P-156
S-SA-57
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2006

NATIONAL PEANUT BOARD / SOUTHEAST PEANUT RESEARCH INITIATIVE

FINAL REPORT for REPORT for WORK DONE UNDER RESEARCH AGREEMENT # 26-31-RE671-356 RE NEW CULTIVARS BEASL

INSTITUTION:	University of Georgia
PROJECT TITLE: Southeast Growers	Evaluation of Newly Released Cultivars for Adaptibility to
RES. AGR. NO.:	26-31-RE671-356
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EXPIRATION DATE:	30 June 2007
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FINAL REPORT: The following trials were planted in the southeast in crop year 2006 evaluating cultivar response to various management factors.

1) Effect of Planting Date on Mid-Maturing Cultivars – Georgia Green, Georgia-03L, AP-3, AT 3081R, AT 3085A, and Attaboy were planted on April 20, May 12 and May 26 at the University of Georgia's Ponder Farm near Ty Ty. Spotted wilt disease rating, yield and grade factor data will be collected.
2) Reduced Fungicide Program on Four Late Maturing Cultivars – C-99R, Georgia-01R, Georgia-02C, and Tifrunner were planted on May 12 at the University of Georgia's Ponder Farm near Ty Ty. Each of these four cultivars are being sprayed with an eight spray fungicide regime and a four spray fungicide regime. The eight spray regime is: Headline, Headline, Folicur, Folicur, Folicur, Folicur, Bravo, and Bravo. The four spray regime is Headline, Folicur, Folicur, and Bravo. Data to be collected include leaf spot ratings, stem rot ratings, spotted wilt ratings, yield, and grade factors.
3) Cultivar Maturity Profile – A trial was initiated at the RDC Pivot on the UGA Coastal Plain Experiment Station to compare the optimal maturity of all currently released runner cultivars in the southeast. In addition, several advanced breeding lines were also included. All cultivars had a maturity profile conducted at 120, 130 and 140 days after planting to determine the relative maturity compared to Georgia Green.
4) Cultivar Response to Irrigation Strategies – Eight cultivars were planted at the University of Georgia's Stripling Irrigation Research Park and are being irrigated using three different strategies. The three irrigation strategies are: Irrigator Pro, UGA EASY Pan, and an experimental irrigation strategy based on physiological growth stage and water requirement. The eight cultivars are: Georgia Green, Carver, AP-3, Georgia-03L, Tifrunner, Georgia-02C, Georgia-01R, and C-99R. The objective was to determine if cultivars respond differently to the irrigation

regimes. At the UGA Lang Farm, Georgia Green, AP-3, and Georgia-03L were being irrigated using the same three strategies.

5) 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. All cultivars were planted in twin rows. Data collected include: yield, grade factors, and main stem height measurements.
6) Cultivar Response to Planting Date and Vapam for control of CBR – Georgia Green, Carver, Georgia-02C, C-99R, Georgia-01R, and DP-1 were planted on April 21 and May 18, with and without the soil fumigant Vapam on a site known for having Cylindrocladium black rot (CBR). The objective of the trial is to evaluate the cultivars' level of resistance to CBR with and without Vapam at two planting dates.
7) Tillage X Row Pattern X Cultivar – Five cultivars were planted on twin and single row patterns and under conventional and strip tillage. The cultivars were: Georgia Green, Georgia-03L, AT 3081R, AT 3085RO, AP-3, Attaboy. This trial was planted at the RDC Pivot on the UGA Tifton Campus. Yield, grade and spotted wilt disease severity ratings were collected.

