

## Progress Report

<b>Title:</b>	<b>The Multidisciplinary Vermont Extension Implementation Program Addressing Stakeholder Priorities and Needs for 2014-2017</b>		
<b>Sponsoring Agency</b>	NIFA	<b>Project Status</b>	ACTIVE
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<b>Submitted By</b>	Daniel Lerner	<b>Date Submitted to NIFA</b>	06/13/2016

**Program Code:** EIP**Program Name:** Extension Implementation Program**Project Director**

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Comparison of Three Organic Apple

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**Recipient Organization**

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**Non-Technical Summary**

The VT EIP uses a multi-disciplinary approach to address IPM priorities and needs identified by local and regional stakeholders. The focus of the program includes forages, grains and field crops, greenhouse and landscape operations, apples and grapes, communities, gardens and plant diagnostics for vegetable and berry growers and others. The priority of the program is to develop and promote diverse alternative pest management tactics that will help growers produce high quality crops, produce, ornamentals or landscapes while minimizing input costs and impacts to health and the environment. The VT EIP team includes a plant pathologist, horticulturist, agronomist, weed specialist, entomologist and a community outreach professional.

**Accomplishments****Major goals of the project**

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.

**What was accomplished under these goals?**

Each facet of the VT EIP has accomplished goals toward increasing 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. The VT EIP project areas include grains, oilseed, and hops; apples and grapes; greenhouse and landscape operations; communities; and plant diagnostics.

All project areas have held workshops/presentations that increased knowledge of IPM topics. Growers at the "Agronomy Winter Conferences" have improved crop quality as a result of implementing practices highlighted. Apple and Grape presentations provided information that was "good expansion on topics that don't often get covered" and "are critical to success." Up to 98% of "Tri-State Greenhouse IPM Workshop" attendees have increased use of biological controls and plant-

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mediated IPM systems, decreased chemical pesticide use, and improved insect identification. 79% of "Master Gardener Course" participants have changed specific garden practices to better incorporate IPM. 92% of MG advanced training participants were able to name specific IPM practices for managing white grubs, weeds in turf, and late blight of tomato. Presentations by the Plant Diagnostic Clinic increased knowledge on pest scouting, lifecycles and management using low risk strategies.

Of other products that have been initiated, several have achieved notable impacts. The "Grain Disease Survey" has been able to detect, and train farmers to identify, arthropods and diseases not previously identified or managed in their fields. Apple pest management practices improved timing and confidence and increased profitability following 2015 meetings. 77% of "IPM First" participating growers are using plant-mediated IPM systems to reduce their use of pesticides and increase crop quality, and a participating grower is transferring IPM knowledge to the public, high school students and other growers. Over 80% of Green Industry IPM ambassadors had fewer pest outbreaks because problems were detected early due to program training. 51% of Plant Diagnostic Clinic users were able to reduce the use of pesticides as a result of the information provided by the PDC. Targeted stakeholder groups (apple and grape growers, landscapers) far exceeded target goals with up to 450% increase in use of the PDC over the past year.

Please see the following accomplishments available at this time for each product for more details.

**Agronomy Field Days**

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

**Agronomy Winter Conferences**

- Annual Hops Conference
  - 85% improved scouting skills
  - 97% reduced insect/disease pressure
  - "The topics/speaker line-up were great."
  - "The best one yet!"
- Annual Grain Growers Conference
  - 98% learned a new information that would help control weed, insect, or disease issues
  - 82% will implement a new practice to improve pest management, grain quality and yield
  - "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."

