

2007 #116
Final
Bud 509

NATIONAL PEANUT BOARD / SOUTHEAST PEANUT RESEARCH INITIATIVE

FINAL REPORT for WORK DONE UNDER RESEARCH AGREEMENT #26-31-RE671-386 RF GPC CALCIUM BEASL

INSTITUTION: University of Georgia
PROJECT TITLE: Large Seeded Runner Cultivars Response to Supplemental Calcium
RES. AGR. NO.: 26-31-RE671-386
PROJECT LEADER: Dr. John P. Beasley, Jr.
EXPIRATION DATE: 30 JUNE 2008
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FINAL REPORT: A trial was initiated in 2004 and continued in 2005, 2006, and 2007 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. Two row plots of at least 500 feet in length were established at each location. Two cultivars were planted at each location except one, where only one cultivar was planted. These were: Georgia Green (the standard) and C-99R (the large-seeded runner). 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. Pegging zone samples were also taken at mid season and just prior to harvest to monitor calcium levels during the season.

Berrien County – Analysis of the data indicated no difference in yield or total sound mature kernels among the gypsum treatments for yield or grade.

Coffee County – Analysis of the data indicated no difference in yield or total sound mature kernels among the gypsum treatments.

Turner County – The Turner County location was a non-irrigated location and planting was delayed until June 13 when there was sufficient moisture for obtaining adequate seed germination and plant emergence. Due to the delayed planting, C-99R cultivar was left out of the trial. Therefore, only Georgia Green was included with the three gypsum treatments (0, 800, and 1,600 lbs/acre). Analysis of the yield data from this location did indicate a significant yield response for increasing the amount of gypsum (see Table 1 below). The pre-plant soil test level of calcium in this field was 400 lbs/acre, therefore, a yield response was expected.

Table 1. Yield (lbs/acre) and total sound mature kernel (%) response to gypsum (calcium sulfate) rates on a non-irrigated field in Tift County, Georgia, 2007.

Gypsum (lbs/acre)	Yield (lbs/acre)	TSMK (%)
0	1,942 c	64
800	2,708 b	70
1,600	3,020 a	70
LSD (0.05)	295	6

This data continues to verify the 500 pounds per acre minimum level for calcium requirement on runner-type peanut cultivars, even one as small seeded as ‘Georgia Green’.