1) Planting Date X Cultivar Trial - Seven mid maturing cultivars were planted at three different dates in 2006 at the University of Georgia's Coastal Plain Experiment Station Ponder Farm near Ty Ty, GA. The planting dates were: April 20, May 10, and May 25. The seven cultivars were: Georgia Green, AP-3, Georgia-03L, Carver, AT 3081R, AT 3085RO, and Attaboy. They were planted in the twin row pattern using a Monosem precision planted at the rate of three seed per foot of row in each row. Plots were two rows by 40 feet in length. All production practices during the season, including pest management, were based on University of Georgia recommendations. Data collected included yield, grade factors, and severity of tomato spotted wilt virus (TSWV). Data were analyzed using SAS PROC Mixed. Data analysis for yield indicated a significant interaction between cultivars and planting date.

Table 1. Peanut yield (lbs/acre) of seven cultivars at three planting dates in 2006, University of Georgia's Ponder Farm, Ty Ty, GA

Cultivars	Planting Date		
	April 20	May 10	May 25
Georgia Green	3868 de*	4530 c	5061 ab
AP-3	4631 ab	4784 bc	4679 bc
Georgia-03L	4974 a	5293 a	5389 a
Carver	4162 cd	4538 c	4445 c
AT 3081R	4289 bc	5080 ab	5368 a
AT 3085RO	4820 a	5382 a	5328 a
Attaboy	3636 e	4608 c	4879 b

*Means within a column with the same letter are not significantly different at the $p \leq 0.05$ level of probability.

The yield for all seven cultivars increased at the May 10 planting date compared to the April 20 planting date. Data analysis indicated a significant yield increase from April 20 to May 10 for AT 3081R, AT 3085RO, Attaboy, and Georgia Green. Georgia Green also had a significant yield increase from May 10 to 25.

Data analysis for percent total sound mature kernels (TSMK %) indicated no significant interaction between cultivars and planting date but there was a significant difference among cultivars and among planting dates. Georgia Green had a significantly higher percent TSMK than the other six cultivars when averaged over the three planting dates (Table 2).

Table 2. Percent total sound mature kernels (TSMK %) of four late maturing cultivars when averaged over three planting dates in 2006, University of Georgia's Ponder Farm, Ty Ty, GA.

Cultivar	TSMK %
Georgia Green	75
AP-3	72
Georgia-03L	73
Carver	73
AT 3081R	71
AT 3085RO	72
Attaboy	71

*Means within a column with the same letter are not significantly different at the $p \leq 0.05$ level of probability.

Data analysis for tomato spotted wilt virus (TSWV) severity indicated a significant interaction between planting date and cultivar. The level of TSWV was approximately 8%, which is a low level compared to what we see in many fields. The higher level of resistance in these cultivars, plus the good plant stands resulted in low levels of TSWV in all three planting dates. Georgia Green had the highest level at 12% while AT 3085RO and Georgia-03L had 4%.

2) Reduced Fungicide X Cultivar X Rotation Trial - In another trial, C-99R, Georgia-01R, Georgia-02C, and Tifrunner were planted following cotton and soybean and were compared on a full versus reduced fungicide spray program. The full spray program had eight (8) fungicide applications while the reduced had four (4) fungicide applications. C-99R, Georgia-01R, Georgia-02C, and Tifrunner were planted on May 12 at the University of Georgia's Ponder Farm near Ty Ty. Plot size was two rows by 50 feet in length. The eight spray regime was: Headline, Headline, Folicur, Folicur, Folicur, Folicur, Bravo, and Bravo. The four spray regime was: Headline, Folicur, Folicur, and Bravo.

Data analysis for yield indicated no significant interactions among cultivars, spray regimes, or previous crop in rotation. It was hypothesized there would be more disease pressure following soybean compared to cotton, especially in the reduced fungicide

regime. When averaged over previous crop and cultivars, the four spray regime had a yield of 4909 lbs/acre and the eight spray regime had a yield of 5016 lbs/acre.

The analysis of percent total sound mature kernel data indicated no interactions and no significant differences for all factors except cultivar. There was a significant difference among cultivars for TSMK % with Georgia-02C and Georgia-01R having the highest at 79% and C-99R and Tifrunner at 77% (LSD 0.05 = 1).

