

Final
#116
2004
continues
to
2005

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

FINAL REPORT for WORK DONE UNDER RESEARCH AGREEMENT #25-21-
RF328-726/GACCP RF Calcium Beasl

ENDING: 30 June 2005

INSTITUTION: University of Georgia

PROJECT TITLE: Large Seeded Runner Cultivars Response to Supplemental Calcium

RES. AGR. NO.: 25-21-RF328-726
PROJECT LEADER: Dr. John P. Beasley, Jr.

EXPIRATION DATE: 30 JUNE 2005

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FINAL REPORT: A trial was initiated in 2004 to determine if large-seeded runner peanut cultivars had a different calcium requirement than the medium and small seeded runner cultivars. All of the calcium response data was collected on Florunner, which had a seed size of approximately 750 seed per pound. Several of the recently released cultivars have a seed size of approximately 650 seed per pound. The objective of this trial was to determine if the current calcium recommendations based on a pegging zone sample were sufficient for these larger seeded runner cultivars. The current calcium recommendation is:

- a) apply supplemental calcium as landplaster or gypsum if the pegging zone level of calcium is less than 500 pounds per acre, or
- b) if the calcium to potassium ratio (Ca:K) is less than three to one (3:1).

The concern was that the 500 lbs/A level was not sufficient for larger seeded runner peanuts, or that it would require a higher Ca:K ratio to prevent calcium deficiency symptoms.

Trials were conducted on producers' fields in Berrien, Coffee, and Turner Counties. Large (18 rows) plots of at least 500 feet in length were established at each location. Three cultivars were planted at each location. These were: Georgia Green (the standard), C-99R (the large-seeded runner), and Gregory (a Virginia-type cultivar). Gypsum treatments were: none, 1X rate (about 750-800 lbs of gypsum per acre), and 2X rate (1,500-1,600 lbs/A of gypsum). A pegging zone soil sample at the three-inch depth was taken shortly after planting, mid season, and just prior to harvest to monitor calcium levels during the season.

Yield data (lbs/A) for calcium treatments at each location are in the table below.

Location	Cultivar	Gypsum Rate		
		None	1X	2X
Berrien	Georgia Green	2452	2159	2396
	C-99R	2454	2411	2321
	Gregory	2647	2623	2575
Coffee	Georgia Green	3172	3441	3214
	C-99R	4398	4335	4506
	Gregory	2482	2333	2104
Turner	Georgia Green	2311	2572	2317
	C-99R	2281	2473	2440
	Gregory	1357	1623	1626

Analysis of variance of the data indicated no difference in yield at the Berrien location and a significant difference among cultivars at the Coffee and Berrien locations. Analysis of grade data indicated a significant difference among cultivars at all three locations with Gregory having a significantly lower percentage of total sound mature kernels than C-99R and Georgia Green (see table below).

Percent Total Sound Mature Kernels (%) averaged over gypsum rates

Location	Cultivars		
	Georgia Green	C-99R	Gregory
Berrien	70	71	62
Coffee	75	73	67
Turner	72	70	64

Soil samples at the pegging zone depth, 3 inches, or 7.6 cm, were taken immediately after emergence, at mid season, and just prior to harvest to monitor available calcium levels throughout the season. A pre-plant soil sample was taken at the plow depth. The table below provides the calcium levels at each location.

Calcium level (lbs/A) as determined by the double acid extraction method.

Location & Cultivar	Pegging Zone Samples (3-inch depth)		
	Early Emergence	Mid Season	Pre-Harvest
Berrien / C-99R	996	1,056	757
Berrien / Georgia Green	911	1,377	1,033
Berrien / Gregory	1,026	1,188	1,502
Coffee / C-99R	1,277	1,172	914
Coffee / Georgia Green	912	1,153	956
Coffee / Gregory	746	800	920
Turner / C-99R	228	782	540
Turner / Georgia Green	546	928	1,203
Turner / Gregory	639	701	966