**Grain Disease Survey**

- All farms said results were useful and would like us to continue scouting in 2016
- Worked with one farm on identification, prevention tactics/management for long term issues with bacterial bean blight
- Grain insects/diseases identified: Leaf rust, Powdery mildew, Septoria, Stagonospora, Tan spot, Cereal leaf beetle,

Brown wheat mite, thrips

• Dry bean insects/diseases identified: Alternaria, Anthracnose, Ascochyta caused by Phoma, Fusarium, Phomopsis, Rhizoctonia, Rust, Sclerotinia, White leaf spot, Bacterial brown spot, Common bacterial bean blight, Potato leafhopper

**Loose Smut Seed Lot Testing**

- Protocol testing conducted in May 2016

**Apple Extension, Outreach, Education**

- Vermont Tree Fruit Growers Association annual meeting
  - Percent participants with 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)
  - "I found I was not placing some of my insect traps correctly."
  - "Learned more about need to monitor BMSB before treating."
- 2015 Vermont Tree Fruit Growers Association annual meeting impacts
  - Percent participants indicating change in use following presentations:
    - 44% plant growth regulators: petal fall thinning spray with good results; studying closer looking for return bloom
    - 33% new SDHI fungicides: alternating different chemistries
    - 20% fireblight management: using streptomycin/pruning practices; early season copper spray/streptomycin spray

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- 30% NEWA as a decision support tool to guide streptomycin use

**Grape Extension, Outreach, Education**

- NY/VT Grape School
  - 98% value rating of disease management presentation
  - 93% value average rating of all viticulture presentations
  - "I finally identified anthracnose and will spray accordingly."
- "Your spray reminder/updates are critical to my success. Thank you so much for sending these out. I do my best, but your insight and reminders are so helpful."

**IPM First for Greenhouse Ornamentals**

- On pre-program questionnaire, 4 sites indicated minimal-moderate knowledge about basic IPM. 1 site currently relies entirely on chemical insecticides

- 77% of growers use some form of plant-mediated IPM systems that reduce use of pesticides/increase crop quality

**Tri-State Greenhouse IPM Workshops**

- 100% of participants learned at least one new IPM technique will use, including plant-mediated IPM systems, scouting aps, biocontrol products
- Past workshop participants: 82% increased use of biological controls (17% increase), 92% decreased chemical pesticide use, 98% improved insect identification, 60% used some form of plant-mediated IPM

**Green Industry IPM ambassadors**

- Three sites identified to establish habitat plantings to promote natural enemies of landscape pests
- Over 75% are extremely interested in providing habitats for native natural enemies
- Over 80% had fewer pest outbreaks because problems were detected early

**Regional IPM Workshops for Landscapers**

- Factsheet produced on white grubs posted to website

**Master Gardener Course IPM Lectures**

- Pre-course survey results reflect that 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:

- 100% report course gave a better understanding of how to apply IPM
- 79% have changed specific garden practices to better incorporate IPM
- 92% were able to name a specific IPM practice for managing white grub in lawns, tomato late blight

**Master Gardener Advanced Training IPM Webinars**

- 92% of respondents to post-training evaluations were able to name specific IPM practices for managing white grubs, weeds in turf, late blight of tomato

**Plant Diagnostic Clinic disease/insect/weed diagnostics**

- 93% increased knowledge of a pest or disease through use of PDC
- 51% were able to reduce use of pesticides as a result of information provided by PDC

**Targeted stakeholder groups**

- 45 apple growers, 16 grape growers, 15 landscapers have submitted samples (150-450% increase)

**Plant Diagnostic Clinic Extension presentations/workshops**

- Plant Disease/IPM at Master Gardener Course:
  - 40% had not known what IPM was before lecture
  - 99% would adopt a new IPM tactic in their gardens this year
- NE Vegetable & Fruit Growers Conference:
  - 90% earned something to help manage pests using IPM strategies
- Field & Forage Disease/IPM workshop:
  - 92% increased knowledge of IPM practices

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- 82% planned to adopt a new IPM practice
- 70% adopted a new IPM practice since last annual meeting that reduced pesticide use
- VT vegetable & berry newsletter column:
  - 25% increase of IPM knowledge on pest scouting, lifecycles, management using low risk strategies

**What opportunities for training and professional development has the project provided?****Agronomy Field Days**

- Growing Dry Beans in Vermont, Morningstar Meadows Farm. Glover, VT, September 10, 2015.
- Hop Harvesting Field Day, Borderview Research Farm, Alburgh, VT, September 11, 2015.

