





## GROWING ORGANIC BLUEBERRIES PROSPECTS & PITFALLS

**Bill Sciarappa**  
Blueberry Working Group

## HUMAN HEALTH CREATING MAJOR NEW MARKETS

### GET YOUR DAILY DOSE OF BLUE.

For optimum health, scientists say, eat a handful of berries.



By the way, the USDA has been promoting the health benefits of blueberries for years. In fact, the USDA has been promoting the health benefits of blueberries for years. In fact, the USDA has been promoting the health benefits of blueberries for years.

Plus, the USDA has been promoting the health benefits of blueberries for years. In fact, the USDA has been promoting the health benefits of blueberries for years.



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The Power Of Blue Berry Day

## ADDING VALUE TO BLUEBERRIES

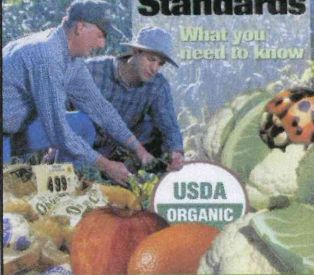
Jersey Blues Iced Tea





## SPECIAL REPORT

# National Organic Standards

What you need to know





# USDA

## October 2002

Full Implementation



[www.theorganicreport.com](http://www.theorganicreport.com)


[www.ota.com](http://www.ota.com)

Organic Trade Commission

## RUTGERS UNIVERSITY BLUEBERRY WORKING GROUP


### Developing New Blueberry Tools & Practices



## Planning for Organic Production with Sustainable Ag Practices

- Recycle best cultural practices of the past
- Utilize appropriate recommendations of today
- Create quality & customized production system





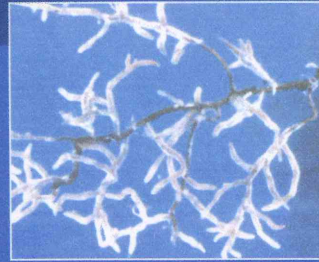
## Primary Production Practices

- ◆ Fertility & Soil Health
- ◆ Blueberry Varieties
- ◆ Cultural Practices
- ◆ Sanitation
- ◆ Water Management
- ◆ Weed Management
- ◆ Disease Management
- ◆ Insect Management
- ◆ Harvest & Post-Harvest Handling

Highbush Blueberry  
Production Guide



## Soil Food Web Feed the Soil – Peat Moss/Humus/Compost



Mycorrhizal fungi  
around plant roots



Dr. Elaine Ingham

## PEST RESISTANT VARIETIES Mark Ehlenfeldt - USDA-ARS

Table 1. Relative responses of 26 major cultivars to mummy berry blight, mummy berry fruit-rot, and anthracnose fruit-rot, and other diseases when screened under high inoculum conditions. Values represent average percentages from a minimum of 2 years, normalized to selected standards

Cultivar	Mummy blight	Mummy fruit-rot	Anthracnose fruit-rot	Miscellaneous Observations
Weymouth	35.1 M	16.9 L	37.5 L	
Blumits	19.1 L	20.2 M	81.6 H	Extremely RRSV susceptible
Chamicleer	27.1 M	10.0 L	74.7 H	
Duke	5.5 L	17.4 M	48.7 M	Some found with RRSV, suspect to stem blight
Spartan	37.8 M	22.2 H	74.2 H	
Bluejay	9.9 L	9.6 L	47.4 M	
Bluehaven	100.0 H	39.0 H		
Blueberry	43.4 H	33.9 H	71.5 H	Susceptible to RRSV
Bluecrop	34.6 M	21.9 M	79.8 H	
Reka	22.0 M	4.9 L	52.0 M	
Legacy	33.3 M	21.7 M	34.3 L	
Jersey	7.8 L	23.8 H	38.9 L	
Rubel	12.3 L	27.4 H	44.2 M	Suscept to nemt, resist to RRSV
Brigitta Blue	16.3 L	9.7 L	16.7 L	Susceptible to scale insects, slow to shut down in Fall
Eliot	4.0 L	37.3 H	12.5 L	

## CULTURAL & SANITATION PRACTICES



Pruning - Ventilation - Air Flow

## WATER MANAGEMENT Trickle versus Overhead Irrigation



## PEST MANAGEMENT SYSTEMS

For

- A. Weed Problems
- B. Disease Problems
- C. Insect Problems



### Plasticulture, Smother Crops & Mulch

**Fine Fescues**

- Slow Growing
- Low Height
- Low Nutrients
- Competitive

### Blueberry Disease Management for New Jersey Organic Approved Fungicide Substitution

**Diseases**

- Monilinia and Phomopsis
- Monilinia, Botrytis, Phomopsis, Anthracnose, Alternaria
- Anthracnose, Alternaria

**Crop Phenology**

- Vegetative bud break and leaf elongation
- Flowering period
- Harvest

Fungicide and spray timing

### Organic Fungicide Tools

- ◆ Bordeaux
- ◆ Sulfur
- ◆ Compost Tea
- ◆ Serenade
- ◆ Armi-Carb
- ◆ Oxidate

### PROGRESS IN DISEASE MANAGEMENT Botrytis Data Preliminary Results – 3 Sites

Marginal Activity	Moderate Activity	Moderate +
• Compost Tea Spray	• Sulfur	• Oxidate
• Compost Tea Drench	• Bordeaux	• Armi-Carb
• Neem		• Serenade**

