United States Department of Agriculture

Progress Report

Title:	Vermont IPM Extension Implementation Program: 2017-2020

Sponsoring Agency	NIFA	**Project Status**	ACTIVE
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Reporting Period Start Date	09/01/2020	**Reporting Period End Date**	08/31/2021
Submitted By	Stephanie Albaugh	**Date Submitted to NIFA**	11/17/2021

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

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Recipient Organization

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Non-Technical Summary

The Vermont Extension Implementation Program includes specialists in plant pathology, entomology, horticulture, agronomy, pesticide education, weed science and community outreach. A program coordinator and an evaluation specialist also play critical roles, maximizing communication and cooperation among Priority area teams. The VT EIP team has strong relationships with stakeholders and addresses IPM needs in the following Primary Priority areas: Agronomic Crops; Specialty Crops; Communities and IPM for Pollinator Health. Secondary Priority areas of IPM Support for Pest Diagnostic Facilities and IPM Education for Pesticide Applicators serve as overarching resources for all Primary Priority areas.The goals of the VT EIP are to develop and promote effective education and outreach programs to improve IPM practices, reduce costs through those IPM practices, increase IPM adoption and reduce human and environmental risks for our commercial growers and communities.

Accomplishments

Major goals of the project

The overarching goals of the Vermont IPM program are to develop and promote effective education and outreach programs to improve IPM practices, reduce costs through those IPM practices, increase IPM adoption and reduce human and environmental risks for our commercial growers and communities. Specific goals of each priority area are:
Agronomy-Goals include identification of the disease and pests that challenge northeast growers. Farmers will learn to identify pests in their fields and learn if their seed sources are disease free. They will learn the best agronomic practices to minimize pest damage and we will promote the UVM PDC for help in identifying disease, insect and weed problems in farmers' fields. Our goal is to help farmers design robust local grain and hop systems that successfully address pertinent pest challenges to produce a diversity of food and feed grains for expanding local grain markets.
Fruit- Goals include include timely delivery of IPM information to apple and grape growers; implementation of regional orchard and vineyard monitoring programs; and development of baseline data on pollinator diversity in commercial orchards (see Priority Area IPM for Pollinator Health). We will continue to highlight the Plant Diagnostic Clinic as a resource for insect, weed

and disease diagnosis and IPM recommendations.
Greenhouse/high tunnel-Goals include addressing grower needs while improving environmental sustainability and profitability of the greenhouse industry in ME, NH and VT by reducing losses from arthropod pests and increasing growers' revenues 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. **Seed quality testing prior to planting has resulted in farmers having fewer issues with bean diseases and increased access to markets by providing quality information. Farmers requested mycotoxin testing expanded to include aflatoxin.** Apple growers increased knowledge of the state pesticide program and invasive insects while planning to adopt at least one new IPM practice and use pesticides more safely. Up to 17% of Greenhouse/High Tunnel/Nursery Tri-State IPM participants have adopted IPM strategies for insect pest management. IPM First growers use IPM strategies to manage pests and regularly scout for pest problems. 84% of Master Gardener Course graduates use IPM practices in their garden. Master Gardener Helpline saved $250 estimated average per client by reducing pesticide use. Advanced Training "served to reinforce (course) foundation and allow to fill some of the gaps in understanding." All participants of the Pollinator Habitat Program provided education to customers about pollinator importance. Master Gardener Pollinator Short Course students "know the proper formulations, timing, and techniques for pesticide application to reduce harm to pollinators." The Plant Diagnostic Clinic provided critical IPM strategies to commercial growers, saving $233 estimated average per client by reducing pesticide use. "With positive ID of certain plant diseases I have switched to cultivars with bred resistance, avoiding sprays and crop loss." Managing Pests While Protecting Pollinators Course students likely to use pesticides more safely. "The student walks away feeling encouraged to spring into action and more mindfully and effectively manage pests while creating abundant pollinator habitat and protection."
Please see the following accomplishments for more details.
Seed Quality Testing

- 40% increase in seed quality submissions to the lab since 2014
- 4 farmers reported fewer issues with bean diseases as a result of testing seed for seedborne diseases prior to planting
- 3 farmers reported increased access to markets by providing quality information.
- All samples analyzed for aflatoxin have been below the acceptable limit.

