02C. The cultivars were planted in twin rows. Data collected included: yield, grade factors, and main stem height measurements. The experimental design was a randomized complete block with 4 replications. Plots were 2 rows by 450 feet in length. Yield data for 2006 and 2007 are presented in the table below. There was no difference in yield between non-treated and Apogee treated within each cultivar in 2006. The same was true in 2007. There was missing data for Georgia-02C in 2007. When averaged over the two years, there was a numerical advantage for the non-treated over the Apogee treatments.

Cultivar	Apogee	2006	2007	2 yr avg
Georgia Green	No	5540 bc	5472	5506
Georgia Green	Yes	5220 c	5408	5314
Georgia-03L	No	5759 bc	5330	5545
Georgia-03L	Yes	5493 bc	4748	5121
Georgia-02C	No	6334 ab		
Georgia-02C	Yes	6730 a		
	LSD	757	537	

4) Tillage X Row Pattern X Cultivar – Eight cultivars were planted on twin and single row patterns and under conventional and strip tillage. The cultivars were: Georgia Green, Georgia-03L, AP-3, AT 3081R, AT 3085RO, Georgia-06G, AP-4, and Georgia-02C. This trial was planted at the RDC Pivot on the UGA Coastal Plain Experiment Station. The experimental design was a split plot with tillage being the main plot and the cultivars and row patterns nested within tillage. Plots were two rows by 40 feet in length. There were 4 replications. Statistical analysis of yield indicated no interactions but there was a significant difference among cultivars when average over tillage and row pattern and a significant difference between tillages when averaged over cultivar and row pattern. Statistical analysis for percent total sound mature kernels (TSMK %) indicated a significant interaction between tillage and row pattern. There was also a significant difference between row patterns, among cultivars, and between tillages. Statistical analysis of tomato spotted wilt virus severity data indicated a significant difference among cultivars, but no interactions. The conventional tillage had a significant yield advantage over strip tillage (5,765 lbs/A vs. 4943 lbs/A). Georgia Green has the highest percent TSWV severity at 18%. Georgia-06G had the lowest level of TSWV at 2%, while Georgia-02C, Georgia-03L, and AT 3085RO had 3%, and AP-4 had 4%.