PEANUT VARIETIES, AGRONOMY, HARVEST

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American Peanut Council

SNACK NUTS
Origins to Packet
Peanuts II
Varieties, Agronomy, Harvest

• Primary Varieties Grown by Major Origins

• International Peanut Genomics Initiative for Variety Improvement

• Agronomy-Cultural Practices by Major Origins

• Harvest by Major Origins

• Manufacturer considerations when selecting supplier
United States Varieties

<table>
<thead>
<tr>
<th>Region</th>
<th>Varieties</th>
</tr>
</thead>
</table>
| Virginia-Carolina | • Bailey-Virginia  
                | • Champs-Virginia  
                | • Sugg-Virginia     |
| Southeast    | • Georgia 06G-Runner  
                | • Florida 07-Runner  
                | • Georgia 07W-Runner |
| Southwest    | • Flavor Runner 458-Runner  
                | • TAMrun OL07-Runner  
                | • Tamnut OL06-Spanish |
|              | • NCV 11-Virginia                           |
Indian Varieties

- Spanish
- Runner

**Future direction:**
- ✔ Development of high oleic acid varieties
- ✔ Yield improving yield
- ✔ Disease resistance
- ✔ Aflatoxins resistance

Use of genomic techniques for improving varieties
Chinese Varieties

- Virginia
- Spanish (Hsuji)
- Runner (recently, less than .2%)

Future direction:
- Development of high oleic acid varieties
- Yield improving yield
- Disease resistance

Use of genomic techniques for improving varieties
Mainly markers for HOAP
Argentine Varieties

- Runner-Granoleic, Prosem 48, Prosem 147

- Higher Yields
- Disease Resistance

Use of genomic techniques for variety improvement
Brazilian Varieties

- Runner-IAC OL 03, IAC OL 4, IAC 503, IAC 504
  - Increase Yields
  - Variety Improvement

Using genomic techniques to move traits from wild species
International Peanut Genomic Initiative
First peanut genome sequenced

A team of multinational crop geneticists known as The International Peanut Group Initiative (IPGI) has sequenced the peanut's genome. Researchers and plant breeders across the world will no doubt rejoice at the news, which will aid in their breeding of remarkable peanuts.
• Genome sequences for diploid A&B progenitors.
• Ongoing work on A. hypogea.
• Continuing to make ‘functional’ for improvement.
Jeremy Schmutz: sequenced Poplar, soybean, common bean, human, mouse…

Doing additional sequencing on diploid parents and on Tifrunner to complement and improve data from BGI.

DNA for Tifrunner is at HudsonAlpha, now working on sequencing.

DNA for diploids at HA. Improved sequences received.

With new sequencing approaches, we should have improved diploid sequences and the Tifrunner should improve as a result of additional sequence as well as the diploid parents.
Evaluation of RIL Population USA/India/Brazil
Evaluation of RIL Population USA/India/Brazil
Building bridges... USA/Brazil

Crossing AA x BB

colchicin treatment
AB hybrids

AABB amphidiploid
COMPATIBLE TO PEANUT
### Attributes for Peanuts

<table>
<thead>
<tr>
<th>Parent</th>
<th>Common or Unique Parent</th>
<th>Market Class</th>
<th>Oleic Acid</th>
<th>TSWV</th>
<th>Early Leaf Spot</th>
<th>Late Leaf Spot</th>
<th>White Mold</th>
<th>Sclerotinina</th>
<th>CBR</th>
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Assessing Traits in the Germplasm Collections

Current Research:
• Phenotyping & Genotyping Core Germplasm collection from China, India, and US
• Used Phenotype data to select varieties with natural resistance

Next Year:
• Sequence important selected varieties
• Compare genomes of resistant and susceptible varieties
• Develop gene markers for the resistance traits
Developed Markers for Economic & Quality Traits

• Current Markers:
  – High Oleic Trait
  – Nematode Resistance
  – Late Leafspot

• Coming Soon:
  – TSWV, Early Leaf spot, CBR, White Mold, thrips, leaf hopper, nematodes, kernel size, and drought.
Breeding for High O/L Tifguard

C1804: Tifguard x GA02C
C1805: Tifguard x Florida07

38 of 46 F1 seeds are hybrids

C1806: Tifguard x F1:C1804
C1815: Tifguard x F1:C1805

BC1

C1839: Tifguard x BC1:C1806
C1840: Tifguard x BC1:C1815

BC2

C1975: Tifguard x BC2:C1839
C1976: Tifguard x BC2:C1840

BC3

Self BC3 in PR

Selection for homozygous high O/L Tifguard

Date:
04/08
09/08
02/09
08/09
06/10
Increase Yields

Reduce Water Usage

Reduce Pesticides Usage

Improve Nutrition – Particularly Protein
Global Results!

- Lower Production Cost
- Higher Yield
- Disease & Pest Resistance
- Reduced Water Demand
- Emerging Diseases
- Improved Quality Traits
- Effective Seed Production Sys.
“Improving peanut varieties can help farmers in developed nations produce more peanuts with fewer pesticides and help farmers in developing nations feed their families.”

Rajeev Varshney – Plant Geneticist of India
Agronomy-Cultural Practices by Major Origins
INDIA
Do not use hull scrape for maturity, rather day after planting –
90 days for Spanish
120 days for Bold and Virginia types
CHINA
Argentina & Brazil
Raw Peanut Buying Specifications

- Type (Example)
  - Runner, Spanish, Virginia, Valencia
- Screen Size/Count
- Appearance
- Aflatoxin
- Foreign Material
- Major & Minor Damage
- Packaging
• Grade (Examples)

<table>
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<tr>
<th>Grade Type</th>
<th>Grade Code</th>
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<tbody>
<tr>
<td>Runner Jumbo</td>
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</tr>
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<td>Runner Medium</td>
<td>40/50</td>
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<tr>
<td>Virginia Super Jumbo</td>
<td>9/11</td>
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<tr>
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<td>Virginia Fancy</td>
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<td>Spanish Jumbo</td>
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