Apple/Grape Extension Outreach Education

- 2021 Vermont Tree Fruit Growers Assoc. Annual Meeting
  - 91% have moderate/considerable knowledge on Vermont Pesticide Program, Invasive Insects (up to 107% increase)
  - 59% moderately/very likely to adopt at least one new IPM practice
  - 69% moderately/very likely to apply and use pesticides more safely

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 21% of the attendees were new to the workshop series. Of those that attended in the past, 61% attended 1-5 workshops, 39% attended 6+ workshops.
- 83% found disease session useful/very useful
- 85% found insect management session useful/very useful
- 80-86% increased knowledge of the identification of foliar diseases, root diseases, insects, biocontrol use
- 61% increased knowledge of disease monitoring, chemical pesticide use/integration
- 77% intend to use new techniques (using natural enemies and pesticides compatibly, importance of record keeping when scouting, inexpensive microscopes to assist with pest id, cultural methods for prevention of insects and diseases, and sanitation strategies).
- 15-17% adopted strategies for insect pest management (predators, organic methods, parasites, nematodes, conventional

pesticides)

Greenhouse/High Tunnel/Nursery IPM First

- 100% use IPM strategies to manage pests (biopesticides, natural enemies, scouting, trap/habitat plants)
- 100% regularly scout for pest problems
- 76% use sticky cards for monitoring

Master Gardener Course

- **2020 Course**
  - 89% moderate/considerable knowledge about use of IPM after course
  - 85-97% moderately/very likely to adopt IPM gardening practices (disease-resistant plants, identify pests, improve timing, cultural practices as first management choice, use pesticides as a last resort, choose least toxic pesticides, reduce use of pesticides)
  - "I thought the course was a great introduction to the science behind gardening."
  - "I look forward to sharing the information with others."
- **2020 Course Impacts**
  - 84% always/regularly currently use IPM practices in their garden
  - 45% have reduced use of pesticides
  - "Combine several different strategies (mechanical, ecological) in order to avoid pesticide use."
  - "Encourage and assist neighboring gardeners in the community plot to identify pests and diseases. Suggest non-toxic/organic products and practices for control."
- **2021 Course**
  - 91% moderate/considerable knowledge about use of IPM after course
  - 89-99% moderately/very likely to adopt IPM gardening practices (disease-resistant plants, identify pests, improve timing, cultural practices, use pesticides as a last resort, choose least toxic pesticides, reduce use of pesticides)
  - "I am much more conscious of the role that each of us must play in creating habitats for our local flora and fauna to thrive."
  - "I gained a lot from this course that I will take into my home and community gardening."

Master Gardener Helpline 2020

- 36% clients said diagnostic ID helped to manage their pest problem with IPM
- 24% clients were able to reduce pesticides as a result of the IPM information
- $250 average per client estimated cost savings by reducing pesticide use
- "I got answers that addressed my specific concerns in a timely way that allowed me to move forward with the understanding I needed for success."
- "Helped me to make the problem somewhat better without any pesticides at all."

Master Gardener Advanced Training 2021

- 100% will improve use of IPM practices when trying to manage pests
- 67% will reduce use of pesticides
- "I learned a lot from the pest management session that has already helped me to mitigate damage from pests."
- "Learned about the 'decision tree' when it comes to IPM"
- "In-person sessions served to reinforce (course) foundation and allow to fill some of the gaps in understanding."

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- 100% provided education to customers about their importance

Master Gardener Pollinator Short Course

- 90-100% moderate/considerable knowledge of pollinator friendly practices (neonicotinoid pesticides, pesticide labels, pesticide formulations, timing pesticide applications, bee biology, habitat design, plant selection)
- 100% will improve use of IPM practices when trying to protect pollinators in the landscape
- 100% of those who use pesticides will reduce use of pesticides
- "It covered all aspects of the topic and motivated me to do all I can on my own land to protect these important species."
- "Learned more about IPM techniques and identifying pests, beneficial pollinators"
- "Now know the proper formulations, timing, and techniques for pesticide application to reduce harm to pollinators"

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- 71% commercial clients said diagnostic ID helped to manage their pest problem with IPM
- 21% commercial clients were able to reduce pesticides as a result of the IPM information
- $233 average per client estimated cost savings by reducing pesticide use
- "Maybe we didn't reduce (pesticides) but we at least knew what to spray, when (as a result of the IPM recommendation)"
- "Yes, with positive ID of certain plant diseases, I have switched to cultivars with bred resistance, avoiding sprays and crop loss."

