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TX-SS  
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2009

**Peanut Breeding**  
March 15, 2010  
NPB Final Report

*Summer*

Title: **Increase of Early-Maturing Peanut Lines**

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### **Objectives.**

Our goals are to develop:

- (a) runner peanut lines maturing approximately two weeks earlier than current varieties and that have the high-oleic trait. We are also attempting to select for disease resistance now,
- (b) a high-oleic Spanish variety that is earlier than OLin and has a yield similar to Tamspan 90,
- (c) a high-oleic Valencia cultivar,
- (d) a high-oleic Virginia cultivar.

To do this, we have had to select high-oleic single plants and increase them for field evaluation. We also wanted to perform larger increases on potential runner cultivar releases.

### **Results**

As a result of the winter increase, we had a large number of materials to evaluate in the field in 2009. In addition, we increased high-oleic single plant selections from materials segregating for the high-oleic trait.

#### **1. Field selection for high-oleic single plants.**

Because of funding for sending materials to J. Leek and Associates for rough determination of the oleic:linoleic ratio of 2700 seeds from high-yielding, early maturing plants, we were able to increase high-oleic single plants of early-maturing lines in the field and make selections for pod shape and overall appearance.

We planted out the following:

- 469 high-oleic F5 runner/virginia plant selections
- 357 high-oleic F6 runner selections

These were from lines that had some potential for release, but were segregating for the high-oleic trait. By identifying high-oleic plants and making selections, we were preparing for future evaluation of derived high-oleic breeding lines.

Approximately half of these were selected based on plant appearance and yield for a total of 286 selections that were sent to the winter nursery in Puerto Rico for increase. These will be planted

in the summer of 2010 as single row plots for evaluation.

**2. Winter nursery increase.**

We sent some materials for increase in Puerto Rico. We have just received these materials back and are working on shelling them out for field evaluation in 2010.

**3. Field increase.**

We increased the following single row plots, based on high-oleic single plants grown in the summer of 2008, selected and sent to the winter nursery in November 2008, and received in time for planting in the summer of 2009:

80 high-oleic early-runner lines

In addition, we increased the following selections:

90 lines from a new runner x runner cross for early maturity

90 lines from a new Spanish x Valencia cross

80 lines from wild species introgression x runner or Spanish cultivars to advance leafspot resistance

**4. Cross promising lines with early maturity.** Crosses included the following:

- Cross high-oleic, early-maturing, high-yielding runners selections to improve pod shape and resistance to Sclerotinia and TSWV.
- Cross early-maturing high-oleic Spanish and Valencia lines for better combinations of yield, early maturity, disease resistance, and shelling.
- Make additional crosses for drought tolerance.

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