2016 Apple Season Recap
(and a look to 2017)

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UNIVERSITY OF VERMONT

121ST ANNUAL VTFGA & UVM APPLE PROGRAM ANNUAL MEETING
2017: UVM Apple Program & Support Programs

Changes at UVM and VT Agency of Agriculture

• UVM Extension in College of Agriculture & Life Science

• Chuck Ross
  • Secretary of Ag -> Director UVM Extension
  • Tom Vogelmann, CALS Dean 2008-present
    • Oversees Extension within CALS

• Anson Tebbetts -> Secretary of Agriculture

• Alyson Eastman -> Deputy Secretary
2016 Growing season: Mild winter

2015-2016 Winter Temperature Conditions at UVM Hort Resch & Educ Ctr, South Burlington, VT
Rainwise AgroMET MkIII
2016 Spring Weather Conditions and Major Disease Events at UVM Hort Research & Education Center, South Burlington, VT

- Total Rain (in)
- Min Temp (F)
- Max Temp (F)
- 1° Apple Scab Infection Period
- 2° Apple Scab Infection Period
- FB Infection (H or I)
- FB EIP

- FB EIP = 388
- FB EIP = 100

- Mac Bloom

- 4/5/2016, 10.9
Drought?
2016 Apple disease highlights

• Fire blight!!!
  - NEWA models largely/functionally accurate
  - Cut out during pruning
  - Be ready in 2017

• Apple scab:
  - Little to none

• Summer diseases
  - Little to no SBFS
  - Fruit rots: irrigate in drought conditions to reduce susceptibility (among other things)
Sample 2017 Insect Damage at Packout from Three VT Orchards

% Fruit with Damage

- pc
- tpb
- amf
- intlep
- surflep
- eas
- stinkb
- raa
- scale

- Orchard 1
- Orchard 2
- Orchard 3
Apple IPM in Vermont: Where are we?

2017 UVM Apple IPM Program Grower Survey: Thank You!

• 100% of respondents report practicing IPM
• 100% report UVM Apple Program as:
  • “Useful”, “Somewhat useful”, or “Highly useful”
• 92% use UVM Apple Program information in decision making
• 92% report and economic impact from using IPM information
  • 100% of those report the impact as positive

<table>
<thead>
<tr>
<th>Has the information obtained through the UVM Apple IPM Program allowed you to:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase your knowledge or understanding of Apple IPM</td>
<td>84.62%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Increase your knowledge on how to prevent pest management problems</td>
<td>84.62%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Adopt at least one new IPM practice</td>
<td>50.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Reduce or minimize pesticide use</td>
<td>69.23%</td>
<td>23.08%</td>
</tr>
<tr>
<td>Determine if pesticides are needed in your orchard</td>
<td>76.92%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Effectively time pesticides if they were needed</td>
<td>76.92%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Adopt a reduced-risk alternative to manage a pest (e.g., insect, disease, weed, vole, deer, etc.)</td>
<td>61.54%</td>
<td>23.08%</td>
</tr>
</tbody>
</table>
NEWA

Weather Stations in Vermont

- 16 stations in Vermont
  - Six airports
  - Ten on-farm stations

Nationwide (East)
- 25 states
- Over 500 stations
- New coordinator at Cornell

newa.cornell.edu
NEWA: Models

- Three disease models
  - Apple scab, fire blight, sbfs

- Six insect models
  - Codling moth, plum curculio, obliquebanded leafroller, Oriental fruit moth, apple maggot, San Jose scale

- Multiple horticultural models
  - Carbohydrate thinning, evapotranspiration, irrigation, frost risk, degree days

- Archived weather data

- Caveat: NEWA is a tool, not a silver bullet. It needs to be used as part of a comprehensive IPM program!!
NEWA usefulness

80% of respondents use NEWA at least once per week

How useful is the NEWA system in helping make management decisions for the following diseases, pests, and horticultural practices:
NEWA usefulness

80% of respondents use NEWA at least once per week

How useful is the NEWA system in helping make management decisions for the following diseases, pests, and horticultural practices:
Do you follow a formal scouting program?

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, I scout weekly for pests and beneficial arthropods using traps and foliar &amp; fruit sampling.</td>
<td>50.00% 5</td>
</tr>
<tr>
<td>Yes, I scout as needed for pests and beneficial arthropods using traps and foliar &amp; fruit sampling.</td>
<td>30.00% 3</td>
</tr>
<tr>
<td>Yes, I scout as needed by making general orchard observations.</td>
<td>20.00% 2</td>
</tr>
<tr>
<td>No, I do not scout</td>
<td>0.00% 0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>0.00% 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
</tr>
</tbody>
</table>
Do you use traps for monitoring the following insects in your orchard?:

<table>
<thead>
<tr>
<th>Insect</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarnished plant bug</td>
<td>10.00%</td>
<td>90.00%</td>
</tr>
<tr>
<td>Spotted tentiform leafminer</td>
<td>20.00%</td>
<td>80.00%</td>
</tr>
<tr>
<td>European apple sawfly</td>
<td>40.00%</td>
<td>60.00%</td>
</tr>
<tr>
<td>Codling moth</td>
<td>60.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>Obliquebanded leafroller</td>
<td>44.44%</td>
<td>55.56%</td>
</tr>
<tr>
<td>Oriental fruit moth</td>
<td>44.44%</td>
<td>55.56%</td>
</tr>
<tr>
<td>Redbanded leafroller</td>
<td>33.33%</td>
<td>66.67%</td>
</tr>
<tr>
<td>Apple maggot</td>
<td>70.00%</td>
<td>30.00%</td>
</tr>
</tbody>
</table>
How comfortable are you with protocols for scouting for the following pests:
2017 UVM Apple Program Scouting Plans