Pesticide Applicator Education: Managing Pests While Protecting Pollinators Course

- 67% moderately/very likely to adopt at least one new IPM practice
- 67% moderately/very likely to apply and use pesticides more safely
- "The student walks away feeling encouraged to spring into action and more mindfully and effectively manage pests while creating abundant pollinator habitat and protection."

What opportunities for training and professional development has the project provided?

Agronomy Field Days & Winter Conferences

- 5 part series Virtual Field Day Fridays virtual webinars (127 attendees) https://go.uvm.edu/j3lio
- 3 part series Virtual Grain Conference, 3/23-4/9/21 (87 attendees)
- 6 part series Virtual Hop Conference, 3/30-4/15/21 (50 attendees)

Seed Quality Testing

- 212 samples in 2020, 270 samples in 2021 analyzed for disease, mycotoxins, germination (small grains, dry beans, corn, hemp)
- Farmers requested mycotoxin testing expanded to include aflatoxin. 7 samples in 2020, 23 samples in 2021.

Agronomy Extension Outreach Education

- 4 IPM guides:
  - Northeast Dry Bean Pest Guide https://go.uvm.edu/ywd0p
  - Cereal Rye Production Guide https://go.uvm.edu/ky5n6
  - Seed Disease and Organic Management for Cereals Grown in the Northeast https://go.uvm.edu/7u0y3
- 4 Agronomy Blog posts (195 subscribers) https://blog.uvm.edu/outcropn/
- 3 Hop Blog posts (155 subscribers) https://blog.uvm.edu/hoppenin/

Apple/Grape Extension Outreach Education

- Commercial Horticulture website created https://go.uvm.edu/idxwb
- 160 subscribed to vtapplegrower@list.uvm.edu listserv; 292 subscribed to VTgrape@list.uvm.edu listserv
- 116 UVM Fruit blog posts promoting IPM tools, Network for Environmental & Weather Applications (NEWA), advertising IPM meetings http://go.uvm.edu/ogreu
- 138 grower consultations
- New England Tree Fruit Management Guide updates, January 2021 https://netreefruit.org/
- 16 new videos on redesigned UVM Fruit YouTube https://www.youtube.com/user/UVMOrchard
- Session planning/presentations
  - 2021 VT Tree Fruit Growers Assoc. Annual Meeting (VT Pesticide Program, Invasive Insects) 2/18/21 (49 attendees)
  - New England Winter Fruit Seminar Series. Jan-Mar, 2021. 10 part series webinars co-presented by New England Extension Fruit professionals. Recorded at: https://go.uvm.edu/xjh2n (1993 live attendees)
- Presentations (attendees)
  - Apple disease identification & management. UVM Master Gardener Summer program (8)
  - Training on apple production. UVM Master Gardener Summer program (10)
  - New England Cider Apple Project: Early results. Northeast IPM Research Update Conference (18)
  - 2 New England Winter Fruit Seminar Series 2021 webinars (Tree Row Volume (98), Cider apples in 2021 (147))
  - Apples. VT Agriculture Food System Strategic Plan presentation to the House & Senate Agriculture Committee (26)
  - Adding Tree Fruit to a Diversified Farm. VT Veg & Berry Grower Webinar Series
- Media
  - 3 Across the Fence Television Segments, WCAX TV (2021 VT Apple Season, 2020 VT Apple Season, COVID Farm Market Safety)
  - Season Check-In. VT Viewpoint radio program, WDEV-FM
  - Seeds to Society segment. Dave Gram Show, WDEV-FM

- Ciderology VT Hard Pressed. VT Public Television feature film
- As apple harvest begins in VT, farmers say COVID is not the problem. VT Digger

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 24th annual event held virtually in 3 Zoom sessions (effective use of biocontrols, using natural enemies and pesticides compatibly, common root disease issues/how to prevent them) 1/14/21 & 1/21/21 (120 attendees) https://go.uvm.edu/gkj4m

