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

**FINAL REPORT** for WORK DONE UNDER RESEARCH AGREEMENT # 25-21-  
RF328-753 RF NEW CULTIVARS BEASL

**INSTITUTION:** University of Georgia

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

**RES. AGR. NO.:** 25-21-RF328-753

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**EXPIRATION DATE:** 30 June 2006

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**REPORT OF PROGRESS:** The following trials were planted in Georgia in crop year  
2005 evaluating cultivar response to various management factors.

- 1) Effect of Planting Date on Four Late-Maturing Cultivars
- 2) Reduced Fungicide Program on Four Late Maturing Cultivars
- 3) Cultivar Maturity Profile
- 4) Cultivar Response to Irrigation Strategies
- 5) Cultivar X Seeding Rate X Planting Date Trial
- 6) Cultivar Response to Planting Date and Vapam for control of CBR
- 7) Tillage X Row Pattern X Cultivar

**Planting Date X Cultivar Trial** - Four late maturing cultivars were planted at three different dates in 2005 at the University of Georgia's Coastal Plain Experiment Station Ponder Farm near Ty Ty, GA. The planting dates were: April 20, May 11, and May 26. The four cultivars were: C-99R, Georgia-01R, Georgia-02C, and Tifrunner. 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 300 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 four late maturing cultivars at three planting dates in 2005, University of Georgia's Ponder Farm, Ty Ty, GA**

Cultivars	Planting Date		
	April 20	May 11	May 26
C-99R	2614 c*	3186 bc	5045 a

Georgia-01R	4036 a	3843 ab	2980 c
Georgia-02C	3530 ab	4093 a	4736 a
Tifrunner	3028 bc	3034 c	3987 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 C-99R, Georgia-02C, and Tifrunner increased at each succeeding planting date, whereas the yield for Georgia-01R declined at the later planting dates (Table 1). One reason for the decline in yield by Georgia-01R at the later planting dates is the marginal seed quality in the lot of seed of that cultivar in 2005.

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. Georgia-02C had a significantly higher percent TSMK than the other three 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 2005, University of Georgia's Ponder Farm, Ty Ty, GA.**

Cultivar	TSMK %
Georgia-02C	77 a*
Georgia-01R	74 b
C-99R	71 c
Tifrunner	69 d

\*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 no significant interaction between planting date and cultivar nor was there a significant difference among cultivars or planting date. 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.

**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 3696 lbs/acre and the eight spray regime had a yield of 3676 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 having the highest at 75%, followed by Georgia-01R at 74%, C-99R at 73%, and Tifrunner at 70%.

**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, 2005. 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 a significant difference among the irrigation strategies when averaged over cultivars. The experimental strategy had a significantly higher yield than Irrigator Pro. Data analysis of percent total sound mature kernels (TSMK %) indicated the experimental strategy had a significantly lower TSMK than Irrigator Pro and EASY Pan.

**Table 3. Yield and percent total sound mature kernels of three irrigation strategies averaged over eight cultivars, UGA Stripling Irrigation Park, 2005.**

Irrigation Strategies	Yield (lbs/acre)	TSMK (%)
Irrigator Pro	4481 b*	71.0 a
UGA EASY Pan	4598 ab	71.0 a
Experimental Growth Stage model	4751 a	68.6 b

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

There was also a significant difference among cultivars when averaged over irrigation strategies for TSMK percent. The TSMK % for each cultivar was: Georgia Green – 73, Georgia-02C – 72, Georgia-03L – 71, Carver – 71, C-99R – 70, Tifrunner – 68, Georgia-01R – 68, and AP-3 – 67.

Spotted wilt virus (TSWV) ratings were also made. Data analysis indicated no interaction between cultivar and irrigation strategies but there was a significant difference among

cultivars. AP-3, Georgia-02C, and Georgia-03L had significantly less TSWV than the other cultivars.

**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.

**Tillage X Row Pattern X Cultivar** – Six cultivars were planted on twin and single row patterns and under conventional and strip tillage in 2005 at the University of Georgia's Coastal Plain Experiment Station's RDC Pivot. The cultivars were: Georgia Green, Georgia-03L, Georgia-02C, Georgia-01R, AT 3081R and AT 3085A. 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. There was no interaction for percent total sound mature kernels but there was a significant difference among cultivars and between tillage systems. Strip tillage had a significant higher % TSMK.

**Tillage (averaged over row patterns and cultivars)**

Conventional – 4695

Strip Till – 4507

LSD (0.05) = 218

**Cultivars (averaged over tillage and row patterns)**

Georgia-03L – 5101 a

AT 3081R -- 4872 ab

AT 3085A – 4823 ab

Georgia-01R – 4566 b

Georgia-02C – 4140 c

Georgia Green – 4107 – c

LSD (0.05) – 377

**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 22 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 planting date by soil treatment interaction, a planting date by cultivar interaction, and a significant difference between soil treatments, planting dates, and among cultivars.

**Planting Date X Soil Treatment (averaged over cultivars)**

Planting Date	Soil Treatment	Yield (lbs/acre)
April 22	Untreated	2039
April 22	Vapam	1985
May 13	Untreated	2238
May 13	Vapam	2695

**Planting Date X Cultivar (averaged over soil treatments)**

	April 22	May 13
Georgia Green	1379	1934
Carver	2215	1960
Georgia-03L	2138	2338
Georgia-01R	2366	3224
Georgia-02C	2085	2784
C-99R	1886	2556

There was heavy pressure from both TSWV and CBR in 2005, resulting in low yields. All of the cultivars except Carver improved in yield at the May 13 planting date.

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.