**Agronomy Winter Conferences**

- 7<sup>th</sup> Annual Hops Conference, Burlington, VT, February 19, 2016.
- 12<sup>th</sup> Annual Grain Growers Conference-Grains in a Diversified Farming System, Essex, VT, March 17, 2016.

**Agronomy Web Resources**

- All research reports on grains, hops, and oilseeds from 2015 trials on [www.uvm.edu/extension/cropsoil/research](http://www.uvm.edu/extension/cropsoil/research)
  - 12 reports related to disease, weed, or insect pest management.
- 5 Hop Blog Posts <http://blog.uvm.edu/hoppenin/>

**Grain Disease Survey**

- Scouted winter/spring wheat fields in Alburgh, N. Troy, Shelburne, Bridport, Berlin and Shoreham, VT. One farm visited for scouting winter wheat in Northfield, MA.
- Scouted dry bean fields in Alburgh, Glover, N. Hero, and Danby, VT.
- Scouted for arthropod pests and downy mildew severity in hop trials at the Alburgh, VT research farm in addition to eight other farms. On-farm scouting occurs in North Hero, Calais, N. Starksboro, Addison, Ferrisburgh, and two farms in Berlin, VT. One additional scouting visit has been made to a collaborating hop yard in Northfield, MA.
  - Identified pathogens on samples of diseased plants with the help of the UVM Plant Diagnostic Clinic.
  - Scouting reports and additional "cheat sheets" for hops, dry beans and grains created.

**Loose Smut Seed Lot Testing**

- Farms identified for seed lot testing and grain samples will be submitted for testing after harvesting.

**Guides of Pests in New England for oilseeds, grains, and hops**

- Field guides are in progress for grain insect and disease pests.
- "What Hops in a Hop Yard?" field guide to hop arthropod pests continues to be updated.
- An oilseed field guide to pests in the Northeast updated to include information on soybeans and soybean pests.

**Apple Extension, Outreach, Education**

- 2,094 page views of UVM Fruit: Tree Fruit [http://www.uvm.edu/~fruit/?Page=treefruit/tf\\_home.html&SM=tf\\_submenu.html](http://www.uvm.edu/~fruit/?Page=treefruit/tf_home.html&SM=tf_submenu.html)
- 142 email addresses subscribed to [vtapplegrower@list.uvm.edu](mailto: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.
  - Planning and presentations at: New England Vegetable & Fruit Conference, Manchester, NH, December 16-17, 2015; 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, April 7, 2016.

**Apple IPM Guideline Assessment**

- 3 advisory stakeholders selected to participate received online assessment survey.

**Grape Extension, Outreach, Education**

- 935 page views of UVM Fruit: Grapes [http://www.uvm.edu/~fruit/?Page=grapes/gr\\_home.html&SM=gr\\_submenu.html](http://www.uvm.edu/~fruit/?Page=grapes/gr_home.html&SM=gr_submenu.html)
- 263 email addresses subscribed to [vermontgrape@list.uvm.edu](mailto:vermontgrape@list.uvm.edu) listserv.
- 35 blog posts providing vineyard IPM guidance and advertising IPM workshops/meetings.

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- Two blog posts referencing Cornell University's Network for Environmental and Weather Applications for use in disease management.
- 16 one-on-one consultations.
- Planning and presentations at: New England Vegetable and Fruit Conference, Manchester, NH, December 16-17, 2015; NY and VT Grape School, Lake George, NY, March 17, 2016.

**Grape IPM Guideline Assessment**

- 3 advisory stakeholders selected to participate have received online assessment survey.

**IPM First for Greenhouse Ornamentals**

- 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 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.
- 1 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.

**Tri-State Greenhouse IPM Workshops**

- Planning and presentations at: The 19<sup>th</sup> 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.

**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.

**Regional IPM Workshops for Landscapers**

- Factsheet was produced on IPM for white grubs and disseminated to landscape professionals.

**Master Gardener Course IPM Lectures**

- A three hour Plant Disease and IPM class took place on 2/9/16, including a thorough discussion of tomato fungal leaf blights.
- A three hour Healthy Lawn Management class took place on 4/5/16, including a discussion of IPM management practices for weeds in lawns.
- A three hour Entomology class took place on 4/26/16, including an overview of IPM for white grubs.

