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 0Lin 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 2007. 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 for rough determination of the oleic:linoleic ratio of 3000 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:
- 848 high-oleic F5 runner selections from the best F4 runner rows in 2007
- 157 high-oleic F6 runner selections
- 423 high-oleic F6 spanish selections from the best F5 entries in 2007
- 289 high-oleic Spanish and/or Valencia plant selections from the best entries in 2007

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, and about 1/2 of
the selections were sent to the winter nursery in Puerto Rico for increase. These will be planted in the summer of 2009 as single row plots for evaluation.

2. **Winter nursery increase.**
We sent some materials for increase in Puerto Rico. We expect to receive back materials within a month.

3. **Field increase.**
We increased the following single row plots, based on high-oleic single plants grown in the summer of 2007, selected and sent to the winter nursery in November 2007, and received in time for planting in the summer of 2008:

- 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. **Backcross promising lines with early maturity.** Crosses included the following:
- Backcross high-oleic, early-maturing, high-yielding runners selections to improve pod shape and resistance to Sclerotinia and TSWV.
- Backcross 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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