- Details up in the air
  - Pending funding: WLEF, SCBGP, USDA EIPM

- Plan to expand scouting & reporting to multiple orchards around state
  - Number depends on funding

- Scouting field day(s) in spring

- Weekly emailed reports/recommendations based on observed conditions
2015 New England Apple Pest Management Guide

• No updated guide 2016

• netreefruit.org

Zeke Goodband, manager of Scott Farm, observes an insect trap. Photo: Red Tomato

Andrea, left, and Bill Suhr run Champlain Orchards in Shoreham, Vermont, along with raising two young children. Photo: Matt Milkovich

Program seeks to reward ecological practices
Potential issue: Rapid/sudden apple decline

- Increased anecdotal reports of sudden decline and death of trees on highly dwarfing rootstocks
  - Mix of dead/declining trees dispersed evenly
  - Young trees most susceptible
  - Graft union affected/necrotic
  - Affected wood solid/not spongey
  - Total collapse of tree in summer

- Survey from Dr. Kari Peters, Penn State University
Increased focus on pollinator protection

Multiple bills to eliminate neonicotinoid insecticide use in VT have failed

2016: Act 83 established VT Pollinator Protection Committee
- Your Truly, committee chair
- Eric Boire, committee member
- Develop recommendations for legislature & VAAFM based on the literature for pollinator protection
Some Pollinator Protection Committee
Recommendations

Pesticide restrictions
- Three-year moratorium on applications of neonicotinoid insecticides (NNIs) on ornamental plants
- Discourage prophylactic use of pesticides (IPM)
- Classify NNIs as Restricted Use
- Classify all materials highly toxic to bees as Restricted Use
- Prohibit systemic pesticides highly toxic to bees until after flowering (exemptions...)
- Develop BMPs on NNI treated corn & soybean seeds, restrict their use unless documented need exists

Habitat
- Several recommendations to develop habitat management practices for pollinators and encourage their funding

UVM Extension
- Create Pollinator Extension position
- Develop educational curricula for beekeepers to aid in hive, disease, and pest management

Develop pollinator protection fund
- Help farmers offset costs
- Seek sustainable funding mechanisms
Which of the following practices do you employ to reduce impacts on pollinators in your orchard?

<table>
<thead>
<tr>
<th>Practice</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Total</th>
<th>Weighted Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mowing to reduce flowering weeds prior to spraying</td>
<td>72.73%</td>
<td>27.27%</td>
<td>0.00%</td>
<td>11</td>
<td>0.73</td>
</tr>
<tr>
<td>Herbicides to reduce flowering weeds prior to spraying</td>
<td>9.09%</td>
<td>72.73%</td>
<td>18.18%</td>
<td>11</td>
<td>0.09</td>
</tr>
<tr>
<td>Maintaining flowering habitat within the orchard to encourage pollinators</td>
<td>27.27%</td>
<td>63.64%</td>
<td>9.09%</td>
<td>11</td>
<td>0.27</td>
</tr>
<tr>
<td>Maintaining flowering habitat outside but near the orchard to encourage pollinators</td>
<td>81.82%</td>
<td>9.09%</td>
<td>9.09%</td>
<td>11</td>
<td>0.82</td>
</tr>
<tr>
<td>Avoiding use of neonicotinoid insecticides</td>
<td>63.64%</td>
<td>36.36%</td>
<td>0.00%</td>
<td>11</td>
<td>0.64</td>
</tr>
<tr>
<td>Avoiding use of neonicotinoid insecticides before bloom</td>
<td>100.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>11</td>
<td>1.00</td>
</tr>
<tr>
<td>Avoiding use of pesticides rated highly toxic to bees</td>
<td>81.82%</td>
<td>18.18%</td>
<td>0.00%</td>
<td>11</td>
<td>0.82</td>
</tr>
<tr>
<td>Avoiding use of demethylase/sterol inhibitor fungicides (e.g. Inspire, Rally, Procure, etc.) during bloom</td>
<td>90.91%</td>
<td>9.09%</td>
<td>0.00%</td>
<td>11</td>
<td>0.91</td>
</tr>
</tbody>
</table>
Cider apple research: Three projects

- Return bloom enhancement with PGRs on European bittersweet cultivars
- Reduced spray programs on dessert fruit grown for cideries
- Reduced pruning inputs on dessert fruit grown for cideries

Pending:
SCRI: Creating Interdisciplinary Extension and Research Programs to Redevelop the American Cider Industry
Sunrise Orchards Embraces Hard Cider

Barney Hodges
Owner, Sunrise Orchards

Barney Hodges has high hopes for his high-density hard cider block at Sunrise Orchards in Vermont.

Hard cider boom lifts Addison County apple orchards

Posted on October 20, 2016 | Addison County apples Citizen Cider Featured Woodstock Cider
By Gaet Murphee

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Funding acknowledgements:

USDA FSMIP
- Orchard Economic Assessment to Support Vermont Hard Cider Production

USDA Extension Integrated Projects Program
- Northeast IPM Center
- Addressing Unique IPM Needs in Northeast Cider Orchards

Northeast SARE
- Orchard Pruning for Cider Apple Production

Vermont Agricultural Experiment Station
Vermont Tree Fruit Growers Association
Vermont Hard Cider Company

Dr. Terence Bradshaw
- UVM Tree Fruit & Viticulture Specialist
  College of Agriculture & Life Science

Dr. Ann Hazelrigg
- Director, UVM Plant Diagnostic Clinic
  UVM Extension

Sarah Kingsley-Richards
Jessica Foster
- Research Technicians

Dr. David Conner
- Agricultural Economist
  UVM Dept Community Dev & Appl Economics

Florence Becot
- Research Specialist, CDAE

Vermont Hard Cider Company