**Master Gardener Helpline**

- 779 home gardener questions answered through the Helpline between July 1st, 2015 and May 11th, 2016.

**Master Gardener Advanced Training IPM 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 was provided in May 2016.

**Plant Diagnostic Clinic disease/insect/weed diagnostics**

- Diagnosed and provided IPM information to 584 commercial growers, Master Gardeners and the general public who submitted disease, insect and weed samples. With each diagnosis, IPM management information is supplied through an email, phone call, site visit or letter.
- Over 500 emails and phone calls answered on pest and disease issues and IPM.

**Targeted stakeholder groups**

- Advertised the Plant Diagnostic Clinic to the VT Tree Fruit Growers Association in their winter newsletter and meeting.

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- Article on Current Disease Issues and IPM for 200 growers in the VT Nursery and Landscape Association newsletter.

**Plant Diagnostic Clinic Extension presentations/workshops**

- Emerging Diseases and Insects at VT Vegetable and Berry Growers association meeting. 200 growers;
- Plant Disease and IPM at Master Gardener Course. 110 students.
- Emerging Diseases/Pests & Disease/IPM Roundtable for the NOFA-VT organic association meeting-50 growers.
- Tomato Diseases in Greenhouse Tunnels for the NE Vegetable & Fruit Growers Conference-100 growers;
- Disease and Pest Issues. 75 field crop and forage growers.
- IPM for 35 UVM Farmer Training Program students in field and classroom.
- Across the Fence Extension Television shows on Current Disease Issues and IPM management-10 programs/year.
- Master Gardener Advanced Trainings on tomato disease and IPM; disease and pests.
- Twilight meeting for NOFA-VT and VT Vegetable and Berry Growers.
- Column on current and emerging weeds, pests and diseases for 750 growers from VT and New England using the bi-weekly VT vegetable and berry newsletter.
- Information on current and emerging pests and diseases for 200 landscapers through their association newsletter.

**How have the results been disseminated to communities of interest?**

- Agronomy IPM information is distributed through websites, field days, winter meetings, blogs, websites, YouTube videos, phone calls and emails. A live broadcast of the hops winter conference was made available and archived online. Information collected in "Loose Smut Seed Lot Testing" will remain confidential.
- Apple and Grape IPM information is distributed through newsletters, website, IPM alerts, winter and summer meetings, conferences, site visits, emails and phone calls. Information collected in assessment surveys will remain confidential.
- Greenhouse and Landscape IPM information is distributed through workshops, presentations, site visits, phone calls, emails, factsheets, and websites.
- Master Gardener impacts have not yet been evaluated and will be disseminated upon receipt.
- Plant Diagnostic Clinic IPM information is distributed through sample diagnosis, websites, listservs, factsheets, television, presentations, workshops, emails, phone calls and site visits.

**What do you plan to do during the next reporting period to accomplish the goals?**

- Apple and Grape IPM Guideline Assessments online assessment survey will be reviewed in July 2016. Participants will be provided one-on-one consultations to discuss assessment results and to plan for IPM improvements. Follow-up assessment survey will occur in 2017
- Continue individualized training at site visits for "IPM First for Greenhouse Ornamentals" and "Green Industry IPM ambassadors".
- Hold the 20<sup>th</sup> annual Tri-State Greenhouse workshops in ME, NH and VT and the 3<sup>rd</sup> annual Biological Control for Landscapers Seminar.
- Hold 2<sup>nd</sup> Biological Control for Landscapers Seminar.
- Establish & formulate suitable habitat plantings to promote natural enemy abundance in landscape settings.
- Develop Landscape IPM brochure and factsheet promoting the establishment of natural enemies in landscape/nursery settings.
- Impacts for 2015 Master Gardener Course participants are will be evaluated in May 2016. 2016 Master Gardener Course participants will be surveyed in May 2017. Surveys of Helpline clients will be administered upon the completion of the season.
- A survey to evaluate Master Gardener volunteer knowledge following advanced training of specific IPM practices for managing tomatoes, white grubs, and weeds in turf will be administered in Summer 2016.
- Develop three (3) factsheets dedicated to fungal diseases of tomato, white grub complexes and turf management. Distribute factsheets on the MG website and at information tables at fairs and farmers' markets.
- Grower surveys of general and targeted stakeholders using the Plant Diagnostic Clinic will occur September 2016 to measure short term/intermediate IPM impacts.
- All other project programs will continue for another year until the end of the grant cycle.