Greenhouse/High Tunnel/Nursery IPM First

- 6 new operations in 2021
- 150 consultations, 40 growers
- 3rd Biennial High Tunnel Production Conference (production technologies, pests/soil/crop management). 3 sessions via Zoom, UNH/UVM /UMaine collaboration. (150 attendees). https://go.uvm.edu/d61hg

Greenhouse/High Tunnel/Nursery Extension Outreach Education

- Presentations
- Diseases & Insects in High Tunnels: Common and Not-so-common Problems and How to Manage Them. High Tunnels After Dark. Virtual High Tunnel Production Conference
- Beneficial Insects. UVM Virtual Grower-to-Grower Session (38 attendees)
- IPM Virtual Reality. 25th Annual Tri-State Greenhouse IPM Program Workshop
- VT Veg & Berry Growers Assoc. 2020 Webinar Series (Aphids on Winter Crops, Tomato Pests)

Master Gardener Course

- Delivered through web platform 2021 (197 students)

Master Gardener Helpline

- 900 questions answered through ASK EXTENSION portal
- 128 phone calls, 812 emails

Master Gardener Advanced Training

- 2020 Summer Pest & Disease Updates (147 attendees)
- 2021 Summer Pest & Disease Updates (75 attendees)

Orchard Pollinator Survey

- 2 orchards surveyed monthly, 2020 season; abundance, diversity catalogued

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- 18 sites (10 in 2020,8 in 2021) established pollinator habitat plantings, 1 new site trained
- Brochure: Native Solitary Bees and How to Support Them https://go.uvm.edu/2gnc7
- 4750 pollinator habitat brochures distributed to retail businesses, outreach events (Bringing In Un-Bee-lievable Beneficials, Native Solitary Bees and How to Support Them)
- 2 articles American Floral Endowment Thrips & Botrytis Newsletter
- 5 articles VT Nursery & Landscape Assoc. magazine, The Dirt: https://go.uvm.edu/85xai
- Presentations
- Supporting wild pollinators on diversified vegetable farms. VT Veg & Berry Growers Assoc., UVM Extension
- Hands-On Training in IPM. New Farms for New Americans Urban Agriculture & Leadership Program
- 2 lectures for Master Gardener Pollinator Short Course

Master Gardener Pollinator Short Course

- Creating Pollinator Friendly Landscape Course. Online training for homeowners (38 attendees)

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- 125 Commercial samples diagnosed, IPM information provided.

- 125 email pictures diagnosed, IPM information provided

Plant Diagnostic Clinic Extension Outreach Education

- New England Vegetable Management Guide annual updates https://nevegetable.org/

- New England Small Fruit Management Guide annual updates https://go.uvm.edu/sqb3o
- 5 articles VT Nursery & Landscape Assoc. magazine, The Dirt: https://go.uvm.edu/85xai
- Presentations (attendees)
  - Master Gardener
    - 2 presentations. Helpline Advanced Training (30)
    - Diseases & Pests of 2020. Helpline Wrap up (20)
    - Pests & Diseases. Lunchtime webinars (90)
    - Plant Pathology Lecture webinar/interactive Q&A. Master Gardener Course
  - 3 presentations. Tree Diseases. UNH Pesticide Supervisory workshop (90)
  - 4 presentations. Plant Disease lecture. UVM PSS 127, PSS 021, PBIO 117, Farmer Training (115)
  - 2 presentations. Garden & Tree Pest & Disease Updates. Ft Ticonderoga Garden Series (44)
  - 3 presentations. Pests & Diseases. VT Veg & Berry Annual Conference, webinar (401)
  - 3 presentations. Commercial Grower Roundtable, Garden Disease & Insect Issues, Pest & Disease Twilight meeting for Commercial Growers. NOFA-VT (100)
  - 2 presentations. Plant Diseases. NH Arborist Assoc. (154)
  - Diseases of High Tunnel Tomatoes. Southern New England Extension Vegetable Growers' webinar https://youtu.be/mfRo9P4F0YM (300)
  - Diagnosing diseases in the field. Commercial Pesticide Applicators meeting for Field & Forages (51)
  - Windsor Garden Club/UVM Master Gardener Gardening Series https://youtu.be/FuaiGZFyNak (177)
  - Gypsy Moth training video https://youtu.be/TPK8hvsjEuo
  - AX Fellows Disease Scouting Training (10)
  - Saffron Twilight Meeting (25)

