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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT
RESEARCH INITIATIVE
REPORT FOR WORK
DONE UNDER RESEARCH AGREEMENT

Final report ← Summary
August 30, 2012

INSTITUTION:	University of Georgia
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PROJECT TITLE:	Peanut Germination Response to Calcium: Cultivar Vigor Testing
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GACCP Control NO.:	

EXPIRATION DATE: Dec 31, 2012	NPB CONTACT:
	NPB Control NO.:

2012 REPORT:

Field and laboratory studies were conducted from 2011 to 2012 to determine if soil calcium concentration affected subsequent peanut seed germination vigor. In 2011, Drs. John Beasley and Glen Harris conducted calcium studies to determine if amount of application and type of product could affect large seeded cultivar pod development, maturity, and yields. As a subcomponent of that project, we collected seed samples from each plot replication as the samples were processed in order to evaluate for seedling vigor testing. In one study, cultivars included Tifgard, Georgia Green, Georgia 07W, Georgia 06G, and calcium products were gypsum at 0, 500, 1000, and 1500 lbs/acre. A second study included the same cultivars used in combinations with Agrical, US Gypsum, Gypsoil, and lime applied at different plant growth stages (at planting, early bloom, mid-bloom, or late bloom, or as split applications. After seed were collected by rep, testing was performed in 2012 on a thermal gradient table where seed were subjected to a temperature range of 56 to 72 F for up to 7 days. Seed were counted daily for germination with the intent of determining is seed vigor was effected by calcium source and timing.

Statistical Analysis

Since this is only the first year of the test, we will not conduct any final analysis until completed. However, data means and trends were clearly observed with differences in the larger seeded peanut cultivars.

Results and Discussion

Preliminary data indicates that gypsum rate affected cultivars differently with respect to seed vigor. For example, in Figure 1, Georgia Green was fairly consistent for the 64 to 72 F temperature germination at approximately 30 to 80%. Application of gypsum was required for adequate seed production. However, for the larger seeded cultivars Georgia 07W and Tifgard, adding gypsum increased seed vigor visually much greater than Georgia Green (comparing the red bars on the graphs). This data indicates that for these larger seeded cultivars gypsum rate will be critical with respect to producing quality seed.

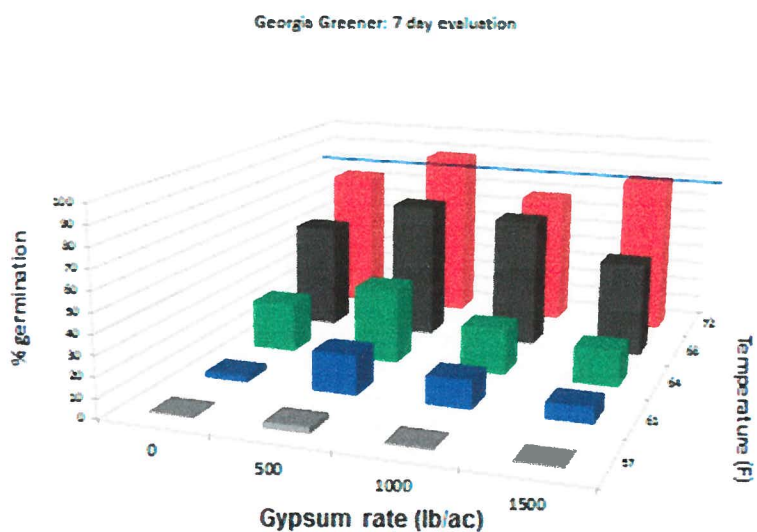
For the calcium source study, there was variation in seed germination for the different material (Figure 2). However, further data analysis is required to establish if there is a trend. Overall, all cultivars responded to calcium application including Georgia 06G and Georgia Greener.

Georgia 06G exhibited the most consistent increases with a very uniform response at 72 F while Georgia 07W and Georgia Greener had greater vigor at 65 F.

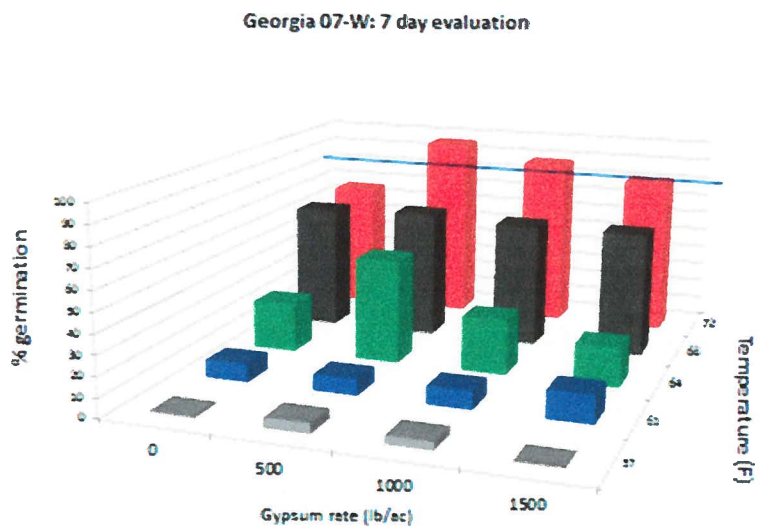
Conclusions from year 1 of this study”

1. Established that newer peanut cultivars do require greater calcium soil concentrations as weed is developing.
2. The influence of calcium on germination of these cultivars was reflected in vigor.
3. At what temperature vigor comes into play may actually vary by cultivar.
4. Will be testing seed grown in 2012 in similar studies.
5. Will combine all data from the two years of this study to assist in determining planting and liming recommendations for future production.

