Highbush Blueberry Site Selection

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Outline of the Presentation

- Introduction
- Soil issues
- Soil drainage
- Irrigation issues
- Topography
- Marketing issues
Introduction

• Missouri’s blueberry industry
  – Recent development
    • Arkansas – research and industry development
    • initial research plantings at Mtn Grove and Springfield in early 1970’s
    • initial commercial plantings 1975
  – 200 acres estimated at present
  – Mostly small scale - >5 acres
  – Mostly direct market
  – Highbush and southern highbush cultivars
Introduction

• Challenges facing Missouri blueberry growers
  – Marginally suitable soils
    • High pH: 5.5-7.0
    • Low organic matter: <3%
    • High calcium content
    • Poor drainage, impervious soil layers
  – Lack of ideally suited cultivars
  – Climate
Site Selection - Soil

- An ideal blueberry soil...
  - Well drained
  - Acidic – pH 4.8-5.2
  - Sandy loam
  - Organic matter > 3%
Site Selection - Soil

• What does the soil test really tell us?
  – Soil pH
  – Nutrient levels
    • Phosphorus
    • Potassium
    • Calcium
    • Magnesium
  – Soil organic matter
  – Neutralizable acidity
  – Cation Exchange Capacity (CEC)
Site Selection - Soil

- Soil test is critical
  - pH: 4.8 - 5.2 (water), 4.3-5.0 (salt)
  - calcium: below 2000 lb/acre
  - CEC: below 18
  - % base saturation from Ca: 58-68%

- Soil fertility – not as important
  - P: 30 lb/acre, K: 150 lb/acre
Site Selection - Soil

<table>
<thead>
<tr>
<th>SOIL TEST RESULTS</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pHs</strong></td>
<td>7.1</td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>490 lbs/a</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>772 lbs/a</td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>6609 lbs/a</td>
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<tr>
<td>Magnesium (Mg)</td>
<td>563 lbs/a</td>
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<tr>
<td>Organic Matter:</td>
<td>7.6 %</td>
</tr>
<tr>
<td><strong>Neutr. Acidity:</strong></td>
<td>0.0 meq</td>
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<tr>
<td><strong>CEC:</strong></td>
<td>19.9 meq</td>
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<th>SOIL TEST RESULTS</th>
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<tbody>
<tr>
<td><strong>pHs</strong></td>
<td>6.4</td>
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<tr>
<td>Phosphorus (P)</td>
<td>98 lbs/a</td>
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<tr>
<td>Potassium (K)</td>
<td>420 lbs/a</td>
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<tr>
<td>Calcium (Ca)</td>
<td>3937 lbs/a</td>
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<tr>
<td>Magnesium (Mg)</td>
<td>218 lbs/a</td>
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<tr>
<td>Organic Matter:</td>
<td>5.8 %</td>
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<tr>
<td><strong>Neutr. Acidity:</strong></td>
<td>1.0 meq</td>
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<tr>
<td><strong>CEC:</strong></td>
<td>12.3 meq</td>
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</table>

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<th>SOIL TEST RESULTS</th>
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</thead>
<tbody>
<tr>
<td><strong>pHs</strong></td>
<td>4.6</td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>9 lbs/a</td>
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<tr>
<td>Potassium (K)</td>
<td>180 lbs/a</td>
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<tr>
<td>Calcium (Ca)</td>
<td>1082 lbs/a</td>
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<tr>
<td>Magnesium (Mg)</td>
<td>126 lbs/a</td>
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<tr>
<td>Organic Matter:</td>
<td>3.3 %</td>
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<tr>
<td><strong>Neutr. Acidity:</strong></td>
<td>5.0 meq</td>
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<tr>
<td><strong>CEC:</strong></td>
<td>8.5 meq</td>
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</tbody>
</table>
Byers Orchard

• The soil test
  – results of our soil test
    • pH: 6.4, good
    • P: 5 lbs/acre, low
    • K, Ca, Mg: adequate
    • OM: 3%, good
    • CEC: 9.7 me, sandy loam - silt loam
Site Selection - Soil

- What about the physical characteristics of a site soil?
  - Soil water drainage
  - Compaction issues
Site Selection - Drainage

- Blueberry root systems are shallow
  - Sensitive to excess moisture in the surface soil layers
- Water table – 15-40” below surface minimum
Site Selection - Drainage

- Percolation test is valuable
- Observation of soil profile is valuable
- Soil drainage problems...
  - Avoid site
  - Berming
  - Tile drainage
  - Subsoiling
Site Selection – Summary

- Site selection hinges on:
  - Soil issues
  - Soil drainage
  - Irrigation issues
  - Topography
  - Marketing issues
Any Questions?