

United States Department of Agriculture
Progress Report

Funding Source	Non Formula	Grants.gov No.	GRANT12397990
Accession No.	1013802		
Project No.	VTN32287		
	09/01/2017		

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through IPM strategies learned at workshops and individual site visits.

Communities-Goals include educating gardeners about pest identification and IPM strategies in the home garden and landscape through a course, a statewide Helpline and several outreach events.

IPM for Pollinators-Goals include educating growers and gardeners on the importance of pollinator protection through an orchard pollinator survey, through pilot habitats and through a home garden IPM short course.

Pest Diagnostics-Goals include providing timely, accurate and cost-effective diagnostics to Vermont stakeholders so they can make informed management decisions based on IPM strategies.

Pesticide Education-Goals include developing trainings on pollinator health to key stakeholders targeting pesticide applicators in apple orchards, in blueberries and for applicators in the nursery/greenhouse ornamentals industry

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 lower costs while protecting the environment and human health. The VT EIP project areas include grain, oilseed, hops, apple, grape, greenhouse, high tunnels, communities, plant diagnostics, and pesticide applicators.

Participants from all project area workshops/presentations have increased knowledge of IPM topics within the first year.

Growers at Agronomy Winter Conferences plan to adopt proactive changes in crop and pest management, including certified seed, scouting, and crop rotation. A new outreach effort on hop production successfully increased understanding of how to scout and manage downy mildew disease. Apple presentations on trunk problems, scouting, and "great ways to support native pollinators" increased knowledge by up to 250%. Greenhouse/High Tunnel/Nursery Tri-State IPM Workshop attendees learned new techniques they intend to use this year, including sanitation, better management of natural enemies, and plant mediated IPM systems. 96% of Master Gardener Course students gained a better understanding of IPM practices, 36% of students have already changed their IPM practices, and 55% intend to change their IPM practices in the next 6 months.

Advanced Training provided new information to experienced Master Gardeners: 95% of participants plan to adopt a new IPM practice. The Plant Diagnostic Clinic provided critical IPM strategies to commercial and home gardener clients. Plant Diagnostic Clinic outreach presentations successfully increased knowledge of IPM and 56% of attendees at the NE Vegetable & Fruit Conference have adopted a new practice as a result of the presentations.

Impacts will be measured throughout the upcoming growing season for additional priority area products. Please see the following accomplishments available at this time for each product for more details.

Agronomy Field Days and Winter Conferences

- Annual Hops Conference:
 - 92% of attendees thought the material covered met their expectations.
 - "The combination of the sensory presentation and the harvest timing presentations fit really well together. I believe this information will help me to produce a better product and more effectively communicate its value with my brewers."
 - "The topics and format was great as a "greenhorn" with hops production, it was very good in covering all aspects of getting started."
- Annual Grain Growers Conference:
 - Attendees plan to: 54% select new grain varieties, 18% buy certified seed, 52% change crop/fertility management, 55% change weed management, 53% implement a new crop rotation, 14% scout, 35% adopt cover crop practices.
 - "This was an excellent conference. The keynote was inspiring and networking sessions were helpful. The emphasis on climate and environmentally sensitive farming methods is very timely."
 - "I enjoyed the mix of bakers speaking about rye issues, the bigger picture of what can be done with grains and community, and the growing and farming workshops."
 - "Great diversity of workshops, extraordinary keynote speaker."

Agronomy Extension Outreach Education

- Hop Power Hour
 - 94% of participants indicated they would make a change to their farming operation or how they advise farmers.
 - 100% of participants indicated that they have a better understanding of how to scout for downy mildew and manage the disease.

Apple/Grape Extension Outreach Education

- 2018 Vermont Tree Fruit Growers Association annual meeting
 - 92% of participants indicated moderate/considerable general knowledge following presentation on Trunk Problems in Vermont Apple Orchards (71% increase)

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- 100% of participants indicated moderate/considerable general knowledge following presentation on Implementing an Orchard Monitoring (30% increase)
- 90% of participants indicated moderate/considerable general knowledge following presentation on Constraints and Opportunities in Growing Cider Apples in Vermont (55% increase)
- 100% of participants indicated moderate/considerable general knowledge following presentation on Managing Native Bees for Tree Fruit Pollination (250% increase)
- "Orchard monitoring detail about trap types and timing was SO helpful."
- "Learned some great ways to support native pollinators, which we rely on heavily in our orchard."

