

Progress Report

Title:	Vermont IPM Extension Implementation Program (VT EIP): 2021-2024		
Sponsoring Agency	NIFA	Project Status	ACTIVE
Funding Source	Non Formula	Reporting Frequency	Annual
Accession No.	1027204	Grants.gov No.	GRANT13321590
		Award No.	2021-70006-35509
Project No.	VTN-FP1180	Proposal No.	2021-05149
Project Start Date	09/01/2021	Project End Date	08/31/2023
Reporting Period Start Date	09/01/2022	Reporting Period End Date	08/31/2023
Submitted By	Stephanie Albaugh	Date Submitted to NIFA	06/05/2023

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

Ann Hazelrigg

802-355-0144

ann.hazelrigg@uvm.edu

Recipient Organization

UNIVERSITY OF VERMONT & STATE

85 S PROSPECT ST

Burlington, VT 054051704

DUNS No. 066811191

Performing Department

Ext - Programming & Fac Sup

Co-Project Directors

Skinner, Margaret

Darby, Heather

Bradshaw, Terence

Departments

{NO DATA ENTERED}

Ext - Programming & Fac Sup

Plant & Soil Science

Non-Technical Summary

The VT EIP is aligned with IPM needs of the diverse crops and audiences in Vermont and includes the Primary Priority areas of IPM Implementation in: Agronomic Crops, Specialty Crops (Tree Fruit/Grapes, Greenhouse/High Tunnel/Nursery crops), Communities, and IPM for Pollinator Health. Secondary Priority areas of IPM Support for Pest Diagnostic Facilities and IPM Education for Pesticide Applicators will serve as resources for all Primary Priority areas. Each Priority area advances the goals of the CPPM program by developing new IPM tools and tactics promoted through education and outreach programs to increase adoption of IPM by new stakeholders, established growers and consumers that reduce pesticide use, crop losses due to pests and disease, decrease production costs and reduce health and environmental risks. National IPM Roadmap goals integrate through all program areas by promoting adoption of IPM in landscapes and gardens, mentoring students for a new generation of IPM scientists, tackling challenges of invasive and emerging pests and by forging collaborative relationships with northeast stakeholders and other CCPM programs to achieve long-term solutions to regional pest management challenges. The VT EIP includes specialists in plant pathology, entomology, horticulture, agronomy, pesticide education and community outreach. Each Priority area solicits stakeholder input on pest management challenges through surveys and develops IPM tactics and programs to meet those needs. Impacts of programs are shared on our VT EIP website and the VT IPM Stakeholder Advisory Team.

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-In this project we will identify the disease and pests that challenge northeast growers. Farmers will learn to ID pests in their fields, learn if their seed sources are disease free and learn the best agronomic practices to minimize pest damage. Our goal is to help farmers design robust crop systems that successfully address pest challenges to produce a

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

diversity of food and feed grains while minimizing impacts on the environment.

Tree Fruit/Grapes-Goals include timely delivery of IPM information to apple and grape growers; orchard pest monitoring training and assessment, and 'natural' grape production evaluation. Outreach communications will integrate site- and region-specific weather and pest models based on NEWA information to provide timely information to growers

Greenhouse/High Tunnel/Nursery-Goals include addressing grower needs while improving environmental sustainability and profitability of the greenhouse industry in ME, NH and VT through IPM strategies learned at workshops, individual instruction, and outreach education.

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

Pollinator Health-Goals include educating growers and home gardeners on the importance of pollinator protection through agronomy outreach, habitat plantings, on-line presentations, and pesticide applicator training.

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 providing IPM education for current and prospective pesticide applicators through training opportunities, newsletter, online IPM courses, and regional meetings.

What was accomplished under these goals?