**Participants**

**Actual FTE's for this Reporting Period**

Role	Non-Students or faculty	Students with Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	

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## Actual FTE's for this Reporting Period

Role	Non-Students or faculty	Students with Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	
Scientist	0.4	0	0	0	0.4
Professional	0.3	0	0	0	0.3
Technical	0.5	0	0	0	0.5
Administrative	0.3	0	0	0	0.3
Other	0	0	0	0	0
Computed Total	1.5	0	0	0	1.5

## Student Count by Classification of Instructional Programs (CIP) Code

{NO DATA ENTERED}

## Target Audience

Target audiences include commercial agricultural operators and associated industry such as crop consultants, professional pest managers, extension educators, researchers and similar stakeholders. Commercial operators include: new and established grain farmers, apple growers, grape growers, growers of greenhouse ornamentals/cut flowers/vegetables, growers of landscape/perennial/nursery stock, landscape managers/groundskeepers, and product end-users such as brewers, bakers, or millers. Master Gardeners, home gardeners, general public, and communities are also target audiences for portions of this project.

## Products

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	YES

## Citation

Darby, H. 2015. Northwest Crops and Soils Program Research Website: <http://www.uvm.edu/extension/cropsoil/research>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	YES

## Citation

Bradshaw, T., Kingsley-Richards, S. 2015. UVM Fruit Tree Fruit Website: [http://www.uvm.edu/~fruit/?Page=treefruit/tf\\_home.html&SM=tf\\_submenu.html](http://www.uvm.edu/~fruit/?Page=treefruit/tf_home.html&SM=tf_submenu.html)

Type	Status	Year Published	NIFA Support Acknowledged
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## Citation

Bradshaw, T., Kingsley-Richards, S. 2015. UVM Fruit Grape Website: [http://www.uvm.edu/~fruit/?Page=grapes/gr\\_home.html&SM=gr\\_submenu.html](http://www.uvm.edu/~fruit/?Page=grapes/gr_home.html&SM=gr_submenu.html)

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Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	YES

**Citation**

Sullivan, C.E.F. and Skinner, M. 2015. Greenhouse Integrated Pest Management Website: <http://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	YES

**Citation**

Sullivan, C.E.F. and Skinner, M. 2015. Landscape Integrated Pest Management Website: <http://www.uvm.edu/~entlab/Landscape%20IPM/LandscapeIPM.html>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	NO

**Citation**

Hazelrigg, A. UVM Extension Master Gardener. 2015. <http://www.uvm.edu/mastergardener>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2015	YES

**Citation**

Hazelrigg, A. Plant Diagnostic Clinic. 2015. <http://www.pss.pdc>

**Other Products****Product Type**

Other

**Description**

Agronomy Field Days highlighting grain, oilseed, and hops pest management trials, scouting strategies, and pest identification tools.

**Product Type**

Other

**Description**

Agronomy Winter Conferences on pests, diseases, weeds and IPM specific to grain, oilseed, and hops. Webinars will be streamed live from each event.

**Product Type**

Audio or Video

**Description**

Agronomy Web Resources: website, blogs, YouTube videos, pest management information briefs



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**Product Type**

Data and Research Material

**Description**

Grain Disease Survey: survey New England farms for foliar disease.

**Product Type**

Data and Research Material

**Description**

Loose Smut Seed Lot Testing. Farmers sent results and info on how to reduce loose smut in fields and seed lots.

**Product Type**

Educational Aids or Curricula

**Description**

Guides of Pests in New England for oilseeds, grains, and hops including pest id, lifecycle and management tools.