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 92% of the attendees learned new techniques they intend to use this year, including sanitation, pH/EC; better management of natural enemies, plant mediated IPM systems (habitat plants)
- 84% usefulness rating of program for solving pest problems
- 71% of the attendees attended a previous program, indicating retention of attendees as well as recruiting of new attendees.

Master Gardener Course

- 96% of students agreed/strongly agreed that the course gave them a better understanding of Integrated Pest Management practices (43% increase).
- 36% of students indicated that as a result of this course they had already changed their IPM practices; 55% indicated that they intend to change their IPM practices in the next 6 months.

Master Gardener Helpline

- Approximately 95% of calls provide IPM information (pest lifecycle, non-pesticide management options) to the home gardening public.

Master Gardener Advanced Training Webinars

- 100% of attendees learned something new on pest and disease identification.
- 95% indicated they would adopt an IPM practice.

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- 96% of commercial grower and 97% of home gardener PDC clients indicated their pest issue was identified and IPM strategies were delivered.
- 92% of commercial grower and 93% of the home gardener PDC clients used an IPM practice as a result of the diagnosis and recommendations.
- 73% of commercial growers and 70% of the home gardener clients reduced their use of pesticides as a result of the diagnosis.

Plant Diagnostic Clinic Extension Outreach Education

- 56% of attendees at the NE Vegetable & Fruit Conference adopted a new practice as a result of the presentations.
- 82% of field and forage grower attendees at the VT Commercial Pesticide Applicators Meeting increased their IPM knowledge as a result of workshop

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

- The 9th Annual Hops Conference, Burlington, VT. February 16, 2018. 126 attendees + 14 participants in Live Broadcast.
- The 14th Annual Grain Growers Conference- Diversifying Grains for a Changing Climate, Essex, VT. March 22, 2018. 107 attendees.
- <http://www.uvm.edu/extension/cropsoil/events-and-calendar>

Agronomy Extension Outreach Education

- 4 Hop Blog Posts <http://blog.uvm.edu/hoppenin/>
 - Hop Power Hour monthly webinars began April 23, 2018 and will continue through September 2018. 34 participants.
- <https://www.youtube.com/watch?v=sNLDK7Mr0h8&t=0s&list=PLaZCgOs78ccqi-5V2G3GaLRxFBNgmeM0Nb&index=1>

Orchard and Vineyard Scouting Network

- Online reporting platform developed. Operating in testing mode for 2018 season.

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Apple/Grape Extension Outreach Education

- 5,408 page views of UVM Fruit: Tree Fruit & 1,656 page views of UVM Fruit: Grapes from Sept 2017-May 2018
<http://www.uvm.edu/~fruit/>

- 166 email addresses subscribed to vtapplegrower@list.uvm.edu listserv; 271 email addresses subscribed to vermontgrape@list.uvm.edu listserv

- 43 UVM Fruit blog posts promoting IPM tools, Network for Environmental and Weather Applications (NEWA), and advertising IPM meetings to apple/grape growers. <http://blog.uvm.edu/fruit/>

- 28 one-on-one grower consultations (phone, email, and on-site)

- Annual revisions of the New England Tree Fruit Management Guide, Feb 2018. <https://netreefruit.org/>

- Session planning and presentations:

- New England Vegetable & Fruit Conference: Hard Cider Session. Manchester, NH. December 13, 2017. 85 attendees.

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- Master Gardener Course delivered through web platform. January 16-April 25, 2018. 96 students. Plant Diagnostic Clinic Program Support of IPM Communities (PDC Team) delivered lectures: entomology, plant pathology and turf care.

- 270 EMG volunteers logged 11,201 hours at 102 projects and events (fairs, Ask a MG tables, Farmers Markets, other outreach) making 30,589 contacts with the public about home gardening, pesticide reduction, sustainable landscapes, pest identification and IPM strategies.

