

Final Report

Title:	Vermont IPM Extension Implementation Program: 2017-2020		
Sponsoring Agency	NIFA	Project Status	COMPLETE
Funding Source	Non Formula	Reporting Frequency	Final
Accession No.	1013802	Grants.gov No.	
Project No.	VTN32287	Award No.	2017-70006-27143
Project Start Date	09/01/2017	Proposal No.	2017-04388
Reporting Period Start Date	09/01/2017	Project End Date	08/31/2022
Submitted By	Stephanie Albaugh	Reporting Period End Date	08/31/2022
		Date Submitted to NIFA	09/28/2022

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

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Recipient Organization

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Co-Project Directors

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Departments

{NO DATA ENTERED}

Ext - Programming & Fac Sup

Plant & Soil Science

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 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

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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?

Highlights: September 2017 - August 2022 <https://go.uvm.edu/2q8hr>

Agronomy Field Days and Winter Conferences

- 92-96% allowed to better scout/identify/manage pests with IPM system in hops and grains
- 86% helped to test for grain mycotoxin, seedborne disease
- 56-78% helped to reduce hops pesticide applications; 35% selecting lowest impact pesticides
- "This (hops) information will help me to produce a better product and more effectively communicate its value with my brewers."
- "I enjoyed the bigger picture of what can be done with grains and community."

Dry Bean Disease Survey

- 95-100% indicated learning how to better identify pests, developed IPM strategies
- 60% tested seed quality

Seed Quality Testing

- 60% increase in seed quality submissions to the lab since 2014
- Farmers reported fewer issues with bean diseases as result of testing seed for seedborne diseases prior to planting, increased access to markets by providing quality information.

Agronomy Extension Outreach Education

- 100% have better understanding of hop powdery mildew and downy mildew scouting and management, irrigation system pest impact, virus ID, timing harvest to minimize pest damage
- 90% will implement scouting schedule; 67% will continue routine scouting
- 29-40% will adjust/reduce pesticide applications, minimize rates

Orchard/Vineyard Scouting Network

- 100% used scouting in pest management decision making, reduced/delayed sprays
- 60-88% had net economic benefit, reduce risks
- "Scouting allowed us to be more precise in our spray applications and reduce our pesticide use"
- "I am certain that my fruit quality and tree health improved due to scouting"

Apple/Grape Extension Outreach Education

- 40-60% changed post-infection fire blight management to decrease pesticide use, reduce use of broad-spectrum pesticides, improve timing of pest management, and improve confidence in making pest management decisions
- 43% changed apple scab management to improve timing of pest management, improve confidence in making pest management decisions, and increase profitability
- 48% changed scouting practices (increased scouting, better trap timing, reduced pesticide use) to improve confidence making pest management decisions
- "Scouting completely impacted our timing of pesticide application"
- "Gained information on identifying different diseases and hardiness/disease resistance of different varieties"
- "I learned of specific software applications that can be used for scab and fireblight tracking"

Greenhouse/High Tunnel/Nursery Tri-State IPM

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- 64-89% changed management practices, increased biological control, plant-mediated IPM, scouting, identification, nutrient management, decreased pesticide use
- 15-17% adopted strategies for insect pest management (predators, organic methods, parasites, nematodes, conventional pesticides)
- 47% reduced chemical pesticide use by >25%; 51% reduced chemical pesticides by >50%

Greenhouse/High Tunnel/Nursery IPM First

- 100% use IPM strategies to manage pests (biopesticides, natural enemies, scouting, trap/habitat plants)
- 100% use biocontrols as chemical pesticide alternatives, reduced chemical pesticides
- 67-100% use plant-mediated IPM systems regularly

Greenhouse/High Tunnel/Nursery Extension Outreach Education

- 100% of webinnet viewers indicated the style of learning tool was useful to increase grower's knowledge on the biology and identification of IPM practices

Master Gardener Course

- 59-98% never/rarely/sometimes/not sure of using IPM before the course
- 55-99% likely to adopt IPM gardening practices; 36% had already changed their IPM practices as a result of this course
- 84% always/regularly currently use IPM practices in their garden
- 45% have reduced use of pesticides
- "I learned a lot of useful and important information that I can directly apply to my gardening and property management techniques"
- "I appreciate learning about science-based information to help me garden and reduce the use of pesticides"
- "Encourage and assist neighboring gardeners in the community plot to identify pests and diseases. Suggest non-toxic/organic products and practices for control."