**Product Type**

Other

**Description**

Apple Extension, Outreach, Education: newsletters, blog posts, and/or factsheets containing time- and crop-sensitive IPM information integrating weather and pest models, on-farm workshop to demonstrate IPM practices, one-on-one consultations, revisions of the New England Tree Fruit Management Guide, planning and presentations at regional grower meetings.

**Product Type**

Educational Aids or Curricula

**Description**

Apple IPM Guideline Assessment: selected group of advisory stakeholders will participate in a survey of crop-specific IPM practices practiced in their orchard operation.

**Product Type**

Other

**Description**

Grape Extension, Outreach, Education: newsletters, blog posts, and/or factsheets containing time- and crop-sensitive IPM information integrating weather and pest models, on-farm workshop to demonstrate IPM practices, one-on-one consultations, planning and presentations at regional grower meetings.

**Product Type**

Educational Aids or Curricula

**Description**

Grape IPM Guideline Assessment: selected group of advisory stakeholders will participate in a survey of crop-specific IPM practices practiced in their vineyard operation.

**Product Type**

Educational Aids or Curricula

**Description**

IPM First for Greenhouse Ornamentals: a statewide individualized grower program. UVM personnel will visit each grower to provide one-on-one instruction and support on selecting, adopting and using plant-mediated

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IPM systems.

**Product Type**

Other

**Description**

Tri-State Greenhouse IPM Workshops: hands-on IPM demonstrations and IPM information packets.

**Product Type**

Educational Aids or Curricula

**Description**

Green Industry IPM ambassadors: a statewide individualized landscape/nursery industry stakeholder program. UVM personnel will visit each stakeholder to provide one-on-one instruction and support on selecting, adopting and using plant-mediated IPM systems. Stakeholders will subsequently assist with promoting IPM to other growers.

**Product Type**

Other

**Description**

Regional IPM Workshops for Landscapers: hands-on IPM demonstrations and IPM information packets. Presentations also given at Green Industry association meetings.

**Product Type**

Educational Aids or Curricula

**Description**

Master Gardener Course IPM Lectures: a 13 week course with 200 students including three lectures on IPM topics.

**Product Type**

Other

**Description**

Master Gardener Helpline: a popular statewide toll-free source for gardeners needing information on current insect, weed and diseases

**Product Type**

Educational Aids or Curricula

**Description**

Master Gardener Advanced Training IPM Webinars: part of the training for the MG volunteers in advanced IPM concepts and emerging insect, weed and disease problems.

**Product Type**

Other

**Description**

Plant Diagnostic Clinic disease/insect/weed diagnostics: diagnosis and IPM recommendations. Clients include commercial growers (agronomic, apple, grape, greenhouse, landscape, nursery, vegetable, berry, etc.), Master Gardener Helpline, the gardening public and urban consumers.

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Other

**Description**

Targeted stakeholder groups: apple growers, grape growers, and landscapers targeted through presentations and grower listservs to make them aware of the Plant Diagnostic Clinic's services.

**Product Type**

Other

**Description**

Plant Diagnostic Clinic Extension presentations/workshops: addressing current and emerging insect, weed and diseases using IPM tactics in commercial crops, for the vegetable and small fruit growers, and for Master Gardeners. Also information on insect, weed and disease outbreaks, id and IPM management strategies provided for MG volunteers, home gardeners and urban consumers through television, factsheets, listservs, MG blogs, websites, webinars, articles and newsletters.

**Changes/Problems**

- "Grain Disease Survey" has been expanded to include scouting for arthropod pests and downy mildew severity in all hop trials at the Alburgh, VT research farm in addition to eight other farms.
- Due to reduced funding, the number of recruits was reduced for "IPM First for Greenhouse Ornamentals" and "Green Industry IPM ambassadors" and sites limited primarily to Northwestern VT. "Regional IPM Workshops for Landscapers" have been limited to VT and only 1 factsheet per year will be produced. The Landscape IPM steering committee was not established
- Due to the loss of the 11 VT interactive television facilities used to deliver the Master Gardener course, the course was delivered in an online webinar format for the first time this year. 100% of students found the new technology to be effective for the course (8% improvement).
- No changes/problems of note for other project programs.