4) Cultivar X Irrigation Strategy Trial – Eight cultivars were irrigated by three different irrigation strategies. The three irrigation strategies are: Irrigator Pro, UGA EASY Pan, and an experimental irrigation strategy based on physiological growth stage and water requirement. The eight cultivars are: Georgia Green, Carver, AP-3, Georgia-03L, Tifrunner, Georgia-02C, Georgia-01R, and C-99R. The research was conducted at the University of Georgia's Stripling Irrigation Research Park in Mitchell Co. Plots were two rows by 35 feet in length and were planted in the twin row pattern with a Monosem precision planter on May 16, 2006. The experimental design was a split plot with irrigation strategies as the main plots and cultivars as the sub-plot. There were three replications for yield and grade data and three additional replications for biomass measurements by scientists with the National Peanut Research Lab and the University of Georgia's Biological and Agricultural Engineering Department.

Data analysis for yield indicated there was no interaction between irrigation strategies and cultivar. There was no difference among the irrigation strategies when averaged over cultivars. Data analysis of percent total sound mature kernels (TSMK %) indicated a significant difference among cultivars but not among cultivar strategies.

Table 3. Yield and percent total sound mature kernels of three irrigation strategies averaged over eight cultivars, UGA Stripling Irrigation Park, 2006.

Irrigation Strategies	Yield (lbs/acre)	TSMK (%)
Irrigator Pro	4442	75.1
UGA EASY Pan	4478	75.3
Experimental Growth Stage model	4377	74.9

There was a significant difference (LSD 0.05 = 1) among cultivars when averaged over irrigation strategies for TSMK percent. The TSMK % for each cultivar was: Georgia Green – 74, Georgia-02C – 78, Georgia-03L – 73, Carver – 73, C-99R – 78, Tifrunner – 77, Georgia-01R – 78, and AP-3 – 70.

5) Cultivar X Plant Growth Regulator – Three cultivars, Georgia Green, Georgia-2C, and Georgia-03L were planted in twin rows in two row plots, 510 feet long. The other factor was comparing these cultivars treated with Apogee plant growth regulator to untreated. The trial was conducted at the Attapulgus Research and Education Center. According to data analysis of yield, there was no interaction between cultivars and plant growth regulator treatment. There was no difference between non-treated and treated with the PGR when averaged over cultivars. There was, however, a significant difference

among cultivars when averaged over PGR treatments. When averaged over cultivars the Apogee treated plots averaged 5814 lbs/A and untreated averaged 5878 lbs/A.

Table 4. Yield and percent total sound mature kernels of three cultivars averaged over Apogee plant growth regulator treated and non-treated plots, UGA Attapulgus Research Center, 2006.

Cultivars	Yield (lbs/acre)	TSMK (%)
Georgia Green	5380	77
Georgia-02C	6532	79
Georgia-03L	5626	74
LSD 0.05	535	1

Cultivar X Seeding Rate X Planting Date Trial – At the UGA Attapulgus Research and Education Center six mid maturing were compared for yield and grade response at three planting dates and two seeding rates. The six cultivars were: Georgia Green, Carver, AP-3, Georgia-03L and two experimental lines, UF00324 and AgraTech 3085A. The three planting dates were April 22, May 13 and May 25. All cultivars were planted in twin rows and the seeding rate comparisons were two versus three seed per foot of row. Data collected included: yield, grade factors, and tomato spotted wilt virus severity.

Analysis of yield data indicated a significant planting date by cultivar interaction and a significant difference between the two seeding rates, cultivars, and planting dates. The table below has the yield data for the cultivar by planting date interaction when average over seeding rate.

Table 4. Yield (lbs/acre) of six cultivars planted at three planting dates, Attapulgus Research and Education Center, 2005.