Master Gardener Helpline

- 36-78% clients used IPM to manage their pest problem
- 24-60% clients were able to reduce pesticides
- \$137-\$250 average per client estimated cost savings by reducing pesticide use
- "I was able to start making helpful gardening changes right away and have a plan for better prevention next season."
- "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 Webinars

- 95-100% will improve use of IPM practices when trying to manage pests
- 20-100% will reduce use of pesticides
- "I appreciate the opportunity to receive current, comprehensive information about an important subject which we can share more broadly with the public"
- "I learned some tricks about pest management to optimize my crops and reduce damage by pests without resorting to pesticides"

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- 88% did not use habitat plantings prior to program
- 63-88% moderate/considerable knowledge of beneficial id/life cycles, plants to attract beneficials
- 100% continue to use habitat planting systems

Master Gardener Pollinator Short Course

- 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 "

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- 71-96% commercial clients said diagnostic ID helped to manage their pest problem with IPM
- 21-75% commercial clients were able to reduce pesticides as a result of the IPM information
- \$233-\$635 average per client estimated cost savings by reducing pesticide use
- "With positive ID of certain plant diseases, I have switched to cultivars with bred resistance, avoiding sprays and crop loss."
- "They have saved us tens of thousands of dollars in potentially lost crops over the years as well as strategies that improved yields moving forward"
- Without resources like this, many farmers including myself would have a much harder time growing sustainable food, employing Vermont residents and running sustainable businesses"

Pesticide Applicator Education: Managing Pests While Protecting Pollinators Course

- 67% moderately/very likely to adopt at least one new IPM practice, 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?

{Nothing to report}

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** is delivered through webinars, factsheets and presentations.

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

{Nothing to report}

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
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

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{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	2022	NO

Citation

Bradshaw, T. & S. Kingsley-Richards. 2022. Commercial Horticulture. <https://www.uvm.edu/extension/horticulture/commercial>

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.

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2022	NO

Citation

Darby, H. 2022. Northwest Crops and Soils Program. <https://www.uvm.edu/extension/nwcrops>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2022	YES

Citation

Hazelrigg, A. & S. Kingsley-Richards. 2022. Pesticide Safety Education Program. <https://www.uvm.edu/extension/psep>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2022	YES

Citation

Hazelrigg, A. 2022. Plant Diagnostic Clinic. <https://www.uvm.edu/extension/pdc>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2022	YES

Citation

Hazelrigg, A. 2022. UVM Extension Master Gardener. <https://www.uvm.edu/extension/mastergardener>

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Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2022	NO

Citation

Hazelrigg, A. 2022. Observations from the UVM Diagnostic Lab. The Dirt, Summer. Vol. 48(2). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. <https://vnlavt.org/news-events/the-dirt/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2022	NO

Citation

Hazelrigg, A. 2022. Observations from the UVM Diagnostic Lab. The Dirt, Spring. Vol. 48(1). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. <https://vnlavt.org/news-events/the-dirt/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2021	NO

Citation

Hazelrigg, A. 2021. Observations from the UVM Diagnostic Lab. The Dirt, Winter. Vol. 47(4). VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. <https://vnlavt.org/news-events/the-dirt/>

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/>

Type	Status	Year Published	NIFA Support Acknowledged
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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
Other	Published	2021	NO

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
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/>

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Type	Status	Year Published	NIFA Support Acknowledged
Other	Accepted	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/>

Type	Status	Year Published	NIFA Support Acknowledged
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/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	NO

Citation

Hazelrigg, A. and G. Maia. 2019. Brassica Diseases. <http://go.uvm.edu/whl4v>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	NO

Citation

Hazelrigg, A. and G. Maia. 2019. High Tunnel Tomato Diseases. <http://go.uvm.edu/li5nf>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Hazelrigg, A. and G.S Maia. 2019. Weather and Climate Impacts on Plant Disease in Vermont in Summer 2018. National Plant Diagnostic Network Meeting, Indianapolis, IN.

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
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.

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Project No. VTN32287

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	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
Conference Papers and	Published	2019	NO

Citation

Sanchez, E., C. Frank Sullivan & M. Skinner. 2019. Using Biocontrols to Manage Aphids in High Tunnels. New Jersey Agricultural Trade Show & Convention Proceedings, Feb. 5-9, 2019, Rutgers University, NJ.

