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Proposal for consideration for funding by the National Peanut Board (10/2010) for 2011 season

I. Title: Fertilization and Nutrient Management Trials in Peanut

II. Principal Investigators:

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III. Objectives and Research Approach:

The overall objective of this research is to evaluate peanut response to fertilization and determine the most cost-effective way to manage nutrients in a peanut cropping system. The focus of the Ca research was to address the source and timing of Ca applications on peanuts. At the Headland site, treatments included: 1) lime at planting, 2) TigerCal 30 (Tiger Industries, Inc., Bristol, RI) applied as a spray when plants were 4 inches tall, 3) 1000 lb/A flue gas desulfurized (FGD) gypsum at planting and a split application of 500 lb/A FGD gypsum at planting and at 40 days after planting. Peanuts were grown under dryland conditions. Additional treatments were included in the irrigated study performed in Tifton (results will be provided from the Georgia report). Due to early season drought, Georgia Greener did not produce a stand; thus, results are presented only on the Georgia 06G variety. Leaching of Ca from the pegging zone was also evaluated using electrical conductivity probes installed in the pegging zone.

IV. Results for 2011 study:

This is the first year of a three year series of studies in collaboration with University of Georgia. At this point, the first year of data has been collected, but growing conditions were not ideal for the dryland experiments. In this report, only the Auburn data is presented (Georgia report will be submitted through University of Georgia). Combined data from both Auburn and University of Georgia will be combined when multiple-year data can be analyzed together. Due to the problems with the dryland sites, an irrigated site will be included next year. Also, following this report is the accepted manuscript of data funded by NPB for field

experiments from 2008-2010 involving the rate and seed-size of gypsum applications. This article will be published in the Journal of Agronomy soon.

Peanut yield was rather low due to the drought season (Figure 1). Yield was greatest in the lime treatment. Although results were not significant, yield was consistently higher in the gypsum and TigerCal 30 treatments compared to the control.

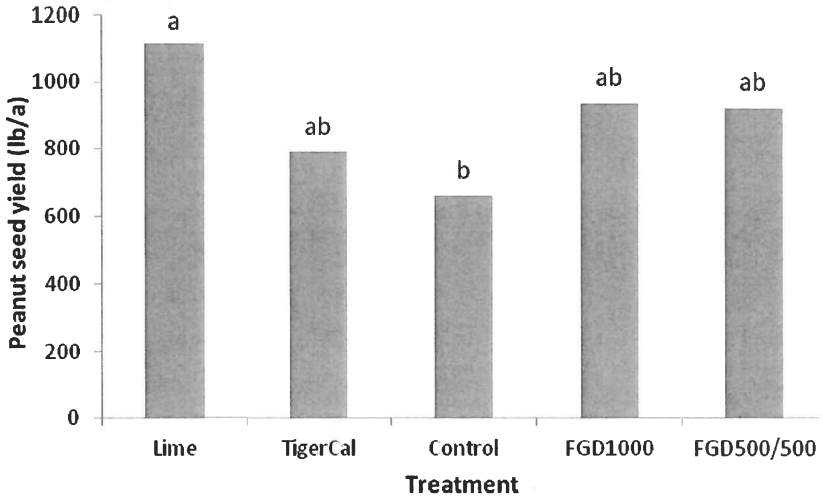

Figure 1. Peanut yield from Georgia-06G peanuts in 2011 from a dryland experiment in Headland, AL. Abbreviations: Control = no calcium treatment, FGD1000 = 1000 lb/A gypsum applied at planting, and FGD500/500 = split application of 500 lb/A of gypsum at planting and 500 lb/A at early bloom.

Seed Ca, which is a good indicator of Ca availability in the soil, was greatest in the split application of gypsum (Figure 2). Other treatments did not differ from the control, although lime and 1000 lb/A gypsum were slightly greater.

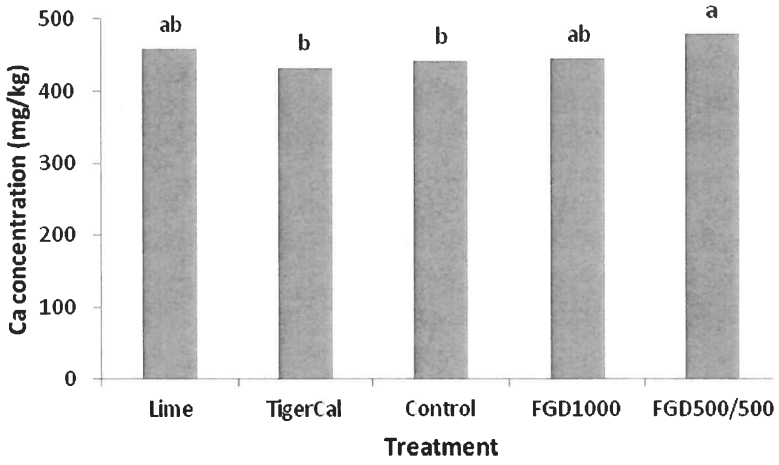

Figure 2. Seed Ca concentration in harvested Georgia-06G peanuts in 2011 from a dryland experiment in Headland, AL. Abbreviations: Control = no calcium treatment, FGD1000 = 1000 lb/A gypsum applied at planting, and FGD500/500 = split application of 500 lb/A of gypsum at planting and 500 lb/A at early bloom.

Soil Ca in the pegging zone at the end of the season was highest in the split application of gypsum (Figure 3). While other treatments were higher, they did not differ from the no calcium treatment (control).

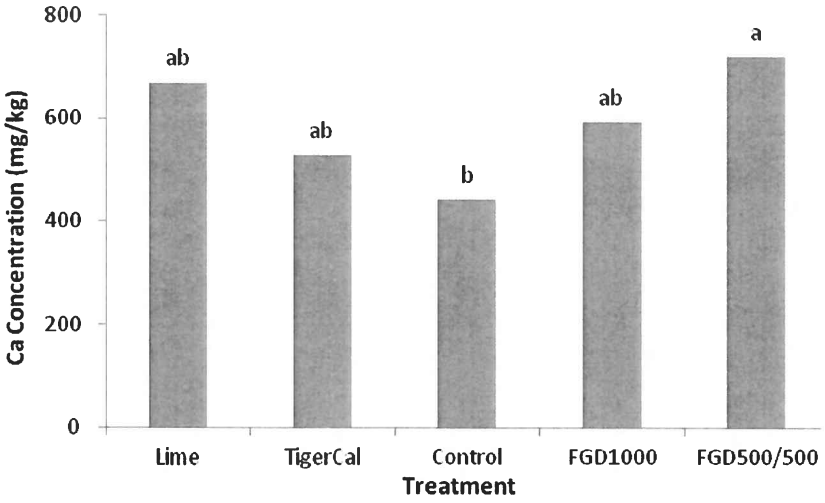

Figure 3. Soil Ca concentration at the end of the season from treatment applied to Georgia-06G peanuts in a 2011 dryland experiment in Headland, AL. Abbreviations: Control = no calcium treatment, FGD1000 = 1000 lb/A gypsum applied at planting, and FGD500/500 = split application of 500 lb/A of gypsum at planting and 500 lb/A at early bloom.