Each facet of the VT EIP is 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. **Agronomy Field Days & Conferences participants have increased knowledge of prevalent pests, IPM practices to minimize crop impact, including managing seedborne diseases.** 63% of orchards have changed management practices to improve identification and management. "Helped confirm importance of cultivating beneficials and tolerating some damage." Up to 77% of Greenhouse/High Tunnel/Nursery Tri-State IPM participants have learned new techniques they intend to use this year including biocontrol use, sanitation strategies, abiotic disorder diagnosis. 68% of Master Gardener Helpline clients implemented the IPM strategies recommended and 54% reduced or avoided the use of pesticides, saving \$124 per client on pesticide costs. Up to 89% of pesticide applicators are likely to adopt at least one new IPM practice to protect pollinators following trainings. 85% of Plant Diagnostic Clinic clients implemented recommended IPM strategies and 66% reduced their the use of pesticides, saving \$600 per client on pesticide costs. "I plan to make more use of this service in the future as I continue to understand how beneficial it can be." Annual pesticide certification meeting, webinar, and online course participants are likely to use pesticides more safely and adopt IPM practices, including protective equipment, worker protection, container recycling, and reading labels. Please see the following accomplishments for more details.

Agronomy Field Days & Winter Conferences

- Fall Field Day
 - 88% increased knowledge of prevalent pests, IPM to minimize crop impact
- Small Grain Webinar Series
 - 76% increased knowledge of prevalent pests, IPM to minimize crop impact
- Hemp Conference
 - 94% increased knowledge of prevalent pests, IPM to minimize crop impact
 - 82% intend to implement an IPM practice to manage pests in hemp
- Annual Crop & Soil Field Day
 - 84% increased knowledge of hemp/grain/hop pests, IPM to minimize crop impact
 - 56% intend to implement a new IPM strategy to manage pests
 - 45-93% will purchase certified seed, improve crop rotation, buy tolerant/resistant varieties, modify mechanical cultivation
- Small Grain, Dry Bean Farm Tours
 - 98% increased knowledge of prevalent pests, IPM to minimize crop impact
 - 90% intend to implement an IPM practice to manage pests in hemp
- Dry Bean Webinar Series:
 - 88% increased knowledge of prevalent pests, IPM to minimize crop impact
 - 70% intend to implement an IPM practice to manage pests in hemp
- Small Grain Webinar Series
 - 76% increased knowledge of prevalent pests, IPM to minimize crop impact
 - 62% intend to implement an IPM practice to manage pests in hemp
- Hemp Conference
 - 96% increased knowledge of prevalent pests, IPM to minimize crop impact
 - 90% intend to implement an IPM practice to manage pests in hemp

Accession No. 1027204

Project No. VTN-FP1180

Hop and Hemp Disease Survey

- 100% increased knowledge of pest scouting, pest identification, IPM to manage pest pressure/crop impact

Seed Quality Testing

- 96% increased knowledge of prevalent diseases, IPM to minimize crop impact
 - 76% intend to implement a new IPM strategy to manage seedborne diseases
 - 62-92% will purchase certified seed, improve crop rotation, buy tolerant/resistant varieties, manage harvest to segregate lots of seed

Tree Fruit/Grape Extension Outreach Education

- 2023 VT Tree Fruit Growers Assoc Annual Meeting
 - 91-100% moderate/considerable knowledge of Core IPM Concepts, Insect/Disease IPM Strategies, Updated VT

Pesticide Policy

- 90% moderately/very likely to adopt at least one new IPM practice
- 63% have changed a management practice in 2022 (better timing, identification)
- "Helped confirm importance of cultivating beneficials and tolerating some damage"
- "Good to talk with other growers facing similar issues and using different approaches"

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 89% average usefulness rating for solving pest management problems
 - 77% learned new techniques they intend to use this year
- 58-73% increased knowledge of biological control, integrating chemical pesticides with biological control, sanitation strategies, disorder diagnosis
 - 26-42% intend to use biocontrol use/release information, pesticide-biocontrol compatibility strategies, sanitation strategies, abiotic disorder ID/management techniques

Master Gardener Helpline

- 90% said the info they received on IPM strategies that addressed their questions
- 68% implemented the IPM strategies recommended
- 54% reduced or avoided the use of pesticides
- \$124 average individual saving in pesticide costs

Pesticide Education Pollinator IPM Training

- 2022 Commercial Pesticide Applicator Meeting
 - 98% moderate/considerable knowledge of Reducing Pesticide Risk to Pollinators
 - 88% moderately/very likely to adopt at least one new IPM practice to protect pollinators
- 2023 VT Pesticide Applicator Meeting
 - 96% moderate/considerable knowledge of Reducing Pesticide Drift Risk to Pollinators
 - 84% moderately/very likely to adopt at least one new IPM practice to protect pollinators
- 2022 & 2023 Initial Pesticide Certification Meetings
 - 89% moderately/very likely to adopt at least one new IPM practice to protect pollinators