Master Gardener Helpline

- 1,061 questions answered by phone and email
- 88 specimens submitted for pest identification

Master Gardener Advanced Training Webinars

- Diseases, Pests and IPM. April 2018. 25 Master Gardener Helpline volunteers who answer the public's gardening questions. Recording will be available to 300+ Master Gardeners statewide.

Orchard Pollinator Survey

- Survey methods developed. 2018 assessment underway.

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- 10 individuals at 3 greenhouse/nursery sites trained to establish pollinators through habitat plantings.

Master Gardener Pollinator Short Course

- Currently under development to launch in 2018 on eXtension course website.

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- 500+ samples diagnosed with pest lifecycle and IPM strategies.
- 100+ emails with photos diagnosed for plant issues.

Plant Diagnostic Clinic Extension Outreach Education

- Presentations (attendees):
 - Master Gardener State Conference. 10/21/17. (60)
 - ME Farmer to Farmer Conference. 11/6/17. (50)
 - NE Grows, Boston, MA. 11/30/17. (40)
 - NE Vegetable & Fruit Conference, Manchester, NH. 12/12/17. (200)
 - VT Vegetable and Berry Association Annual Meeting, Fairlee, VT. 1/2/18. (200)
 - CT Nursery and Landscape Association Meeting, Plantsville, CT. 1/24/18. (100)
 - VT NH Christmas Tree Growers Association, Burlington, VT. 1/30/18. (50)
 - VT Nursery and Landscape Association, Burlington, VT. 2/15/18. (100)
 - NOFA VT Annual Meeting, Burlington, VT. 2/18/18. (50)
 - PSS Course IPM and Agroecology, 2/28/18. (40)
 - VT Crops Meeting, Bradford, VT. 3/27/18. (50)
 - VT Commercial Pesticide Applicators Meeting, So. Burlington. 3/29/18. (60)
 - Newport Garden Club, Newport, VT. 4/10/18. (40)
- Television: 4 programs on pests, diseases, IPM Management. Across the Fence. 8/30/17 <https://youtu.be/9Mv8l5S2TMY>, 10/06/17 <https://youtu.be/oCMzDsH1vTA>, 4/27/18 https://youtu.be/Qk6UkY_e-Uo, 5/25/18 <https://youtu.be/ROfi7IsUR-k>
- Radio PSAs: WDEV. Fall 2017 and Winter 2018.
- Newsletters:
 - Four articles for The Dirt: "Observations from the UVM Plant Diagnostic Lab". <https://greenworksvermont.org/news-events/the-dirt/>. 350 subscribers.
 - Regular contributor on diseases and pests from the Plant Diagnostic Clinic and the field. VT VEG and BERRY bi-weekly listserv for vegetable farmers throughout the Northeast. 650 farmers.
 - UMASS Vegetable Notes (contribute VT data). Weekly in season; monthly in winter. <https://ag.umass.edu/vegetable/newsletters>. 2,128 subscribers.
- Press Release: Nuisance Pests in Homes. Winter 2018

Pesticide Applicator Online Education

- Online platform determined.

How have the results been disseminated to communities of interest?

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- Prepare case studies

Master Gardener Course

- In April of 2019 the 2018 master gardener students will be surveyed to assess if they adopted an IPM practice and reduced their use of pesticides.

Master Gardener Helpline

- We will survey 2018 clients at the end of the season to see if they adopted an IPM practice that reduced pesticide use.

Master Gardener Advanced Training Webinars

- We will offer two webinars in June and July of 2018 with IPM topics to be determined. A committee of two faculty and one staff member are working on the planning for the additional advanced trainings.

- Additionally, the committee is planning several hand-on summer courses including: an urban pest and disease tree walk, a forest walk focused on the safe and judicious use of pesticides for invasive plant irradiation, a hands-on workshop for vegetable diseases and pests and two hand-on sessions on how to use IPM strategies when fertilizing your vegetable garden.

- Factsheets will be developed to be used during the workshops as well as distributed to our 300 master gardeners after the course, and the general public at fairs, farmers markets and other community events around the state.