- How to diagnose diseases in the field. NH Certified Crop Advisor Conference (35)
- Highlights of VT disease & pest issues. NE Plant Diagnostic Network (20)
- NE American Phytopathological Society Meeting (60)
- Hemp Disease Basics Webinar https://youtu.be/wouZy-3Ioxk (20)

- Recap & Results of the 2019 Meeting. National IPM Coordinating Committee Annual Meeting (50)
- Pests & Diseases. Burlington Garden Club (35)
- Onboarding Committee Update & VT Pests & Diseases of 2020. Northeast Plant Diagnostic Meeting (30)

Pesticide Applicator Education

- VT Pesticide Education: Managing Pests While Protecting Pollinators (1 credit) online training for commercial growers (4 attendees)
- 3 lectures for Master Gardener Pollinator Short Course
- 6 factsheet series: Managing Pests While Protecting Pollinators (homeowner, commercial, Apple Orchards, Greenhouse & High Tunnel Production, Blueberry Crops, References
- 2 IPM factsheets: Pest Management Principles, Neonicotinoid Pesticides

How have the results been disseminated to communities of interest?

- **Agronomy** IPM information is distributed through field days, winter meetings, blogs, websites, webinars, Facebook posts, YouTube videos, phone calls, emails and social media. A live broadcast of the hops winter conference was made available and archived online. Information collected in Dry Bean Survey and Seed Quality Testing will remain confidential.
- **Apple/Grape** IPM information is distributed through newsletters, website, blog posts, factsheets, on-farm workshop, one-on-one consultations, and presentations at regional grower meetings. Information collected in Orchard and Vineyard Scouting Network and Apple/Grape IPM Guideline Assessment surveys will remain confidential.
- **Greenhouse/High Tunnel/Nursery** IPM information is distributed through workshops, conferences, presentations, site visits, factsheets, websites, Facebook page and a listserv.
- **Master Gardener** IPM information is delivered through the Master Gardener Course, through the Master Gardener Helpline, EMG newsletter, state reports, website and emails.
- **Plant Diagnostic Clinic** IPM information is distributed through sample diagnosis, websites, meetings, presentations, webinars, newsletters, television, radio, factsheets, emails, and phone calls.
- **Pesticide Applicator Online Education** will be through webinars, factsheets and presentations.

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

Continuation of ongoing objectives:

- **Agronomy Field Days and Winter Conferences:** Repeat attendees will be surveyed to assess whether they have adopted specific IPM tactics.
- **Dry Bean Disease Survey:** completed
- **Seed Quality Testing:** Will track number of farmers testing their seed/how many chose to purchase certified seed and/or clean their seed.
- **Agronomy Extension Outreach Education:** UVM Northwest Crops website, Hop Blog Posts; Hop Power Hour webinars; Presentations at local and regional conferences; Repeat attendees will be surveyed to assess whether they have adopted specific IPM tactics.

- **Orchard/Vineyard Scouting Network:** final report will be published; Number of growers scouting will be collected.

- **Apple/Grape IPM Guideline Assessment:** Change web platform; Grower trial/evaluation
- **Apple/Grape Extension Outreach Education:** UVM Fruit website, listservs, blog posts; grower consultations; On-farm workshop; presentations at local and national conferences; Repeat attendees will be surveyed to assess adoption of specific IPM tactics; number of growers scouting will be collected.

- **Greenhouse/High Tunnel/Nursery Tri-State IPM:** Survey of repeat attendees to assess adoption of specific IPM tactics.
- **Greenhouse/High Tunnel/Nursery IPM First:** Survey of IPM First participants to assess adoption of specific IPM tactics.

- **Greenhouse/High Tunnel/Nursery Extension Outreach Education:** UVM greenhouse/high tunnel/landscape IPM webpages; UVM Entomology & Saffron Facebook page; GreenGrower listserv; factsheets; articles, webinars, webinets; presentations at local/national conferences; Survey of repeat attendees to assess adoption of specific IPM tactics.
- **Master Gardener Course:** Students of 2021 courses will be surveyed to assess whether they have adopted specific IPM tactics.
- **Master Gardener Helpline:** Helpline clients will be surveyed to assess whether they have adopted specific IPM tactics.
- **Master Gardener Advanced Training: R**epeat attendees will be surveyed to assess whether they have adopted specific IPM tactics.