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
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
Conference Papers and	Published	2020	NO

Citation

Skinner, M., C.F. Sullivan & E. Sanchez. 2020. Habitat plants to support beneficials in high tunnels: The best things in life are free. In: Proc. Mid-Atlantic Fruit & Vegetable Convention, 28-30 Jan. Hersey, PA. PA Veg. Growers Assoc. pp: 78-79.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

Skinner, M. & C.F. Sullivan. 2019. Native Solitary Bees and How to Support Them. Univ. of VT, Entomology Research Laboratory, Burlington VT. 2 pp.

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Type	Status	Year Published	NIFA Support Acknowledged
Book Chapters	Published	2019	NO

Citation

Skinner, M., C.F. Sullivan, & B.L. Parker. 2019. Chapter: Integrated Pest Management in Greenhouse and Other Protected Environments. In: Integrated management of insect pests: Current and future developments; Eds: M. Kogan & L. Higley, Burleigh Dodds Science Publ. Cambridge, UK.

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2022	NO

Citation

Sullivan, C.E.F. and Skinner, M. 2022. 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/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Sullivan, C.F. & M. Skinner. 2020. The Insidious Flower Bug, Our Un-Bee-lievable Beneficials (Part 3). 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	YES

Citation

Sullivan, C.F. & M. Skinner. 2020. Persistent Pest Parasites, Our Un-Bee-lievable Beneficials (Part 2). The Dirt, Summer. Vol. 46(2) VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. <https://vnlavt.org/news-events/the-dirt/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Sullivan, C.F. & M. Skinner. 2020. The Sedulous Syrphid Fly, Our Un-Bee-lievable Beneficials (Part 1). The Dirt, Spring. Volume 46(1) VT Assoc. of Professional Horticulturists. Ferrisburgh, VT. <https://vnlavt.org/news-events/the-dirt/>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Sullivan, C.F., A. Davari, B.L. Parker & M. Skinner. 2020. Marigold Guardian Plant Production Guidelines. Entomology Research Laboratory. Tri-State Greenhouse IPM Workshops. Manchester, ME., Durham, NH & Burlington, VT. 2020.

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Accession No. 1013802

Project No. VTN32287

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sullivan, C.E.F. & M. Skinner. 2019. Attracting & Sustaining Aphid Natural Enemies in High Tunnels. Univ. of VT Entomology Research Laboratory. PennState Ag Progress Days, Rock Springs, PA. August 13-15, 2019.
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/Habitat%20Plants%20in%20High%20Tunnels%20Natural%20Enemies%202019%20version.pdf>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sullivan, C.E.F. & M. Skinner. 2019. Critical Questions to Consider to Help Manage Persistent Pest Problems. Univ. of VT Entomology Research Laboratory. PennState Ag Progress Days, Rock Springs, PA. August 13-15, 2019.
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/Critical%20Questions%20to%20Manage%20Persistent%20Pest%20Problems%20Aug%202019.pdf>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	NO

Citation

Sullivan, C.E.F., M. Skinner & E. Sanchez. 2019. Guidelines & Tips for Scouting High Tunnel Crops. Univ. of VT Entomology Research Laboratory. PennState Ag Progress Days, Rock Springs, PA. August 13-15, 2019.
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/Scouting%20Guidelines%20High%20Tunnel%20Pests%20Natural%20Enemies%20Aug%202019%20UVM.pdf>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	NO

Citation

Sullivan, C.E.F. & M. Skinner. 2019. Attracting & Sustaining Aphid Natural Enemies in High Tunnels. Expand Your Tunnel Vision: High Tunnel Production Conference Manchester NH - Dec 3-4. 1p.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

Sullivan, C. Frank & Skinner, M. 2019. Bringing in Un-Bee-lievable Beneficials. The Dirt. Winter Issue Vol. 44(4):23-24.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

Sullivan, C. Frank & Skinner, M. 2019. Habitat Plantings Harbor Happy Beneficial Bugs. VT Vegetable & Berry Newsletter 3/12/19 <http://www.uvm.edu/vtvegandberry/Pubs/HabitatPlants.pdf>

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.

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Other Products**Product Type**

Other

Description

Agronomy Field Days and Winter Conferences

- 10 events, 836 attendees: Annual Hops Conf, Virtual Hops Conf, Annual Grain Growers Conf, Virtual Grain Conf, Champlain Valley Hops Field Day, Virtual Field Day Fridays

Product Type

Data and Research Material

Description

Dry Bean Disease Survey

- 5 farms (75 acres total, VT & MA) surveyed in 2018 & 2019 seasons for pests
- Farmers invited to participate, assisted with scouting 75% of the time

Product Type

Data and Research Material

Description

Seed Quality Testing

- 804 samples analyzed for disease, mycotoxins, germination (small grains, dry beans, corn, hemp)
- 30 samples. Farmers requested mycotoxin testing expanded to include aflatoxin.

