Pecan Nursery Production

Dr. Patrick Conner
University of Georgia
Horticulture Dept.
Seed Stock Selection

• Requirements for seed stock
  – High quality nut (good kernel).
  – Readily available.
  – Vigorous seedlings.
  – Healthy seedlings.

• Observations from breeding program
  – Thin shell nuts are prone to rot.
  – Thick shells do not hamper germination.
  – Small nuts do as well or better than large nuts.
Seed Stock Varieties

Good

Elliot – Medium vigor, good quality nuts, healthy seedlings, easy to stratify
Curtis – Good seedling health, medium vigor, hard to find.
Caddo – Good quality nuts, very vigorous, seedlings often scab.
Desirable – Medium vigor, seedlings often scab.

Poor

Schley – Thin shell, kernel often rots, poor vigor, seedlings often scab.
Sumner – Poor vigor.
Pawnee – Seedlings often scab, slow to emerge.
Seed Stratification

- Simulates winter conditions so seed is prepared for germination.

- Requires
  
  Cool conditions 34-40 °F (not freezing).
  Moist environment (not wet).
Planting Experiment

• Three Treatments
  – Dry Seed: Seed kept dry in cooler until planting.
  – Soaked Seed: Seed kept dry in cooler and then soaked in running water for 3 days before planting.
  – Stratified Seed: Seed soaked in running water for 3 days then damp stratified prior to planting.

• Treatments started Nov. 1 and seed was planted Dec. 1, Jan. 2, Feb. 1, Mar. 1, and Apr. 1
Results

- The dry seed and soaked seed were not different from each other.
- Stratified seed had better and earlier germination, and produced taller seedlings.

<table>
<thead>
<tr>
<th>Seed Trt.</th>
<th>% Live</th>
<th>Emergence</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Seed</td>
<td>81 B</td>
<td>May 8 B</td>
<td>36 B</td>
</tr>
<tr>
<td>Soaked Seed</td>
<td>85 AB</td>
<td>May 6 B</td>
<td>35 B</td>
</tr>
<tr>
<td>Stratified Seed</td>
<td>90 A</td>
<td>April 18 A</td>
<td>41 A</td>
</tr>
<tr>
<td>Planting Date</td>
<td>% Live</td>
<td>Emergence</td>
<td>Height (cm)</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Stratified Seed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec. 1</td>
<td>86</td>
<td>Apr. 10 B</td>
<td>46 A</td>
</tr>
<tr>
<td>Jan. 2</td>
<td>98</td>
<td>Apr. 10 B</td>
<td>42 AB</td>
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<tr>
<td>Feb. 1</td>
<td>88</td>
<td>Apr. 12 B</td>
<td>38 B</td>
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<tr>
<td>Mar. 1</td>
<td>94</td>
<td>Apr. 17 B</td>
<td>39 B</td>
</tr>
<tr>
<td>Apr. 1</td>
<td>82</td>
<td>May 10 A</td>
<td>41 AB</td>
</tr>
<tr>
<td><strong>Dry Seed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec. 1</td>
<td>78</td>
<td>Apr. 12 A</td>
<td>41 A</td>
</tr>
<tr>
<td>Jan. 2</td>
<td>80</td>
<td>Apr. 28 B</td>
<td>38 AB</td>
</tr>
<tr>
<td>Feb. 1</td>
<td>74</td>
<td>May 5 C</td>
<td>37 AB</td>
</tr>
<tr>
<td>Mar. 1</td>
<td>86</td>
<td>May 23 D</td>
<td>34 BC</td>
</tr>
<tr>
<td>Apr. 1</td>
<td>86</td>
<td>June 2 E</td>
<td>31 C</td>
</tr>
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</table>
Planting Seed

• Generally want a close spacing
  – 1 foot within rows. 5-6 feet between rows.

• Nut much fertilizer needed the first year.
  – 50 lbs / acre N as 10-10-10 seems adequate.
## Benefits of Plastic Mulch

<table>
<thead>
<tr>
<th></th>
<th>Caliper</th>
<th>Height</th>
<th>Shoot Wt.</th>
<th>Root Wt.</th>
<th>Total Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bare Ground</td>
<td>8.4</td>
<td>28.5</td>
<td>7.1</td>
<td>56.4</td>
<td>63.5</td>
</tr>
<tr>
<td>White Mulch</td>
<td>11.1</td>
<td>28.6</td>
<td>16.0</td>
<td>137.9</td>
<td>153.9</td>
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</tbody>
</table>

Black mulch kills seedlings!

It doesn't rain under the mulch!
First Year Seedling Growth

- Most energy directed towards root growth.
- Caliper increases throughout the growing season. Can get large enough to graft 1st year.
- Height is slow to develop after initial growth.
- Root length is often 2-3x height.
Second year growth.

- Final tree size strongly determined by water and fertilization.
- Seedlings grow as long as conditions are favorable.
- Can get seedlings too big to graft.
Weed Control

- Plastic mulch helps greatly except for nutsedge.
- Glyphosate (Roundup) is NOT safe around seedlings as a spray. Damage will be apparent later as strap-like leaves.
- Poast will control most grasses, need several applications.
- MSMA will control nutsedge, need several applications.
- Glufosinate (Rely) is safer than glyphosate (Roundup).

- **Begin control the year before planting!**
Weed wipers are a safe way to apply Roundup.
Insect Control

- Pecan Bud Moth – Likes juvenile growth. Will kill main growth and cause branching.
- Leaf Phyloxera – Can be severe, slows growth.
- Good control early, beginning right at budbreak, usually keeps them down all season.

Phylloxera Damage

Bud Moth Damage
Disease Control

• Scab is the only real problem in seedling stocks.
  – Plant resistant seedstock (Elliot or Curtis).
  – Water with drip tubes, not overhead.

• Grafted trees should have a regular scab control program to prevent stem lesions.
Thanks to The Georgia Agricultural Commodity Commission For Pecan for its support of our breeding program!