Variety Selection

- Wholesale Marketing
  - High percentage of 15 lb pumpkins [9 – 13” inches in diameter]
  - Deep orange color
  - Strong, healthy stems
  - Uniformity
    - Size
    - Shape
    - Color

- Retail Marketing
  - Broader size range
  - Dark orange color may not be as important
  - Strong, healthy stems
  - Uniformity may not be as critical
  - Demand for unique or specialty varieties

Soil Testing

- A soil test is the only accurate method of determining the amount of:
  - Lime to apply
  - Fertilizer to apply
- Too much fertilizer:
  - Wastes money and fertilizer
  - Can injure, even kill plants
  - Can pollute ground water
- Low pH and poor fertility:
  - Reduce yield and quality

Soil Sampling

- Use a sample tube or spade to collect samples that are at least 4 inches and no more than 6 inches deep
- Collect samples from 8 to 10 locations around the field
- Avoid sampling irregular or extremely wet areas
- Combine samples in a clean plastic container

pH and Nutrient Availability

- Proper pH range
  - 6.0 – 6.5
  - Optimum nutrient availability
- Soil sample in the Fall
- Lime in the Fall
  - Agricultural lime is variable in size and reacts over time
  - 6 months is generally required to see much activity
Fertility – Bare Soil

- Nitrogen (N)
  - 80 – 90 lb/A total
  - 40 – 50 lb/A at planting
  - 30 – 40 lb/A at 12” runner development
- Phosphate (P₂O₅)
  - Low 150 lb/A Medium 100 lb/A
- Potash (K₂O)
  - Low 200 lb/A Medium 150 lb/A

Fertility – Plastic Mulch

- Nitrogen (N)
  - 80 – 150 lb/A total
  - 25 – 50 lb/A at planting
  - Remainder throughout the growing season through fertigation
  - 8 to 10 weekly applications (beginning 3 to 4 weeks after planting)
    - Alternate
      - 50 lb/A/week of calcium nitrate
      - 50 lb/A/week of potassium nitrate
      - 50 lb/A/week of water soluble 20–20–20

Planting Dates

- Factors affecting planting date:
  - Relative Maturity
  - Market
  - Harvest Date
  - Microclimate
  - Production Practices
  - Frost Dates (?)
  - Soil Moisture
- Most varieties have relative maturities of 90 to 115 days
  - Those may not be exact days for you!
  - They are relative and often taken at the seed companies trial location (often in the Northeast)

Pumpkin Spacing

- Bush
  - 5-6’ between rows; 2-3’ in-row
  - 4-6 lbs seed/acre
- Semi-vine
  - 6-8’ between rows; 2-4’ in-row
  - 2-4 lbs seed/acre
- Vine
  - 8-10’ between rows; 4-5’ in-row
  - 2-4 lbs seed/acre

Pollination

- Rule of thumb:
  - 1 hive/A
- Native bees can be an important source of pollination
Irrigation
• Dry land production
• Overhead irrigation
• No-till production
• Following plasticulture strawberries, re-use plastic mulch and drip tape
• Needs:
  – 1 to 2 1/2 inches of water/A/week

Harvest Considerations
• Avoid harvesting when foliage is wet
• Cut stems as close to vine as possible
• Careful handling can prevent wounding and help maintain quality

Postharvest Handling
• Wash?
• Store in a cool, dry, dark place
  – Cool: 45 – 55 degrees F
  – Relative humidity: 70 – 75%
  – Single layer
  – Barrier between pumpkins and soil, if possible

Objective:
To evaluate powdery mildew resistance, yield, fruit quality, and postharvest storability of experimental and commercially available jack-o’-lantern varieties in Tennessee

2009 Powdery Mildew Resistance Variety Trial
Annette Wszelaki, Craig Canaday & Randi Dunagan
Vegetable Specialist, Plant Pathologist & Research Associate, University of Tennessee

Methods
• Two locations: Jackson, TN
  Lexington, KY
• 22 varieties
• 4 replicated plots/cultivar
• Plots: 20’ long
• Plant spacing: 4 hills/plot
  5’ between hills
  9’ between rows
• Planted: June 3, 2008
  June 12, 2009
• Harvested: September 10-11, 2008
  September 23, 2009
Characteristics Measured

- Yield
- Number of Fruit
- Fruit Weight
- Fruit Length and Width

Subjective Scales:

- Color:
  1= , 5= , 9= 
- Shape:
  1= , 5= , 9= 
- Suturing:
  1= None, 5= Medium, 9= Deep

Subjective Scales:

- Stem Length:
  1= Short, 5= Medium, 9= Long
- Stem Thickness:
  1= Thin, 5= Medium, 9= Thick
- Stem Attachment:
  1= Poor, 5= Average, 9= Excellent

Storage

- At harvest, sub-sample of 8 pumpkins/plot for storage
- Half (4) washed with 100 ppm bleach solution; half (4) not washed
- Pumpkins were weighed and evaluated for decay every 3 weeks for 45 days in 2008; after 2 weeks in 2009
- Rotten pumpkins were discarded