Figure 1. Peanut seed vigor testing as a factor of gypsum field application rate and germination temperature.

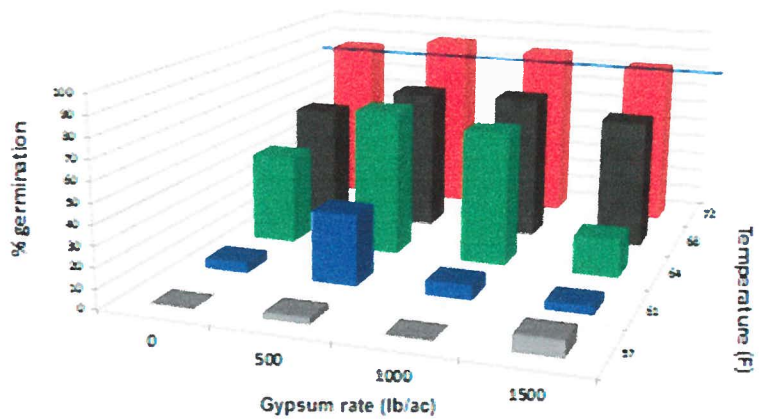


Grown at Plains research farm 2011



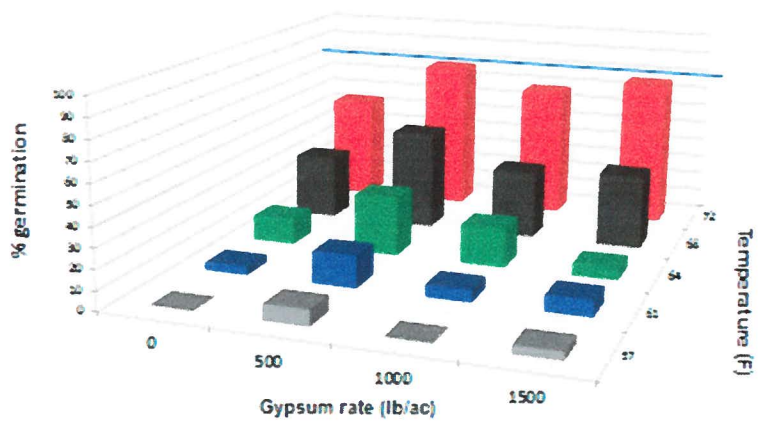
Grown at Plain research farm 2011

Georgia 09-B: 7 day evaluation



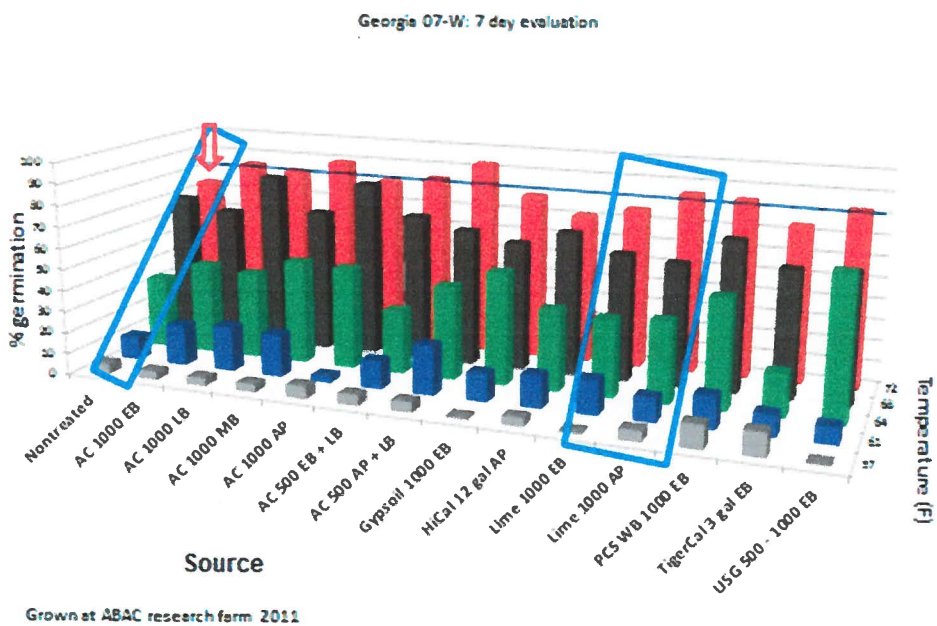
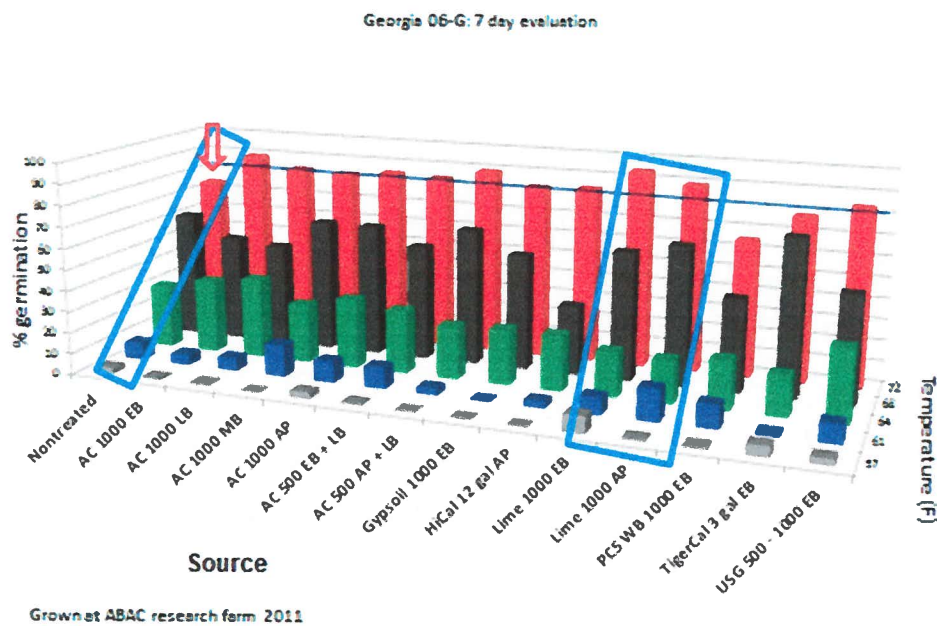
Grown at Plain research farm 2011