Product Type

Other

Description

Agronomy Extension Outreach Education

- 18 webinars, 261 attendees: Hop Power Hour
- 19 Hop Blog Posts blog.uvm.edu/hoppenin
- 6 Agronomy Blog posts (195 subscribers) blog.uvm.edu/outcropn
- Online course of Hops Conf campus.extension.org
- Hop goScout surveys (introductory, training, crowning, scouting, irrigation, harvest timing)
- Virtual Reality Scouting Tool for Hop Growers (VRScout Hops) completed, presented at 2019 Hops Conf go.uvm.edu/3myft
- 4 IPM guides:
 - Northeast Dry Bean Pest Guide go.uvm.edu/ywd0p
 - Cereal Rye Production Guide go.uvm.edu/ky5n6
 - Seed Disease and Organic Management for Cereals Grown in the Northeast go.uvm.edu/7u0y3
 - The European Corn Borer in Hops and Hemp go.uvm.edu/k8iwn

Product Type

Data and Research Material

Description

Orchard/Vineyard Scouting Network

- 12 orchards + 1 vineyard scouted weekly, 2018 & 2019 season
- Third-party online reporting platform trialed

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Product Type

Educational Aids or Curricula

Description

Apple/Grape IPM Guideline Assessment

- Assessments developed on iPIPE IPM Elements platform

Product Type

Other

Description

Apple/Grape Extension Outreach Education

- 32 events, 3319 attendees: Planning/presentations at VT Tree Fruit Growers Assoc annual meetings, NE Veg & Fruit Conf, NE Winter Fruit Seminar Series, Maine Pomological Society Workshop, VT on-farm workshops; presentations at Northeastern IPM Center Advisory Council Meeting, VT Veg & Berry Growers Assoc, The Dish Food & Ag Series by City Market & Intervale, ME Pomological Soc. Ann Meeting, Congrès Cidres, vins et alcools d'ici. MT Grape & Winery Assoc. Ann Conf, Greater Cabot Working Landscape Committee, Atlantic Seed Assoc. Ann Conv., NY Ag Exp Station/Cornell Plant Pathology Seminar, UVM HREC Res. Open House, VT Master Gardener Summer program, NE IPM Research Update Conf, House & Senate Ag Committee
- 3 Across the Fence Television WCAX, 2 radio programs WDEV-FM, VT Public Television film
- Commercial Horticulture website created go.uvm.edu/idxwb
- 160 subscribed vtapplegrower@list.uvm.edu; 292 subscribed VTgrape@list.uvm.edu
- 236 UVM Fruit blog posts promoting IPM tools, Network for Environmental & Weather Applications (NEWA), advertising IPM meetings go.uvm.edu/ogreu
- 289 grower consultations
- New England Tree Fruit Management Guide annual updates netreefruit.org
- 16 videos on redesigned UVM Fruit YouTube youtube.com/user/UVMOrchard

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 4 events, 535 attendees: annual Tri-State Greenhouse IPM Workshops

Product Type

Educational Aids or Curricula

Description

Greenhouse/High Tunnel/Nursery IPM First

- 5 events, 240 attendees: scouting training for greenhouse staff, educational tour at participating greenhouses, presentations to greenhouse production tech school students, 3rd Biennial High Tunnel Production Conf
- 22 new operations enrolled
- 250 site visits/consultations
- Inspection checklist developed (pest id, natural enemy releases, pesticide applications, plant-mediated IPM system use, environmental conditions, cultural practices, diagnostic clinic use)

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Extension Outreach Education

- 18 events, 661 attendees: 3 webinettes, 2 webinars, NE Veg & Fruit Conf, High Tunnel Production Conf, Rionegro Colombia, Twilight Meeting, Intervale Community Farm, Mid-Atlantic Fruit & Veg Conf, ME Organic

Final Report

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Farmers & Gardeners Assoc, Penn State Ag Progress Days, Virtual High Tunnel Production Conf, UVM Virtual Grower-to-Grower Session, VT Veg & Berry Growers Assoc. 2020 Webinar Series

- 14,000+ views greenhouse/high tunnel/landscape IPM webpages
- 4,100 followers Entomology & Saffron Facebook
- 460 subscribed GreenGrower listserv
- 9 Factsheets/Articles

