

# Organic Apple IPM

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# Organic IPM

Organic IPM is an approach to managing pests that integrates biological, cultural, physical, and *organically acceptable* chemical tools in a way that minimizes economic, health, and environmental risks.

# **What is Organic Agriculture?**

**In 1995, the USDA National Organic Standards Board (NOSB) defined organic agriculture as**

**"an ecological production management system that promotes and enhances biodiversity, biological cycles, and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain, or enhance ecological harmony ...The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people."**

# **Major Obstacles In Organic IPM**

- McIntosh – Apple Scab
- Plum Curculio

# Potential Alternatives to Obstacles

- Cultivar shift away from McIntosh and in market focus (retail/farm stand)

# Potential Alternatives to Obstacles

- Research progress on organic arthropod options (Surround; Entrust, etc.)

# The OrganicA Project

## A New Look at Organic Apple Production in New England

Funding: USDA Integrated Organic Program

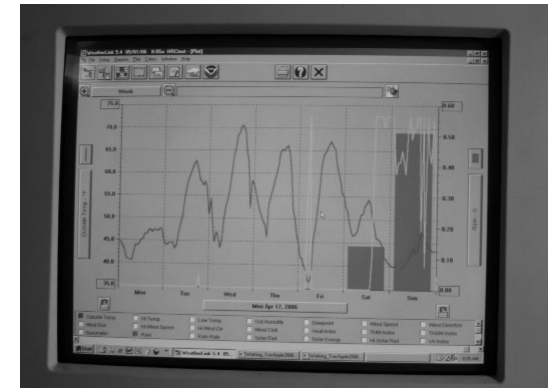
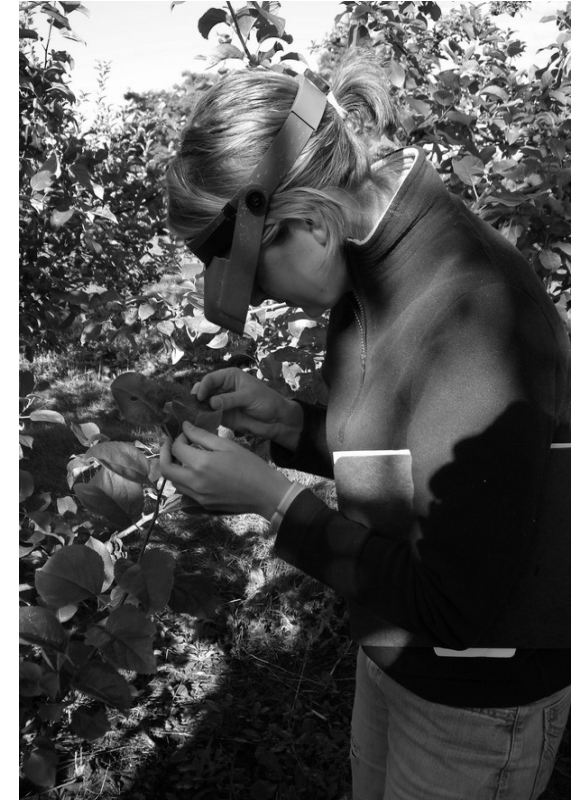
# OrganicA Project



Cultivars: Honeycrisp, Zestar!, Ginger Gold,  
Macoun, Liberty



# Organic IPM



# Organic IPM



- **Do thresholds need adjustments ?**
- **Timing of applications ?**
- **Number of applications ?**

# ***Potential Organic Arthropod Options***

- **Botanicals (Aza-Direct, PyGanic, etc. )**
- **Particle Film (Surround)**
- ***B. t.* products**
- ***T. pyri***
- **Spinosad (Entrust)**
- **Insecticidal Soap**
- **Oil**
- **Pheromones (mating disruption)**
- **Granulosis virus (CM – Cyd-X)\***

# ***Potential Organic Disease Options***

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- **Copper (fixed)**
- **Sulfur**
- **Liquid Lime Sulfur**

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- **Serenade (*Bacillus subtilis*)**
- **Bactericides**

# OrganicA Orchards



- What have been the pest management challenges?
- What have we done?
- What have we learned so far ?

# Orchard 1

Planted in 2006

## Establishment Years

### Indirect Insect pests include:

GPM, Aphids, LM, LH, JB, etc.