Tifguard: 7 day evaluation

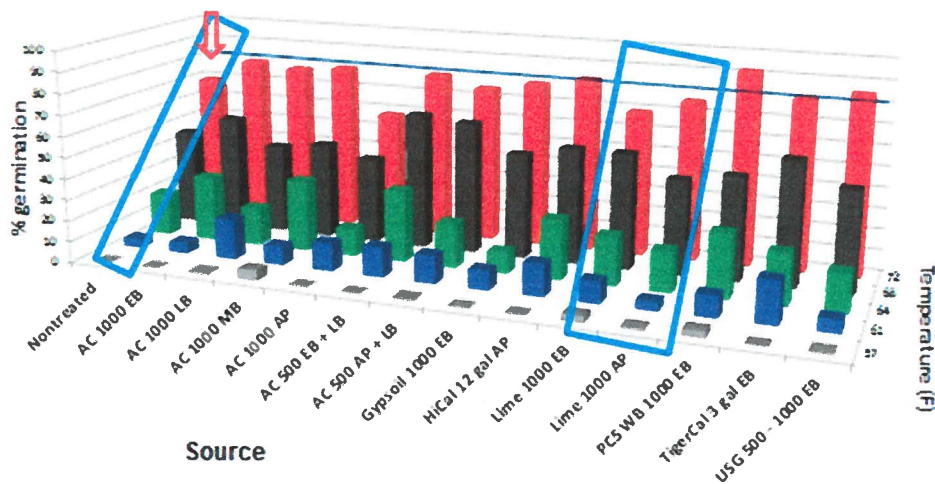


Grown at Plain research farm 2011

Figure 2. Affect of calcaim source on peanut seed germination.

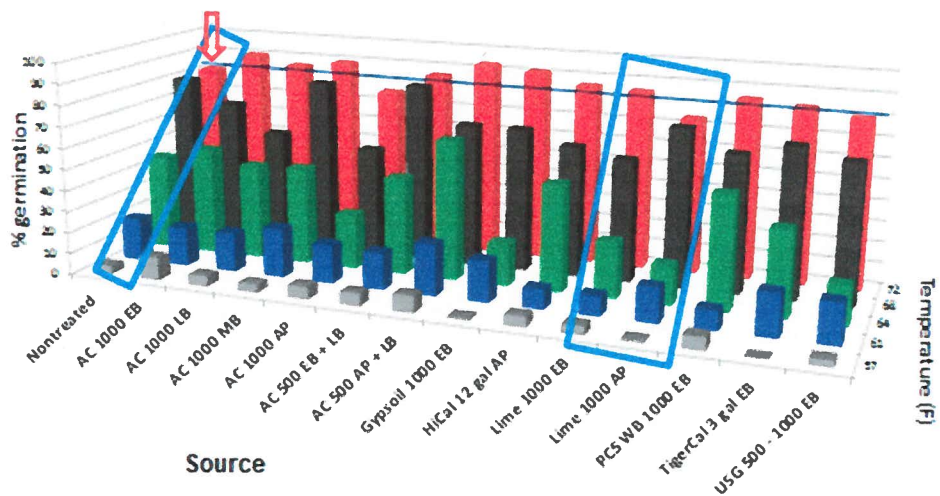


Tifgard: 7 day evaluation



Grown at ABAC research farm 2011

GA Greener: 7 day evaluation



Grown at ABAC research farm 2011