

VERMONT E-IPM PROGRAM REPORT, January 2017

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UVM Team members: The program team includes Ann Hazelrigg, IPM Program Coordinator; Heather Darby and Sid Bosworth, Agronomists; Terence Bradshaw, Apple and Grape Specialist; Margaret Skinner, Greenhouse and Landscape Entomologist; Sarah Kingsley-Richards, Evaluation Specialist.

Stakeholders: Our stakeholders include both conventional and organic growers, landscapers, nursery and greenhouse operators, grower associations, home gardeners, the general public, crop consultants, University researchers, and government officials.

Crop Focus: Crops addressed include but are not limited to; field and forages, grains, nursery and landscape, apples, grapes, greenhouse ornamentals, home gardens and landscapes plus vegetables and berries. Crops included those managed both conventionally and organically.

Major Goals: The major goals of the project are to increase the adoption of IPM practices in a variety of crops and settings to reduce the amount of pesticides used and to lower costs while protecting the environment and human health.

Accomplishments for 2016:

Agronomy IPM

Northwest Crops and Soils Program www.uvm.edu/extension/cropsoil/research

Field days and winter conferences for 2016 included:

7 th Annual Hop Conference	2/19/16	158 participants
Hop Conference Live Broadcast	2/19/16	19 participants
12 th Annual Grain Growers Conference	3/17/16	142 participants
Getting Started with Grains	6/21/16	27 participants
Grain Research Tour, Borderview Farm	6/28/16	29 participants
Organic Wheat Prod. And Proc.in Quebec	7/13/16	14 participants
Annual Field Day, Borderview Farm	7/28/16	185 participants
Hopping and Milling About	8/18/16	53 participants
Successfully Starting a Hop Yard	9/1/1	52 participants
Grains & Dry Beans in Vermont	10/11/16	28 participants

Topics addressed included among others: disease and pest scouting, identification and management; cultural practices to reduce pests and pesticides.

Agronomy Winter Conference-3/17/16

Growers have improved grain quality as a result of implementing practices highlighted. Results showed:

- 98.25% attending learned something new including; cultivar selection, seed saving, disease scouting, crop rotation, alternative grain crops, reduced tillage, etc.)
- 82.14% intend to implement something new on their farms as a result of what they learned at the conference including; crop rotations, best management practices, scouting, variety selection, etc.)
- Comment from growers at the Conference- "The conference remains a wonderful place to network and connect with farmers, growers, bakers, and friends. Thank you so much for the huge amount of work you devote to organizing it"; "The conference was great. I learned a lot and made some new contacts"; "Excellent discussion with practical applications"; "I need to plan in advance on how I will watch for disease, learn what to look for, how to test and minimize risk"

Annual Hops Conference-2/19/16

- 85% improved scouting skills; 97% reduced insect/disease pressure
- Grower comments: "The topics/speaker line-up were great."; "The best one yet!"

Annual Crops & Soils Field Day, 7/28/16- A scouting session was held to train farmers how to scout their fields and disseminated "cheat-sheet" of common diseases/pests. Surveys indicated:

- 100% learned how to better scout and identify insect/disease pests
- 75% would implement a new pest management techniques

The "Grain Disease Survey" identified pest issues of importance. The survey was followed by training of farmers to identify arthropods and diseases in the field. Fifteen farms throughout New England were scouted throughout the growing season. Diseases were identified in the fields (tan spot, Septoria sp., leaf rust, loose smut, powdery mildew) and arthropod pests (thrips, mites, cereal leaf beetle, grain borer).

Agronomy Web Resources:

- All research reports on grains, hops, and oilseeds from 2016 trials on www.uvm.edu/extension/cropsoil/research
- 12 reports related to disease, weed, or insect pest management www.uvm.edu/extension/cropsoil/research
- 5 Hop Blog Posts <http://blog.uvm.edu/hoppenin/>

Apple IPM

UVM Fruit Website <http://www.uvm.edu/~fruit/>

Accomplishments include:

- 2,094 page views of UVM Fruit: Tree Fruit website http://www.uvm.edu/~fruit/?Page=treefruit/tf_home.html&SM=tf_submenu.html
- 142 email addresses subscribed to vtapplegrower@list.uvm.edu listserv.
- 27 blog posts providing orchard IPM guidance (apple scab, fireblight) and advertising IPM workshops/meetings.
- 7 blog posts referencing Cornell University's Network for Environmental and Weather Applications for use in management of apple scab, fireblight, and thinning.
- 41 one-on-one consultations
- Presentations at Northeastern NY Commercial Tree Fruit School, Lake George, NY, February 15, 2016; Vermont Tree Fruit Growers Association annual meeting, Middlebury, VT, February 18, 2016; Effective Orchard Spraying. Peru NY, Apple Spraying. Peru NY, April 7, 2016.