Product Type

Educational Aids or Curricula

Description

Master Gardener Course

- 4 courses, 498 attendees: annual Master Gardener Course delivered through web platform
- 1,405 EMG volunteers, 414 projects/events, 56,321 hours making contacts with the public about pesticide reduction, pest identification, IPM strategies

Product Type

Other

Description

Master Gardener Helpline

- 4,892 questions answered by phone/email
- 253 specimens submitted for pest identification

Product Type

Other

Description

Master Gardener Advanced Training Webinars

- 15 events, 543 attendees: annual workshops/webinars

Product Type

Data and Research Material

Description

Orchard Pollinator Survey

- 2 orchards surveyed monthly, 2018-2020; abundance, diversity catalogued

Product Type

Educational Aids or Curricula

Description

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- 5 presentations, 142 attendees: VT Nursery Landscape Assoc Winter Meeting, international student training, VT Greenscape Assoc Turfgrass Conf & Trade Show, VT Veg & Berry Growers Assoc, New Farms for New Americans Urban Ag & Leadership Program
- 30 sites established pollinator habitat plantings
- 4750 pollinator habitat brochures distributed to retail businesses, outreach events
- Brochure: Native Solitary Bees and How to Support Them go.uvm.edu/2gnc7
- 1 updated educational sign go.uvm.edu/poi4r
- 2 articles American Floral Endowment Thrips & Botrytis Newsletter
- 5 articles The Dirt. VT Nursery Landscape Assoc. greenworksvermont.org/news-events/the-dirt (350 subscribers)

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Product Type

Educational Aids or Curricula

Description

Master Gardener Pollinator Short Course

- 38 attendees: Creating Pollinator Friendly Landscape Course online training for homeowners campus.extension.org

Product Type

Other

Description

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- 1725 samples diagnosed with pest lifecycle/IPM strategies
- 475 emails with photos diagnosed for plant issues

Product Type

Other

Description

Plant Diagnostic Clinic Extension Outreach Education

- 66 presentations, 4667 attendees: National IPM Coord. Committee Ann Meeting, NE Plant Diagnostic Meeting, NE Veg & Fruit Conf, NE Grows, NE American Phytopathological Society Meeting, Plant Diagnostic Network, Ecological Landscape Alliance Conf, Southern NE Extension Veg Growers' webinar, VT Veg & Berry Assoc Ann Meeting, VT NH Christmas Tree Growers Assoc, VT Nursery & Landscape Assoc, NOFA VT Meetings, VT Crops Meeting, VT Commercial Pesticide Applicators Meeting, VNLA Flower Show, VT High Tunnel Workshop, Saffron Twilight Meeting, VT farm workshops, VT garden clubs, VT Master Gardener State Conf, VT Master Gardener Training, UVM PSS courses, UVM Farmer Training, UVM AX Fellows, NH Landscape Recertification Course, NH High Tunnel Conf, NH Arborist Assoc., NH Supervisory Pesticide Training, NH Certified Crop Advisor Conf, ME Farmer to Farmer Conf, CT Nursery & Landscape Assoc Meeting, Fort Ticonderoga NY Ann Garden & Landscape Symposium
- Hemp Disease Basics Webinar, Gypsy Moth training video youtu.be/TPK8hvsjEuo,
- 16 Television programs on Across the Fence WCAX, 2 Radio PSAs WDEV
- New England Vegetable Management Guide annual updates nevegetable.org
- New England Small Fruit Management Guide annual updates ag.umass.edu/fruit/publications/new-england-small-fruit-management-guide
- 2 Factsheets + Poster
- Press Release: Nuisance Pests in Homes
- VT Veg/Berry Newsletter biweekly column (650 farmers)
- 21 articles The Dirt. VT Nursery Landscape Assoc. greenworksvermont.org/news-events/the-dirt (350 subscribers)
- UMASS Vegetable Notes articles (contribute VT data) ag.umass.edu/vegetable/newsletters (2,128 subscribers)

Product Type

Educational Aids or Curricula

Description

Pesticide Applicator Education

- 4 attendees: VT Pesticide Education: Managing Pests While Protecting Pollinators (1 credit) online training for commercial growers campus.extension.org
- 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

Accession No. 1013802

Project No. VTN32287

Changes/Problems

COVID measures necessitated the following changes:

- Educational offerings in all programs shifted to online delivery methods in 2020
- 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

OTHER:

- Apple/Grape IPM Guideline Assessments developed on iPiPE IPM Elements: platform discontinued, data unavailable
- No changes/problems of note for other project programs.