Orchard Pollinator Survey

- Pan traps in two orchards collected weekly; identify and catalogue collected insects.
- Apple growers will be surveyed annually to assess level of adoption of specific pollinator protection practices such as timing and choice of pesticides.

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- Establish and monitor habitat plantings
- Produce and distribute consumer brochure and signs about protecting pollinators and pollinator identification
- Provide updates on websites and social media

Master Gardener Pollinator Short Course

- We are currently developing the course syllabus, reaching out to potential experts to teach various modules, developing the course website and the course advertising materials, such as the flyers website, social media posts, press releases and setting up the pre and post course surveys.

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

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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	
Other	0	0	0	0	0
Computed Total	3.5	0	0	0	3.5

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: organic and conventional growers of specialty crops, field crops and forages, new and established grain/dry bean/hop farmers, apple growers, grape growers, blueberry growers, growers of greenhouse ornamentals/cut flowers/high tunnel vegetables, growers of landscape/perennial/nursery stock, and product end-users such as brewers, distillers, maltsters, chefs, bakers, and millers. Master Gardeners, home gardeners, owners of small acreage, general public, schools and communities are also target audiences for portions of this project.

Products

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2018	YES

Citation

Bradshaw, T. & S. Kingsley-Richards. 2018. UVM Fruit. <http://www.uvm.edu/~fruit/>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2018	NO

Citation

Darby, H. 2018. Northwest Crops and Soils Program. <http://www.uvm.edu/extension/cropsoil/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2018	NO

Citation

Hazelrigg, A. 2018. Home invasions of the insect kind. <https://www.uvm.edu/newsstories/news/home-invasions-insect-kind>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2018	YES

Citation

Hazelrigg, A. 2018. Plant Diagnostic Clinic. <http://www.uvm.edu/extension/pdc>

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Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2018	YES

Citation

Hazelrigg, A. 2018. UVM Extension Master Gardener. <https://www.uvm.edu/extension/mastergardener>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2018	NO

Citation

Sullivan, C.E.F. and Skinner, M. 2018. Greenhouse Integrated Pest Management Website: <http://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2017	NO

Citation

Hazelrigg, A. 2017. Tomato pest management. New England Vegetable & Berry Conference Proceedings, December 14, 2017, Manchester, NH. Proceedings.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2017	NO

Citation

Hazelrigg, A. 2017. Why are my greens brown? 2017 Disease Update. New England Vegetable & Berry Conference Proceedings, December 13, 2017, Manchester, NH. Proceedings.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2017	NO

Citation

Sanchez, E., C. Frank Sullivan & M. Skinner. 2017. High Tunnel Vegetable Crops: Designing a Scouting Plan. PennState Extension Article. <https://extension.psu.edu/high-tunnel-vegetable-crops-designing-a-scouting-plan>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2017	NO

Citation

Sullivan, C.F. & M. Skinner. 2017. Habitat plants to attract natural enemies into high tunnel crops. New England Vegetable & Berry Conference Proceedings, December 14, 2017, Manchester, NH. Proceedings.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2017	NO

Citation

Bradshaw, T. 2017. Constraints & Opportunities for Selling Apples to the Cider Market. New England Vegetable & Berry Conference Proceedings, December 13, 2017, Manchester, NH. Proceedings.

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Product Type

Other

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Product Type

Other

Description

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics: provide new and established stakeholders with rapid and accurate diagnosis and current IPM recommendations. Clients include commercial growers, Master Gardener Helpline volunteers, the gardening public and urban consumers.

Product Type

Other

Description

Plant Diagnostic Clinic Extension Outreach Education: present IPM information addressing current and emerging insect, weed and diseases using IPM tactics in talks/workshops, newsletter columns, television programs, blogs, websites, webinars, press releases, and articles.

Product Type

Other

Description

Pesticide Applicator Online Education: online platform determined for trainings address IPM and pollinator health targeted for pesticide applicators in apple orchards, in blueberries and for applicators in the nursery/greenhouse ornamentals industry.

Changes/Problems

- Target enrollment for the Master Gardener Course was 120 students. 2018 enrollment was 96 students and 86 completed the course.
- No changes/problems of note for other project programs.