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

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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 alcross all treatments.

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

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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

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View of the planting shortly after trees were planted in April of 2010.

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View of the planting after trellis posts and wires were installed in July of 2010.

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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.

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Planting Design

Potential fungicide-insecticide treatments

1a. SRC-IPM fungcde/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./conv'l insectic'd
7c. SRC-organic fungicides/conv'l insectic'd
8d. no fungicide (control)/conv'l insectic'd
9. SRC-organic fungicides/organic insecticide
10. no fungicide/no insecticide ?????

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Potential fungicide-insecticide treatments

	Fungicide Program			
Insecticide Program	SRC IPM	SRC organic	full-season organic	no fungicide (control)
convent'l insecticide	1	6	7	8
organic insecticide	2	9		
sustainable-1 insecticide	3			
sustainable-2 insecticide	4			
no insecticide (control)	5			10 ??

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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).

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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.

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Some landscape fabrics allowed water to pass through more readily than others as shown by the puddling on the fabrick 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.

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