Mites -- ERM and TSSM

Diseases -- AS, CAR, FELS, PM, FB

Weeds

Vertebrates - voles



# Orchard 1

## 2006 Pest Management

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**2 Insecticide Applications** -- Kaolin primarily for Japanese beetles [July 14 and 21, 2006]

**3 Fungicide Applications** (combination sulfur/ LLS) on June 22, July 1, and sulfur on July 14, 2006

# 2006 Orchard 1

## % Veg. Terminal Leaves Infected

August 9-11, 2006

	SCAB	RUST	FELS	clean of disease and arthropods
Ginger Gold	41.3 a	25.6 a	5.4 bc	43.5 d
Honeycrisp	2.7 c	13.5 b	3.8 c	72.9 b
Liberty	0.0 d	0.3 c	3.1 c	87.6 a
Macoun	28.4 b	1.5 c	10.8 a	60.9 bc
Zestar!	34.1 ab	0.7 c	10.2 ab	55.1 cd



# 2006 Orchard 1

## % Veg. Terminal Leaves - Incidence

August 9-11, 2006

Cultivar	Aphids	ERM	LM mines	WALH damage	Japanese beetle damage
Ginger Gold	0.0	0.2	5.7	0.9	0.4 bc
Honeycrisp	0.0	0.0	6.7	1.4	5.1 a
Liberty	0.0	0.1	5.2	0.6	2.3 ab
Macoun	0.4	0.2	3.7	0.3	0.0 c
Zestar!	0.3	0.0	5.2	0.9	0.4 c

# Beneficial Organisms

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# Orchard 1

## 2007 Pest Management

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**Dormant Oil**

**3 Insecticide Applications** ( 2 Kaolin, 1 spinosad)

**12 Fungicide Applications** (7 LLS, 5 S)

**4 Bactericides** (Fire Blight) – Copper, Serenade,  
Streptomycin

# “Pinching” Flowers

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# 2007 Orchard 1

## % Veg. Terminal Leaves Infected

August 7, 2007

Cultivar	SCAB	RUST	FELS	"Clean" of disease and arthropod
Ginger Gold	0.3	24.8 ab	2.3 b	55.2 abc
Honeycrisp	0.0	39.9 a	2.3 b	41.0 c
Liberty	0.0	14.7 b	2.2 b	58.5 ab
Macoun	0.9	25.2 ab	8.9 a	49.4 bc
Zestar!	0.2	14.5 b	6.5 ab	67.9 a

# 2007 Orchard 1

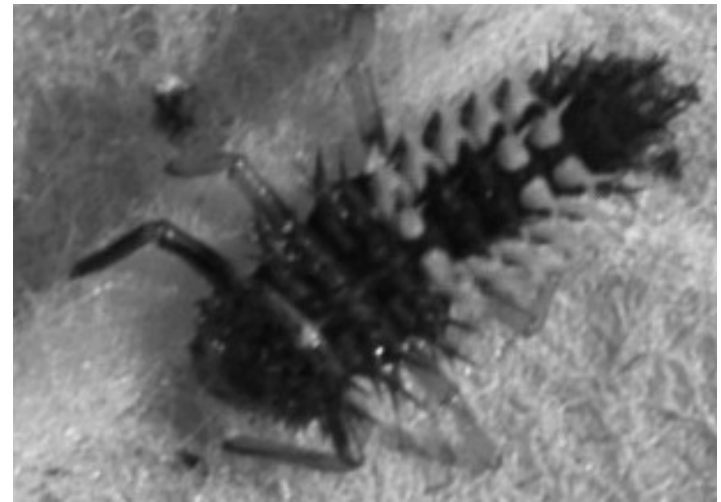
## % Veg. Terminal Leaves - Incidence

August 7, 2007

Cultivar	Aphids	ERM	STLM mines	WALH damage	Japanese Beetle damage
Ginger Gold	3.7 a	11.3	2.2	0.0	1.7 b
Honeycrisp	2.0 ab	6.7	1.3	0.0	10.4 a
Liberty	1.0 ab	0.9	1.0	0.0	11.8 a
Macoun	0.0 b	5.2	1.4	0.0	0.6 b
Zestar!	0.0 b	2.0	3.8	0.0	1.5 b

