

**A Report to the Georgia Agricultural Commodity Commission for Peanuts
on
Identifying Optimum Maturity for New Peanut Genotypes with either Normal or
High Oleic Oil Chemistry and the Effect of Maturity and Calcium Concentration on
Final Yield, Grade, Seed Germination, and Flavor**

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The Georgia Agricultural Commodity Commission for Peanuts provide funding in 2007-2008 to support research on identifying optimum maturity of new peanut genotypes with normal and high oleic oil chemistry and the effect of maturity and calcium concentration on final yield, grade, seed germination, and flavor. We refer to this project as the “Flavor Study”.

Six runner-type peanut cultivars were selected for inclusion in this project. The cultivars were: Georgia Green, Carver, and AP-3 from the mid maturity group and C-99R, Georgia-01R, and Georgia-02C from the late maturity group. All six cultivars were planted on May 9 at the University of Georgia’s Coastal Plain Experiment Station RDC Pivot. The trial was a randomized complete block with four replications. Plots were 18 feet wide (six rows) by 40 feet in length and planted in the single row pattern at six seed per foot of row. Three harvest dates were taken within each plot. Two-row plots were selected at random within each cultivar in each rep for timing of harvest. Harvest dates were based on the Hull-Scrape Maturity Profile. Harvest timing was 10 days earlier than optimal, optimal, and 10 days later than optimal. Yield and grade samples were taken at each harvest timing. A large sample (five or more pounds of farmers stock) was pulled for shelling outturn and flavor chemical composition analysis. The shelled kernels were then sized based on USDA standards. All medium and jumbo kernels were kept for further analysis.

As of the writing of this report, the samples for flavor and chemical composition analysis had just been taken to J. Leek and Associates laboratory and another sample sent to the USDA-ARS lab in Raleigh, NC for additional flavor analysis. Another portion of the sample from each plot was sent to the Agricultural and Environmental Lab in Athens for calcium content determination in the seed.

Statistical analysis of the yield and percent total sound mature kernels data indicated a significant interaction between cultivars and harvest timing. Yield data is presented in Table 1 below and percent total sound mature kernels are presented in Table 2 below. After the peanuts were shelled, they were screened for seed size distribution for jumbo, medium, and No. 1 kernels. Analysis of the kernel size distribution indicated a significant interaction for medium size kernels but not for jumbo and No. 1 kernels. There was, however, a significant difference among harvest timings and cultivars for jumbo, medium, and No. 1 kernels. Chemical composition, flavor scores, and calcium content data will be presented when they are completed and analyzed.

Table 1. Yield response (lbs/acre) of peanut cultivars to timing of harvest

	Timing of Harvest		
	10 days early	On Time	10 days late
Georgia Green	4593	4933	4800
Carver	5001	5146	4061
AP-3	3919	4544	4012
C-99R	4228	4418	4038
Georgia-01R	3924	4094	3748
Georgia-02C	3502	4162	4090
Average	4195	4549	4125

LSD (0.05) for harvest dates = 424 lbs/acre

Harvesting 10 days too early penalized each cultivar in yield. Yield held relatively steady for the late harvest for Georgia Green and Georgia-02C, while yield declined for Carver, AP-3, C-99R and Georgia-01R at the late harvest.

Table 2. Grade factor response (% total sound mature kernels) of peanut cultivars to timing of harvest

	Timing of Harvest		
	10 days early	On Time	10 days late
Georgia Green	72	77	77
Carver	69	74	73
AP-3	68	73	73
C-99R	74	75	76
Georgia-01R	74	77	78
Georgia-02C	74	77	78
Average	72	75	76

LSD (0.05) for harvest dates = 2%