- **Orchard Pollinator Survey:** Growers will be surveyed to assess whether they have adopted specific pollinator IPM tactics.

- **Greenhouse/High Tunnel/Nursery Pollinator Habitat Program in greenhouses/high tunnels and nursery:** Program participants will be surveyed to assess whether they have adopted specific pollinator IPM tactics.
- **Master Gardener Pollinator Short Course:** Pre/post survey of students to assess knowledge gain on pollinator IPM strategies.
- **Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics:** PDC clients surveyed for adoption of specific IPM tactics.
- **Plant Diagnostic Clinic Extension Outreach Education:** Survey of repeat attendees to assess adoption of specific IPM tactics.
- **Pesticide Applicator Online Education**: Pre/post survey of students to assess knowledge gain on pollinator IPM strategies.

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	
Scientist	0.4	0	0	0	0.4
Professional	0.9	0	0	0	0.9
Technical	0.7	0	0	0	0.7

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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	
Administrative	1.5	0	0	0	1.5
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	2021	NO

Citation

Bradshaw, T. & S. Kingsley-Richards. 2021. Commercial Horticulture. https://www.uvm.edu/extension/horticulture/commercial

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2021	NO

Citation

Darby, H. 2021. Northwest Crops and Soils Program. https://www.uvm.edu/extension/nwcrops

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2021	NO

Citation

Hazelrigg, A. 2021. Observations from the UVM Diagnostic Lab. The Dirt, Fall. Vol. 47(3). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Type	Status	Year Published	NIFA Support Acknowledged
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Citation

Hazelrigg, A. 2021. Observations from the UVM Diagnostic Lab. The Dirt, Summer. Vol. 47(2). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

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Citation

Hazelrigg, A. 2021. Observations from the UVM Diagnostic Lab. The Dirt, Spring. Vol. 47(1). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Type	Status	Year Published	NIFA Support Acknowledged
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Citation

Hazelrigg, A. 2021. Observations from the UVM Diagnostic Lab. The Dirt, Winter/Spring. Vol. 46(4). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2021	YES

Citation

Hazelrigg, A. 2021. Plant Diagnostic Clinic. https://www.uvm.edu/extension/pdc

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2021	YES

Citation

Hazelrigg, A. 2021. UVM Extension Master Gardener. https://www.uvm.edu/extension/mastergardener

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2021	YES

Citation

Hazelrigg, A. & S. Kingsley-Richards. 2021. Pesticide Safety Education Program. https://www.uvm.edu/extension/psep

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	NO

Citation

Hazelrigg, A. 2020. Observations from the UVM Diagnostic Lab. The Dirt, Fall. Vol. 46(3). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	NO

Citation

Hazelrigg, A. 2020. Observations from the UVM Diagnostic Lab. The Dirt, Summer. Vol. 46(2). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

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Other	Published	2020	NO

Citation

Hazelrigg, A. 2020. Observations from the UVM Diagnostic Lab. The Dirt, Spring. Vol. 46(1). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Accession No. 1013802 **Project No. VTN32287**

Type	Status	Year Published	NIFA Support Acknowledged
Other	Accepted	2020	NO

Citation

Parker, B.L., A. Davari & M. Skinner. 2020. Can Western Flower Thrips be managed without insecticides? American Floral Endowment Thrips & Botrytis Newsletter, Fall 2020, Issue 3.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2021	NO

Citation

Skinner, M., C.F. Sullivan & B.L. Parker. 2021. Want to save money on pesticides? Scout for Thrips! American Floral Endowment, Thrips & Botrytis Newsletter, Feb 2021, Issue 1.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2021	YES

Citation

Skinner, M. & C.F. Sullivan. 2021. Wait a Minute! The Dirt, Summer. Vol. 47(2) VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2021	NO

Citation

Sullivan, C.E.F. and Skinner, M. 2021. Greenhouse Integrated Pest Management Website: http://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2021	YES

Citation

Sullivan, C.F. & M. Skinner. 2021. Lively Lady Beetles, Our Un-Bee-lievable Beneficials (Part 4). The Dirt, Winter. Vol. 46(4) VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. https://vnlavt.org/news-events/the-dirt/

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Other	Published	2020	YES

Citation

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Other Products

Product Type

Other

Description

Agronomy Field Days and Winter Conferences: highlighting grain, oilseed, beans and hops pest management trials, IPM scouting strategies, and pest identification tools; live-stream of winter conferences.