### HARVEST TIME

- ❖ Clean & Chlorinate Equipment
- ❖ Consider Hydrogen Dioxide

### Anthracnose Management

- ◆ Cultivar
  - > Bluecrop (S)
  - > Elliott (R)
- ◆ OLD - Bordeaux, Sulfur, compost tea
- ◆ NEW - Serenade, Oxidate, Neem, Armicarb

**Lab Results**

Treatment/Cultivar	% Anthracnose
Compost Tea	~78
Bordeaux mix	~65
Yeast/compost	~68
Oxidate 1%*	~62
Sulfur	~58
Serenade	~45
Armicarb	~42
Compost	~55
Bluecrop 1,2	~15



**BLUEBERRY INSECT MANAGEMENT**  
 Sampling, Identification, Scouting  
 Organic IPM Solution



**ORGANIC INSECTICIDE INVENTORY**  
 IPM Timing – Spot & Perimeter Spraying



**Key Pests**



Blueberry Fruit Fly



Blueberry Fruit Fly Larvae



**Commercial Air Blast Application**

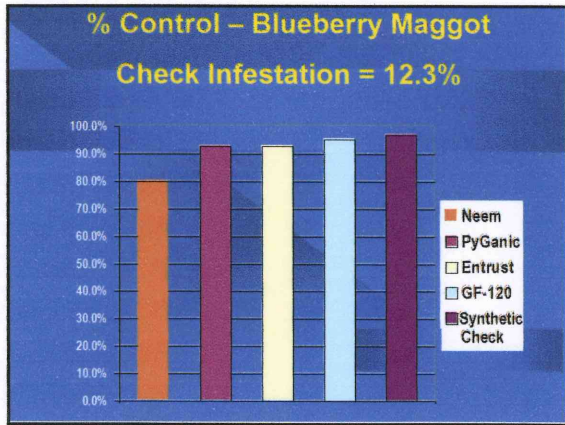


**Fruit Fly Data Blueberry Acres**



Dr. James Barry, Staff & Master Gardener Volunteers





### Bio-Insecticide Profile

Trade Name	PyGanic	Agro-neem	Entrust	GF 120
Formulation	1.4 EC	.15 FI	80 WP	Bait
Active Ingredient	Pyrethrin	Azadiractin	Spinosad	Spinosad
Rate/Acre	18 Oz	2 Qt	2 Oz	20 Oz
Re-entry	12 Hours	0 when dry	4 Hours	4 Hours
PHI		0 Days	3 Days	0 Days
Price	\$150/Gal	\$21/Qt	\$400/Lb	\$80/Gal
Price/Spray	\$21	\$42	\$50	\$14

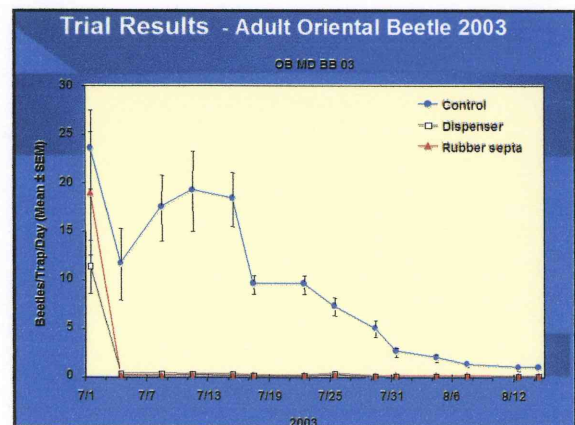
## Key Pests

Oriental Beetle Adults & Larva

Larval root damage

### New Pheromone Tools & Strategies

#### Mating Disruption – Oriental Beetle






### Oriental Beetle Population Disruption

Treatment	# Distrupsters/ Hectare	# Beetles Pre-Test	# Beetles Post-Test	% Distrupction	% Mated
Control	0	46.9 – NS	340.8 – A	0	76.9
Dispensers	50	22.7 – NS	6.6 – B	98.1	5.9
Rubber Septa	50	37.8 NS	2.3 – B	99.3	0

Crop Stage	Pest Problem	Management Method
Dormant	Scale, phomopsis	lime sulfur
	Botrytis, anthracnose	Prune old canes & twiggy wood
	Scarab beetles	Milky spore, predaceous nematodes
	Curculio, weevil, fruit worm, fruitfly	Rotary hoe or rake middles and cultivate alleyways
Bud Break	Blueberry thrips	Entrust
	Mummyberry	Disc, rake, sweep, hoe & mulch
	Weevils, curculio	Disc, rake, sweep, hoe & mulch
Pre-bloom	Leafrollers, caterpillars	BT's – Dipel, Javelin
Bloom	Botrytis blossom blight	Serenade
Post-bloom	Various diseases	Armicarb, Bordeaux, Serenade - rotation
Fruiting	Blueberry maggot	GF120 bait – spinosad
	Blueberry maggot	Entrust, Agroneem, PyGanic - rotation
	Leafrollers & caterpillars	Bacterial insecticides
	Leafhoppers & aphids	Stylet oil
	Scarab beetles	Pheromone disruption & attractant traps
	Birds & mammals	Netting, auditory & visual scare devices, dogs
Pre-harvest	Anthracnose	Oxidate, Trilogy - clarified neem oil
Post-harvest	Bud mite, scale	Horticultural oil, neem oil, prune old cane

### “Making Progress” in Organic Blueberry Production



Sciarappa@aesop.rutgers.edu