Cultivars	Planting Dates		
	April 22	May 13	May 25
AP-3	3775 a*	4662 a	4661 a
AT 3085A	3201 b	3739 b	4552 a
Carver	3721 ab	3675 b	3726 bc
Georgia Green	3197 bc	3596 b	3444 c
Georgia-03L	3393 ab	3768 b	4263 ab
UF 00324	2884 c	3716 b	4240 ab
Overall Avg for PD	3362	3859	4148

*Means within a column with the same letter are not significantly different at the $p \leq 0.05$ level of probability.

The three seed per foot of row seeding rate had a significantly higher yield than two seed per foot of row when averaged over planting date and cultivar. The third planting date had the highest yield averaged over cultivars and seeding rate. Analysis of data for percent TSMK indicated a significant difference among planting dates with the May 25 planting date having a significantly higher TSMK % at 73 compared to 69% for the May 13 planting and 68% for the April 22 planting.

6) Cultivar Response to Planting Date and Vapam for control of CBR – Georgia Green, Carver, Georgia-03L, Georgia-02C, C-99R, and Georgia-01R were planted on April 20 and May 13, with and without the soil fumigant Vapam on a site known for having Cylindrocladium black rot (CBR). The objective of the trial was to evaluate the cultivars' level of resistance to CBR with and without Vapam at two planting dates. Plots were two rows by 36 feet in length and there were 8 replications. The planting dates were blocked and the cultivar by soil fumigant treatment was randomized within the two planting dates. Vapam was applied at the rate of 10 gal/acre two weeks ahead of planting. Data collected included yield, percent total sound mature kernels (TSMK), percent tomato spotted wilt virus (TSWV), and percent CBR. Data analysis for yield indicated there was a cultivar by planting date by soil treatment interaction, a cultivar by soil treatment interaction, planting date by cultivar interaction, and a significant difference between planting dates and among cultivars.

Table 5. Response of peanut cultivars treated with and without Vapam soil fumigant to planting date, UGA Southwest Georgia Research and Education Center, Plains, GA, 2006

	Vapam	April 20	May 13
Georgia Green	Yes	3512	3421
Georgia Green	No	4003	3418
Carver	Yes	4720	3696
Carver	No	4986	3772
Georgia-03L	Yes	4993	4052
Georgia-03L	No	4792	4068
Georgia-01R	Yes	4832	3963
Georgia-01R	No	4695	4164
Georgia-02C	Yes	4837	4164
Georgia-02C	No	4429	4004
C-99R	Yes	4498	3594
C-99R	No	4264	3527

Data analysis of percent total sound mature kernels (TSMK %) indicated a planting date by cultivar interaction and a significant difference among cultivars and planting dates. There was a significantly higher TSMK % for the second planting date (73%) compared to 69% for the April 22 planting date. Georgia-01R and Georgia-02C had the highest TSMK % when averaged over planting date and soil treatments.

7) Tillage X Row Pattern X Cultivar – Six cultivars were planted on twin and single row patterns and under conventional and strip tillage in 2006 at the University of Georgia's Coastal Plain Experiment Station's RDC Pivot. The cultivars were: Georgia Green, Georgia-03L, AP-3, AT 3081R and AT 3085RO, and Attaboy. Plots were two rows by 40 feet long and there four replications. Analysis of the yield data indicated no significant interactions but a significant difference among cultivars when averaged over row patterns and tillage and a significant difference between strip tillage and conventional tillage when averaged over cultivars and row patterns. There was no

interaction for percent total sound mature kernels but there was a significant difference among cultivars. Strip tillage had a significant higher % TSMK.

Tillage (averaged over row patterns and cultivars)
Conventional – 4494
Strip Till – 5355
LSD (0.05) = 295

Cultivars (averaged over tillage and row patterns)
Georgia-03L – 5302
AT 3081R – 4847
AT 3085RO – 4980
AP-3 – 5749
Attaboy – 4338
Georgia Green – 4334
LSD (0.05) – 511