# Beneficial Organisms

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# Weed Management

## Mulch and Flaming



July 9, 2007



July 11, 2007



# Vole Management - Guards





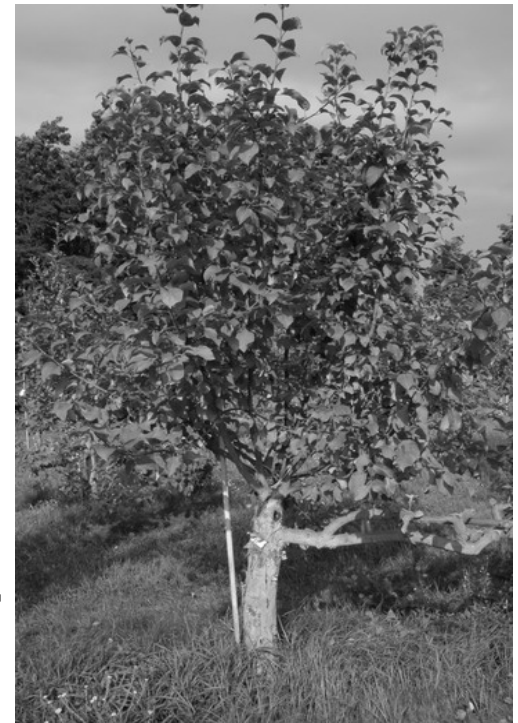


**April 3-6, 2006**

## **Orchard 2 Top-Grafted**



**Sept. 9, 2007**



# 2007 Orchard 2

## % Veg. Terminal Leaves Infected

### August 8-14, 2007

Cultivar	SCAB	CAR	FELS	Pinpoint purple Spots	"Clean" of disease and arthropods
Ginger Gold	0.4	35.5 a	10.2 bc	3.8	5.0
Honeycrisp	0.1	36.6 a	7.1 c	12.9	2.1
Liberty	0.0	17.9 b	9.4 bc	12.6	6.0
Macoun	0.8	18.6 b	20.8 a	11.5	8.0
Zestar!	0.1	12.6 b	14.2 ab	6.1	8.2

# 2007 Orchard 2

## % Veg. Terminal Leaves - Incidence

August 8-14, 2007

Cultivar	Aphids	ERM	STLM mines	WALH damage	Japanese Beetle damage
Ginger Gold	0.7	91.0	0.5	0.0	6.5 ab
Honeycrisp	0.1	84.5	1.1	0.0	22.7 a
Liberty	0.7	75.8	1.1	0.0	11.2 ab
Macoun	2.4	81.0	1.1	0.0	0.5 b
Zestar!	0.8	81.2	0.8	0.0	4.3 ab

# Japanese Beetle

## % Veg. Terminal Leaves Damaged

Cultivar	Orchard 1 2006	Orchard 1 2007	Orchard 2 2007
Ginger Gold	0.4 bc	1.7 b	6.5 ab
Honeycrisp	5.1 a	10.4 a	22.7 a
Liberty	2.3 ab	11.8 a	11.2 ab
Macoun	0.0 c	0.6 b	0.5 b
Zestar!	0.4 c	1.5 b	4.3 ab

# 2008 Concerns

TPB



EAS



Rust



Phytoxicity



# **Scab-Resistant Cultivars**

## **An Important Consideration**





# **Great Source of Information**



**Experienced**

**Organic Apple Growers**

# Recordkeeping



- **Detailed, complete recordkeeping is crucial for organic certification.**
- **Contact Certifier in the beginning and often to determine what is needed for certification.**

# Organic Certifiers

OrganicA - a resource for organic apple production: Agencies - Netscape Browser

File Edit View Go Bookmarks Tools Help

http://www.uvm.edu/~organica/sitematerials/agencies.html

Personal 27° Webmail Personal Bookmarks view.jpg (JPEG Image, 720x540 pixels) webcam image

Arizona Webcam OrganicA - a resource for org...

**OrganicA** - a resource for organic apple production

[Organic Basics](#) - [Horticulture](#) - [Organic IPM](#) - [Harvest & Processing](#) - [Economics & Marketing](#)  
[Case Studies](#) - [Listserves & Newsletters](#) - [The OrganicA Project](#) - [Additional Links](#) - [OrganicA Home](#)  
Please take a moment to send us your input, comments, and suggestions: [\\*Evaluate OrganicA\\*](#)

**Federally accredited certifying agencies for the New England states include:**

**Maine**

MOFGA Certification Services, LLC  
294 Crosby Brook Rd.  
P.O. Box 170  
Unity, ME 04988-0170  
Contact: Mary Yurlina  
207-568-4142  
E-mail: [certification@mofga.org](mailto:certification@mofga.org)  
Scope: crop, livestock, wild crop, handling

**Connecticut and Massachussetts**

Baystate Organic Certifiers  
683 River St.  
Winchendon, MA 01475  
Contact: Don Franczyk  
978-297-4171  
E-mail: [baystateorganic@earthlink.net](mailto:baystateorganic@earthlink.net)  
Scope: crop, livestock, wild crop, handling

**New Hampshire**

New Hampshire Dept. of Agriculture,

<http://www.uvm.edu/organica>

Done

# **UVM APPLE TEAM**



- **Terry Bradshaw**
- **Sarah Kingsley-Richards**
- **Morgan Cromwell**

# ***Thank you !***



- USDA Integrated Organic Program
- Vermont Tree Fruit Growers' Assoc.
- Universities of Vermont, Maine, Arkansas