2016 Vermont Tree Fruit Growers Association annual meeting participants were surveyed pre- and post- for change in moderate/considerable general knowledge following presentations:

- 100% Orchard IPM 101 (41% increase)
- 93% Brown Marmorated Stinkbug Management (82% increase)
- 100% Apple Replant Disease (73% increase)

Grower comments included: "I found I was not placing some of my insect traps correctly"; "Learned more about need to monitor BMSB before treating."

Apple IPM Guideline Assessment: Two advisory stakeholders have been selected to participate in an online IPM assessment survey. Growers will be evaluated for their knowledge increase of knowledge of IPM tactics for fireblight, codling moth and apple scab fungicide resistance mitigation.

Grape IPM

UVM Fruit Website <http://www.uvm.edu/>

Accomplishments include:

- 935 page views of UVM Fruit: Grapes http://www.uvm.edu/~fruit/?Page=grapes/gr_home.html&SM=gr_submenu.html
- 263 email addresses subscribed to vermontgrape@list.uvm.edu listserv.
- 35 blog posts providing vineyard IPM guidance and advertising IPM workshops/meetings.
- Two blog posts referencing Cornell University's Network for Environmental and Weather Applications for use in disease management.
- 16 one-on-one consultations
- Presentations at: NY and VT Grape School, Lake George, NY, March 17, 2016

Grape IPM Guideline Assessment: •Three advisory stakeholders have been selected to participate in an online IPM assessment survey on specific IPM tactics in their vineyards.

Grape Extension, Outreach, Education

- NY/VT Grape School, March 17, 2016
- 98% value rating of disease management presentation
- 93% value average rating of all viticulture presentations

Greenhouse IPM

Greenhouse Integrated Pest Management Website

<http://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

IPM First for Greenhouse Ornamentals- an individualized grower program will involve 6-8 growers to learn about and evaluate use of plant-mediated systems.

- Recruited 5 new greenhouse sites with 10 growers/owners/managers and assisted 18 growers at 8 sites from past years, who are receiving individualized training to increase their adoption of IPM in greenhouse ornamentals
- Over 50 site visits made to selected growers
- 2 presentations by high school tech center students raising banker plants for a local grower
- Presentation at a regional workshop on plant-mediated IPM systems
- 3 IPM tours for growers describing how the grower transitioned from chemicals to biological controls.
- 4 tours for the general public showing how biological control is used and how pesticide use was minimized.
- 3 presentations given by an IPM First grower at the 2016 Tri-State Greenhouse Workshops describing how her operation switched from chemical to biological control.
- One 15-minute news segment on local TV station about students at the high school tech center who are raising banker plants for a grower, thereby supporting a local business to produce plants with no chemical pesticides.
- Currently, 13 sites are actively working with IPM-First receiving individualized training to increase adoption of IPM practices: 77% of growers use some form of plant-mediated IPM systems that reduce use of pesticides/increase crop quality and 100% of participants learned at least one new IPM technique will use, including plant-mediated IPM systems, scouting apps, biocontrol products.

Tri-state greenhouse IPM workshops- Planning and presentations at: The 19th annual event held in Maine, New Hampshire and Vermont. Cooperating regional specialists presented biological/biorational disease management, reducing disruptions to IPM program, the thrips/aphid identification and biologically-based IPM, and hands on biological control agent viability and quality assurance techniques. Of workshop participants that attended the 2016 post workshop surveys indicate since attending, an average of 82% increased their use of biological

controls, 68% increased their use of biological controls, 92% decreased chemical pesticide use, 98% have improved insect id and 89% have improved disease id.

The 20th session is scheduled for January 4-6, 2017 in ME, NH & VT (Water Worries: Woes & Foes)

Presentations include: The Good, The Bad & The Ugly: Novel IPM Strategies for "bugs" in the Nursery. Seventh Western Native Plant Conference 6-8 Dec. 2016, Vancouver, WA (Skinner, M); High Tunnel Insect Pests & Natural Enemies. High Tunnel Growers' Conference: Expanding your Tunnel Vision. 14 Dec. 2016, Manchester, NH (Sullivan, CEF and Skinner, M.); Identifying common natural enemies in high tunnels bio controls for insect pests in high tunnels. 2 Feb. 2016. Mid-Atlantic Fruit and Vegetable Convention, Hersey, PA (Skinner, M. & C.E.F. Sullivan. 2016)

Landscape IPM

Landscape Integrated Pest Management Website

<http://www.uvm.edu/~entlab/Landscape%20IPM/LandscapeIPM.html>

Green Industry IPM ambassadors

- 26 growers at 6 sites identified to receive individualized support to expand IPM adoption and to serve as Green Industry ambassadors and received individualized learning plans designed from pre-project needs survey.
- Over 20 site visits made to selected growers.
- Three sites established habitat plantings to promote natural enemies of landscape pests
- Several types of natural enemies were observed visiting these plantings. The majority were parasitic wasps (39%), the predatory bug, Orius (29%); syrphid fly adults (20%) and several species of native lady beetles (5%).

