Evaluating Sustainable Management Practices on Scab-Resistant Apples in the Hudson Valley

Fruit Workers Meeting, Burlington, VT
October 19, 2010

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Objectives for our new SRC planting

1. Establish a modern high-density planting of scab-resistant cultivars (SRCs).

2. Evaluate effects of organic and sustainable fungicide and insecticide programs on yield, fruit quality, and tree health.
   - Show that SRCs can enhance yield in organic production systems by decreasing the need for sulfur and lime-sulfur.
   - Fertility and ground cover management will be a uniform commercial standard across all treatments.

3. Evaluate effects of five ground-cover management programs on yield, fruit quality, and tree health.
Planting design and background

Peter Jentsch ordered custom-budded trees in winter of 2007-2008. Trees were planted in spring of 2010.

1. More than 1700 trees were planted on 1.3 A: 3 ft between trees and 11 ft between rows
View of the planting shortly after trees were planted in April of 2010.
View of the planting after trellis posts and wires were installed in July of 2010.
Planting Design

1. Trees were planted on 1.3 A:
   3 ft between trees and 11 ft between rows

2. Six rows (reps) for fungicide/insecticide trts:
   each row contains 10 plots (= 10 trts).

3. Each plot contains 11 cultivars:
   Pristine                      Honeycrisp                Florina Querina
   Redfree                      Liberty                        Enterprise
   Novamac                      Crimson Crisp               GoldRush
   Nova Easygro                 Scarlet O'Hara

4. Five ground cover treatments to be replicated across plots containing 11 trees of the same cultivar.
# Planting Design

<table>
<thead>
<tr>
<th>ROW #</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
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<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree number</td>
<td>11-GR</td>
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<tr>
<td>Paved Roadway</td>
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<td>2</td>
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</tbody>
</table>

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CROSS-DRIVE
Potential fungicide-insecticide treatments

1a. SRC-IPM fungicide/conventional insecticide
2. SRC-IPM fungicides/organic insecticide
3. SRC-IPM fungicides/sustainable-1 insecticide
4. SRC-IPM fungicides/sustainable-2 insecticide
5. SRC-IPM fungicides/no insecticide (control)
6b. full-season organic fung./conventional insecticide
7c. SRC-organic fungicides/conventional insecticide
8d. no fungicide (control)/conventional insecticide
9. SRC-organic fungicides/organic insecticide
10. no fungicide/no insecticide ?????
Potential fungicide-insecticide treatments

<table>
<thead>
<tr>
<th>Insecticide Program</th>
<th>SRC IPM</th>
<th>SRC organic</th>
<th>full-season organic</th>
<th>no fungicide (control)</th>
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</thead>
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<tr>
<td>convent'1 insecticide</td>
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<td>6</td>
<td>7</td>
<td>8</td>
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<tr>
<td>organic insecticide</td>
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<tr>
<td>sustainable-1 insecticide</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sustainable-2 insecticide</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no insecticide (control)</td>
<td>5</td>
<td></td>
<td></td>
<td>10 ??</td>
</tr>
</tbody>
</table>

*Note: SRC IPM, SRC organic, full-season organic, no fungicide (control) columns represent different treatment levels or measurements.*
Ground cover management evaluations

Treatments:
1. Gramoxone/simizine; gramoxone in summer
2. Glyphosate simizine; gramoxone in summer
3. Glyphosate simizine; glyphosate in summer
4. Landscape cloth from bloom to Aug 10
5. Landscape cloth from 10 June to Sept 15

Objectives:
1. Check for glyphosate effects on tree health.
2. Evaluate feasibility of using removable landscape cloth (organic systems).
Planting Design

We experimented with water-filled tubing sewn into ground cover fabric as a means to hold fabrics in place, but this proved too expensive.
Comparison of weed control in an herbicide plot (foreground) in mid-September compared to a plot with landscape fabric.
Comparison of weed control in an herbicide plot (left) in mid-September compared to a plot with landscape fabric.
Some landscape fabrics allowed water to pass through more readily than others as shown by the puddling on the fabric on the right.
Soil condition beneath the fabrics as they were being removed in the fall.
View of the planting in mid-summer. We anticipate collecting data from this planting over the next 5 yr.