Integrated Fruit Production for Apples in New York State

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NYS Integrated Pest Management Program

USDA United States Department of Agriculture

SYSCO

EUREPGAP®

TESCO Nature's choice

NOFA-NY Certified Organic LLC

Gerber

Wegmans helping you make great meals easy

CORE VALUES NORTHEAST

IPM

Food Alliance

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red tomato Fresh produce. Fresh thinking.

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Protected Harvest

The Earth is our bottom line.

Apple IFP Challenges

- EUREPGAP certification for EU markets
- IFP for market differentiation
- Can an IFP qualify for EUREPGAP?
  - No. But it helps.
- How many audits can a grower afford?

Assist farmers in capturing and meeting consumer demand for food grown in an environmentally sensitive manner.

Impact of EUREPGAP on NY Apple Growers

- 300 to 350 apple growers (~half)
- 700,000 bushels to EU (600K to UK)
- NY apples to EU market = $12.6M
- Number of acres
  - 60 to 70% of 4900 acres of Empire
  - 15 to 20% of 8000 acres of McIntosh
  - 10 to 40% of 1500 acres of Gala
- Costs of yearly audits = $500 to $1000
- Meeting certification requirements
  - 90 to 95% compliant

EUREPGAP Objectives

TRACEABILITY

- Food Safety
  - Food-born illness – GAPs, USDA
  - Pesticide residues – IPM, EPA
- Environmental Protection
  - Wildlife conservation – DEC, F&W
  - Non-point-source pollution – AEM, BMPs, NRCS
- Occupational Health, Safety & Welfare
  - Worker protection – DEC, EPA
  - Farm labor – DOL, OSHA

EUREPGAP Certification

- Audited against all Checklist questions
  - Major Musts in Red → 100%
  - Minor Musts in Yellow → 95%
  - Recommendations in Green → 0%
- Do a self-assessment before the audit
- 210 control points or questions
  - 47 Major; 98 Minor; 65 Recom.

Version 2.0-Jan04

EUREPGAP Audit Workbook

Created for apple growers in New York

Print & CD versions from Cornell Cooperative Extension

"Without the audit workbook, I'd have spent five times as long preparing for the audit."

Developed by:
Juliet Carroll
Deborah Breth
Michael Fargione

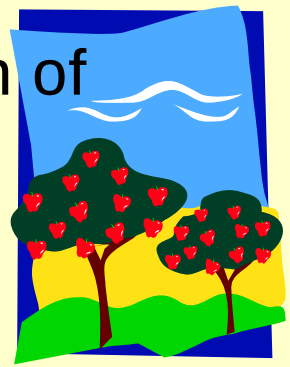
Cornell Cooperative Extension IPM

Integrated Fruit Production (IFP)

...the economically successful production of high quality fruit with the best possible protection of the agroecosystem, human and domestic animal health, wildlife and the environment.

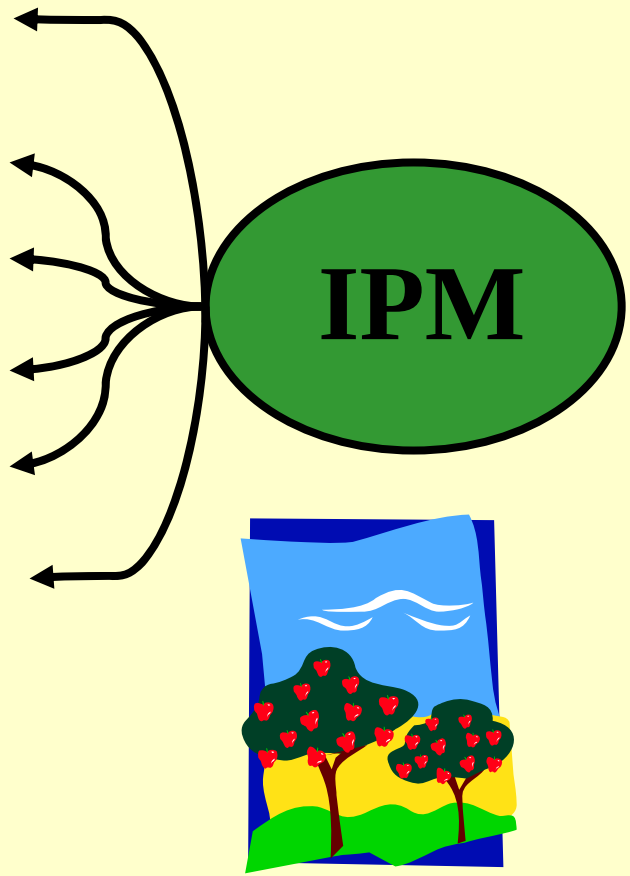
...primary goal is assurance of safe and healthy fruit for human consumption.