Regional IPM Workshops for Landscapers- Factsheet was produced on IPM for white grubs and disseminated to landscape professionals. Results on landscape habitat plantings and natural enemies presented at conference in Washington State and published on website.

Community IPM

UVM Extension Master Gardener website <http://www.uvm.edu/mastergardener>

Master Gardener (MG) Helpline-Over 3,000 phone calls and emails came into the Master Gardener Helpline, a toll-free call-in center for garden information, over the course of the year. Over 90% of the calls were disease or pest-related and included IPM strategy information.

- 93% increased knowledge of a pest or disease through use of Helpline/PDC

- 51% were able to reduce use of pesticides as a result of information provided by PDC

Master Gardener Course-The MG course includes 13 three hour lectures with information on plant pathology, entomology, IPM and pesticide safety. A Plant Disease and IPM class (2/9/16) including a thorough discussion of tomato fungal leaf blights; a Healthy Lawn Management class (4/5/16) including a discussion of IPM management practices for weeds in lawns and an Entomology class (4/26/16) including an overview of IPM for white grubs.

Pre-course survey results reflect:

- 56% of students self-identified as being unfamiliar with concept of Integrated Pest Management prior to class
- 16% report "Never" utilize, 55% report "Not Sure" whether use IPM practices

Post-course survey results reflect:

- 100% report course gave a better understanding of how to apply IPM
- 79% have changed specific garden practices to better incorporate IPM
- 99% would adopt a new IPM tactic in their gardens this year exceeding our goal of 85%.

Advanced MG Helpline Training Webinars- The three Master Gardener Course IPM lectures recorded and archived for educational use. A 1 hour advanced training on IPM for Fungal Diseases of Tomato (5/16) and Current Diseases and Pests of 2016 (7/16) were offered with 92% of participants of the training able to name specific IPM practices for the 3 webinars in the post-training evaluations: managing white grubs, weeds in turf and late blight of tomato.

Plant Diagnostic Clinic IPM

UVM Plant Diagnostic Clinic website <http://www.pss.pdc>

Plant Diagnostic Clinic Samples-Over 600 emails, samples and photos were received by the UVM Plant Diagnostic in 2016. The year-end survey in December 2016 of clients (commercial growers and home gardeners) who used the clinic responded to the following questions:

- Did the information provided help you use integrated pest management strategies (cultural practices and use of least toxic pesticides as a last resort) to manage your pest /disease problem?
Yes 90% No 10%
- Were you able to reduce the use of pesticides as a result of the information you received from the Plant Diagnostic Clinic?
Yes 74 % No 26%

A commercial vegetable grower comment from the 2016 survey: "The plant diagnostic Clinic is extremely important to our farm. It directly influences the amount of pesticide we use on our

plants. When you have a diagnosis of what the disease or infestation is than you can correctly treat the problem and you do not have to guess and try multiple products, while trying to figure it out. Ann Hazelrigg and those working under her, have always gotten back to us in a very timely matter which is a huge asset to the vegetable and berry community. +highly recommend this service to commercial growers”

PDC Workshops/Presentations:

1. Emerging Diseases and Insects to the VT Vegetable and Berry growers association annual winter meeting- 200 growers
2. 3 hour lecture for the Master Gardener program on Plant Disease and IPM- 110 Master Gardeners
3. Emerging Diseases and Pests for the Annual NOFA-VT organic association meeting-50 growers
4. Disease and IPM Roundtable for the Annual NOFA-VT organic association meeting-50 growers
5. Tomato Diseases in Greenhouse Tunnels for the NE Vegetable and Fruit Growers Conference-100 growers
6. Disease and Pest Issues for field crop and forage pesticide applicators-75 Survey results indicated:
 - 92% of the attendees increased their knowledge of IPM practices
 - 81% increased their knowledge of safe pesticide practices.
 - 82% planned to adopt a new IPM practice
 - **70% indicated they had adopted a new IPM practice since the last annual meeting that reduced pesticide use.**
7. IPM for UVM Farmer Training Program students both in field and classroom-35
8. Advanced training for Master Gardeners on tomato disease and IPM-12
9. NOFA/VT Veg and Berry Growers twilight meeting-20 growers
10. Advanced Training for Master Gardeners in disease and pests-15
11. High Tunnel Workshop-Tomato Diseases-Manchester, NH-100 growers

PDC Newsletters:

- Information on current and emerging weeds, pests and diseases for 750 growers from VT and New England using the bi-weekly VT veg and berry listserve in the “From the PDC” column. Results of a survey of these readers showed 25% of IPM knowledge AFTER reading the newsletter on pest scouting, pest lifecycles and management using low risk strategies.
- Information on current and emerging pests and diseases for 200 landscapers through their association newsletter

Across the Fence Television Programs:

Six 15 minute programs were presented over the growing season on diseases and insect pests of home gardens and landscapes and IPM management. This long running Extension program reaches 18,000-20,000 households.