Product Type

Data and Research Material

Description

Dry Bean Disease Survey: Northeast dry bean farms surveyed for seedborne and non-seedborne foliar diseases throughout the growing season with the information provided weekly to the grower.

Product Type

Data and Research Material

Description

Seed Quality Testing: farmers offered seed quality testing. Results with information on how to reduce pathogens in seed lots sent to the grower to promote certified seed use or cleaning of seed when disease is present.

Product Type

Other

Description

Agronomy Extension Outreach Education: conference proceedings and meeting videos , two IPM Briefs/year, blog , scouting info, identification and IPM strategies for a broad range of crops. A Dry Bean IPM guide, previous guides (hops, oilseeds, cereal grains) updated, goScout Action Survey-hop growers surveys, ID Hour, Virtual Reality (VR) video environments.

Product Type

Data and Research Material

Description

Orchard and Vineyard Scouting Network: weekly coordinated orchard pest monitoring. Weekly results communicated to participating orchards to guide pest management decisions. Online reporting platform developed to track state-wide trap captures. Two vineyards will be evaluated at veraison and harvest for incidence of disease and insect pest damage.

Product Type

Educational Aids or Curricula

Description

Apple/Grape IPM Guideline Assessment: develop a self-assessment of crop-specific IPM practices tailored to Vermont growers. The assessment available as an online tool to facilitate IPM education and assist grower

decision-making.

Product Type

Other

Description

Apple/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, revisions of the New England Tree Fruit Management Guide, planning and presentations at regional grower meetings.

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Tri-State IPM: presentations on insect and disease-related IPM topics. Attendees take part in hands-on demonstrations and receive information packets on current IPM topics.

Product Type

Educational Aids or Curricula

Description

Greenhouse/High Tunnel/Nursery IPM First: five specialty crop operations enrolled annually, receiving on-site visits by specialists over the growing season to improve IPM skills.

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Extension Outreach Education: webinettes (10-minute narrated, web-based presentations), IPM factsheets for workshops, advanced IPM topics, case studies on IPM adoption based on grower experiences, IPM Facebook posts, and northeast region Greengrower listserve.

Product Type

Other

Description

Master Gardener Course: a 13 week course with 120 students offered through a web-based platform; including three lectures on IPM topics.

Product Type

Other

Description

Master Gardener Helpline: popular statewide toll-free service staffed with trained volunteers to answer questions on insect, weed and disease problems and their management.

Product Type

Other

Description

Master Gardener Advanced Training: for Master Gardener volunteers addressing recent inquiries from the public. Factsheets developed on these topics posted on the website.

Product Type

Data and Research Material

Description

Orchard Pollinator Survey: orchard pollinator community composition assessed in two orchards using pan traps to collect pollinators weekly throughout the growing season. Collected insects identified to develop baseline data for use in developing or assessing IPM programs protective of pollinators in orchard systems.

Product Type

Educational Aids or Curricula

Description

Pollinator Habitat Program for ornamentals/vegetables in greenhouses/high tunnels and nursery settings: operations enrolled to encourage conservation of pollinators. Habitat plantings at each site established with annual and native perennial plant varieties useable for sale as cut flowers, providing continual floral resources to attract the pollinators and beneficials that provide pest management. Beneficial insects (pollinators, predators and parasitoids) surveyed at the three habitat plantings monthly from May-September.

Product Type

Other

Description

Master Gardener Pollinator Short Course: “Creating Pollinator Friendly Landscapes” course offered using an interactive online webinar platform.

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: “Managing Pests While Protecting Pollinators” course offered using an interactive online webinar platform to 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

COVID measures necessitated the following changes:

- Educational offerings in all programs shifted to online delivery methods
- 16th Annual Grain Growers Conference, Essex VT 3/24/20 cancelled

- Master Gardener Helpline suspended physical sample submissions for pest identification
- Plant Diagnostic Clinic:
  - Many fewer samples received
  - Presentation: Garden & Tree Pest & Disease Updates. Ft Ticonderoga Garden Series 2020 cancelled
  - Television: No programs recorded in 2020-2021