Top 5 Marketable Yield

<table>
<thead>
<tr>
<th>Variety</th>
<th>2009 Marketable Yield (cwt/A)</th>
<th>2008 Marketable Yield (cwt/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camaro</td>
<td>362 (1)</td>
<td>604 (3)</td>
</tr>
<tr>
<td>HSR4721</td>
<td>344 (2)</td>
<td>625 (2)</td>
</tr>
<tr>
<td>Merlin</td>
<td>328 (3)</td>
<td>425 (12)</td>
</tr>
<tr>
<td>Spartan</td>
<td>296 (4)</td>
<td>525 (5)</td>
</tr>
<tr>
<td>ACX 7301</td>
<td>282 (5)</td>
<td>322 (19)</td>
</tr>
<tr>
<td>Magic Wand</td>
<td>204 (13)</td>
<td>584 (4)</td>
</tr>
<tr>
<td>Gladiator</td>
<td>194 (12)</td>
<td>525 (5)</td>
</tr>
<tr>
<td>ACX7302</td>
<td>168 (16)</td>
<td>525 (5)</td>
</tr>
<tr>
<td>HSR4710</td>
<td>266 (7)</td>
<td>778 (1)</td>
</tr>
</tbody>
</table>

Camaro

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (cwt/A)</td>
<td>362</td>
<td>604</td>
</tr>
<tr>
<td>Total Fruit/A</td>
<td>2,964</td>
<td>5,808</td>
</tr>
<tr>
<td>Avg. Weight (lbs)</td>
<td>16.7</td>
<td>12.1</td>
</tr>
<tr>
<td>% Unmarketable</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Dimensions</td>
<td>11” x 11”</td>
<td>10” x 9”</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow orange</td>
<td></td>
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</table>
**HSR4721**

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
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</thead>
<tbody>
<tr>
<td>Yield (cwt/A)</td>
<td>344</td>
<td>625</td>
</tr>
<tr>
<td>Total Fruit/A</td>
<td>4,417</td>
<td>8,289</td>
</tr>
<tr>
<td>Avg. Weight (lbs)</td>
<td>10.2</td>
<td>8.3</td>
</tr>
<tr>
<td>% Unmarketable</td>
<td>24%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Dimensions</td>
<td>9” x 9”</td>
<td>8.5” x 9”</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow orange</td>
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**Merlin**

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (cwt/A)</td>
<td>328</td>
<td>425</td>
</tr>
<tr>
<td>Total Fruit/A</td>
<td>3,085</td>
<td>5,324</td>
</tr>
<tr>
<td>Avg. Weight (lbs)</td>
<td>12.7</td>
<td>13.7</td>
</tr>
<tr>
<td>% Unmarketable</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Dimensions</td>
<td>10” x 11”</td>
<td>9” x 9”</td>
</tr>
<tr>
<td>Color</td>
<td>Medium orange</td>
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**Spartan**

<table>
<thead>
<tr>
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<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (cwt/A)</td>
<td>296</td>
<td>525</td>
</tr>
<tr>
<td>Total Fruit/A</td>
<td>2,178</td>
<td>5,566</td>
</tr>
<tr>
<td>Avg. Weight (lbs)</td>
<td>14</td>
<td>12.1</td>
</tr>
<tr>
<td>% Unmarketable</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Dimensions</td>
<td>11” x 10”</td>
<td>11” x 10”</td>
</tr>
<tr>
<td>Color</td>
<td>Medium-dark orange</td>
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**ACX 7301**

<table>
<thead>
<tr>
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<th>2009</th>
<th>2008</th>
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</thead>
<tbody>
<tr>
<td>Yield (cwt/A)</td>
<td>282</td>
<td>322</td>
</tr>
<tr>
<td>Total Fruit/A</td>
<td>3,449</td>
<td>3,872</td>
</tr>
<tr>
<td>Avg. Weight (lbs)</td>
<td>9.5</td>
<td>8.7</td>
</tr>
<tr>
<td>% Unmarketable</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Dimensions</td>
<td>11” x 10”</td>
<td>9” x 9”</td>
</tr>
<tr>
<td>Color</td>
<td>Orange</td>
<td></td>
</tr>
</tbody>
</table>

**Storability**

- No difference in decay during storage between washed and unwashed pumpkins in 2008
- Stem health key to marketability
- Weight loss varied among varieties during 45 days of storage from ~0.5-1.5 lbs/pumpkin

**Weight Loss During Storage**

![Graph showing weight loss during storage for different varieties.](image)
Conclusions

• Powdery mildew resistant varieties can reduce need for fungicide inputs in years with low disease pressure
• In years with high disease pressure, variety selection is still the first and an important line of defense
• Washing did not increase pumpkin keeping quality in 2008

Acknowledgements

• Jason Reeves
• Lanny Davis
• Matthew Morrow
• Bob Hayes
• Michael Hannah
• Wszelaki Lab
• Madison Co. Master Gardeners
• WTREC Farm Crew

• Abbott & Cobb
• Harris
• Harris Moran
• Hollar
• Johnny’s Selected Seed
• Outstanding Seed
• Seedway
• Siegers

Thank you!
Questions?

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