...a second aim is conservation of the orchard environment, its habitats and wildlife.



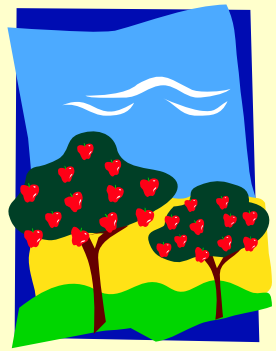
Key Facets of Apple IFP

- Crop Risk Management
- Food Safety
- Environmental Conservation
- Worker Protection
- Education
- Fruit Quality



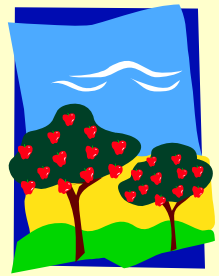
NY Apple IFP - Team

Terence Robinson	Horticultural Sciences
Lailiang Cheng	Horticulture
Ian Merwin	Horticulture
Chris Watkins	Horticulture
Arthur Agnello	Entomology
Harvey Reissig	Entomology
Andrew Landers	Entomology
Jan Nyrop	Entomology
Richard Straub	Entomology
David Rosenberger	Plant Pathology
Paul Curtis	Natural Resources
Gerald White	Appl. Economics & Management
Juliet Carroll	NYS IPM Program



NY Apple IFP - Team (cont.)

Deborah Breth	CCE Lake Ontario Fruit Team
Alison DeMarree	CCE Lake Ontario Fruit Team
Stephen Hoying	CCE Lake Ontario Fruit Team
Michael Fargione	CCE Hudson Valley Fruit Program
Kevin Iungerman	CCE Northeastern NY Fruit Program
James Allen	New York Apple Association



17 Apple Growers in NY cooperated on an Entomology USDA RAMP project “Reduced-Risk Pest Management Programs for Eastern Tree Fruits” exploring alternatives to OP’s.

NY Elements of IPM for Apple

- ★ IPM Elements for apples, new in 2004
- Integral part of apple IFP protocol
- Grower self-assessment of IPM practices
- Standards for IPM-grown label (80%)

Rating Practices for IFP

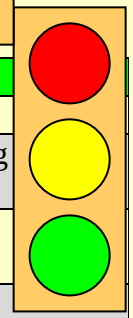


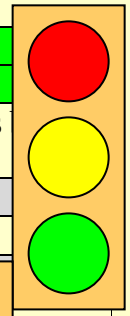
Table 3. Vertebrate Damage Mitigation Practices

Animal Pest	Preferred Practices Under IFP
Beaver	Wire trunk guards, exclusion drift fencing
Birds	Netting; visual scare device (eye-spot balloons, silhouettes, reflective tape); auditory frightening (recorded alarm calls, pyrotectics, propane cannon).
Rabbits	Exclusion fencing (individual wire guards or 2 ft. (60 cm) high area exclusion fencing); habitat manipulations including removal of brush piles & protective cover within orchards.
Raccoons	Electrified exclusion fencing.
Voles	Wire trunk guards; close mowing of orchard middles; vegetation reductions (<40% ground cover) under trees; removal of dropped apples and prunings; habitat manipulations including elimination of unmowable areas within orchards; monitor to determine the need for rodenticides.
White-Tailed Deer	Exclusion fencing (8 ft. (244 cm) high-tensile woven wire or 5 to 6 ft. (152 to 183 cm) electric exclusion fencing; peanut-butter baited electric fences; invisible fencing with dogs); habitat manipulation including elimination of protective cover within orchards.
Woodchucks	Exclusion fencing (individual wire guards or electrified exclusion fencing); habitat manipulation including removal of brush piles within orchards.
Animal Pest	**Practices where Restrictions and Caution Apply***
Beaver	Population reduction through trapping by licensed trapper or licensed nuisance wildlife control agent.
Birds	Population reduction through shooting by licensed hunter of permitted species in appropriate season (crows, turkeys); or unprotected species (European starlings, English sparrows, pigeons).
Rabbits	Population reduction through shooting by licensed hunters or landowners in appropriate seasons; through trapping by landowner or by licensed nuisance wildlife control agent.
Raccoons	Population reduction through shooting by licensed hunters or landowners in appropriate seasons; through trapping by landowner, by licensed trapper, or by licensed nuisance wildlife control agent.
Voles	Population control through trapping by landowner.
White-Tailed Deer	Population reduction through shooting by licensed hunters, landowners or their agents with nuisance deer permits.
Woodchucks	Population reduction through shooting by licensed hunters or landowners; through trapping by landowner or by licensed nuisance wildlife control agent.

* Conduct shooting and trapping only as defined by New York State Department of Environmental Conservation regulations. Shooting for nuisance wildlife control is allowed only when neighboring occupied buildings are >500 ft. distant; shooting when neighboring buildings are less than 500 ft. distant requires neighbor permission. Also check local ordinances, as shooting and trapping are prohibited in some areas.

Consult Cornell Pest Management Guidelines for Commercial Tree-Fruit Production for further information.

3. Insecticides

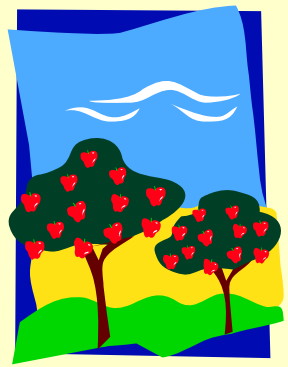


Rating Pesticides for IFP

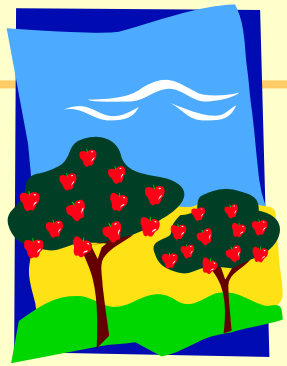
Green Materials For Insect Management – Preferred under IFP	
Materials	**Uses and Precautions**
abamectin (Agri-Mek)	Once per year for WALH, STLM. Reduces phytoseiid predatory mite numbers 50%.
azadirachtin (Aza-Direct, Azatin, Neemix)	Soft-bodied insects (RAA, STLM, aphids).
Bacillus thuringiensis (Agree, Biobit, Dipel)	Leps only (mainly OBLR-OW generation).
imidacloprid (Provado)	No more than 1-2 times per yea
indoxacarb (Avaunt)	4 sprays per year max; PC, inte
kaolin (Surround)	Thorough coverage required, multiple applications PC, CM, AM.
pheromone disruption (Isomate, sprayables, etc.)	OFM, CM; use in combination with conventional materials.
pyriproxyfen (Esteem)	IGR for SJS; some activity on STLM, CM.
spinosad (SpinTor, Entrust)	Mainly for OBLR, some activity on AM.
tebufenozide (Confirm)	IGR for OBLR-OW; rotate with SpinTor in summer.
thiamethoxam (Actara)	1 spray per year max; PC, TPB, RAA, EAS, STLM.
Yellow Materials For Insect Management – Restrictions and Cautions apply	
Materials	**Uses and Precautions**
azinphos-methyl (Guthion)	PF: plum curculio, EAS; summer: CM, OFM, AM. Non-target, beneficial species effects; worker hazard.
carbaryl (Sevin)	Mainly for leafhoppers, if needed; thinning activity. Non-target, beneficial species effects.
chlorpyrifos (Lorsban)	Prebloom: OBLR-OW, RAA, SJS; Post-PF: trunk borers. Non-target, beneficial species effects; worker hazard.
dimethoate	Once per season max: aphids, leafhoppers, SJS. Non-target, beneficial species effects; worker hazard.
endosulfan (Thiodan)	Once per season max: aphids, leafhoppers, green fruitworm. Non-target, beneficial species effects.
esfenvalerate (Asana)	Once per season max; best at pink: TPB, STLM, RAA. Will nearly eliminate phytoseiid predatory mites; non-target, beneficial species effects.
fenpropathrin (Danitol)	Once per season max; best at pink: TPB, STLM, RAA. Will nearly eliminate phytosiid predatory mites; non-target, beneficial species effects.
lambda-cyhalothrin (Warrior)	Once per season max; best at pink: TPB, STLM, RAA. Will nearly eliminate phytoseiid predatory mites; non-target, beneficial species effects.
methidathion (Supracide)	Prebloom: RAA and SJS. non-target, beneficial species effects; worker hazard.
methomyl (Lannate)	Once per season max: STLM, leafhoppers, SJS. Will nearly eliminate phytoseiid

Challenges of Implementing the NY Apple IFP

- Non-OP arthropod management programs mean costlier replacement products
- Reduced-EBDC disease management programs in the face of scab resistance
- Non-residual herbicide weed management programs
- Carbaryl-free fruit thinning programs
- Grower-driven certification



NY Apple IFP Protocol



- ✓ Review by Board of Directors of Apple Research & Development Program
- ✓ Review by growers, consultants and others in the apple industry
- Publication in print and online
  - nysipm.cornell.edu/publications/nyifp_agrochem
  - yearly pesticide updates

Cornell University
Cooperative Extension

Integrated Pest Management

- Our mission -

To develop and deliver sustainable strategies for managing pests in ways that minimizes economic, environmental and health risks.

Balancing farms, food, and nature.