Plant Diagnostic Clinic Diagnostics

- 85% clients said diagnostic ID helped to manage their pest problem with IPM
- 66% clients able to reduce pesticides as a result of the IPM information
- \$600 average per client estimated cost savings by reducing pesticide use
- "This ultimately saved an entire crop of almost 25,000 mums"
- "Helpful in suggesting cultural control options before going to typical pesticide solutions"
- "The information I received meant I was able to give recommendations to commercial growers that provided alternatives to pesticide use"
 - "I plan to make more use of this service in the future as I continue to understand how beneficial it can be"

Pesticide Certification Meetings

- 2022 Commercial Pesticide Applicator Meeting
 - 98% moderate/considerable knowledge of PPE for Pesticides, Ag Container Recycling
 - 94% moderately/very likely to apply/use pesticides more safely

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

- 92% moderately/very likely to adopt at least one new IPM practice
- 2023 VT Pesticide Applicator Meeting
 - 92-98% moderate/considerable knowledge of Pesticide Compatibility, Worker Protection Standards, Respirator Safety & Fit Testing
 - 90% moderately/very likely to apply/use pesticides more safely
 - 79% moderately/very likely to adopt at least one new IPM practice
- 2022 & 2023 Initial Pesticide Certification Meetings
 - 51-97% moderately/very likely to apply/use pesticides more safely
 - 81-84% moderately/very likely to adopt at least one new IPM practice
 - "Because I'm so new to the industry, this meeting has been very helpful"
 - "Good overview of the regulations and strategies for pest management"
 - "Went over all the basics and stressed the importance of reading the label"
 - "Helped me consider how to better buy, store, and apply pesticides"

Pesticide Applicator Report

- 103 Spring 2022 recertification credits issued

Pesticide Applicator Extension Outreach Education

- Mindful Pest Management. Master Gardener Advanced Training Webinar
 - 91-100% moderate/considerable knowledge of reading pesticide labels, pesticide regulations, pesticide exposure/risk
 - 100% moderately/very likely to apply/use pesticides more safely
 - 93% moderately/very likely to adopt at least one new IPM practice
 - "Professional and inviting on a topic that is not always welcome!"
- On-demand online training
- 98% moderately/very comfortable with the manual information
- 100% moderately/very likely to apply/use pesticides more safely
- 95% moderately/very likely to adopt at least one new IPM practice

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. Conference proceedings and meeting videos will be posted to our website.

Tree Fruit/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 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, Master Gardener Helpline, advanced training, newsletter, state reports, website, and emails.

Pollinator: IPM information is distributed through each responsible program area networks.

Plant Diagnostic Clinic: IPM information is distributed through sample diagnosis, websites, meetings, presentations, webinars, newsletters, television, radio, factsheets, emails, and phone calls. Northeast Small Fruit and Vegetable IPM Working Group education/research priorities will be shared on the NE IPM center website.

Pesticide Applicator: IPM information is distributed through presentations, newsletters, online courses, factsheets, website, emails, and phone calls.

What do you plan to do during the next reporting period to accomplish the goals?**Continuation of objectives:****Agronomy Field Days & Winter Conferences**

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

- Planning for annual events

Hop and Hemp Disease Survey

- Survey for diseases and plant health at northeast hop and hemp farms

Seed Quality Testing

- Offer annual seed quality testing for grains and corn farmers

Agronomy Extension Outreach Education

- Ongoing activities (presentations, website, etc.)

Orchard Scouting Network

- Training/data collection at selected orchards

Grape 'Natural' Production Evaluation

- Pest damage, crop yield, and juice quality data collection at selected vineyards

Tree Fruit/Grape Extension Outreach Education

- Ongoing activities (presentations, website, etc.)

Greenhouse/High Tunnel/Nursery Tri-State IPM

- Planning for next event to be held 2024

Greenhouse/High Tunnel/Nursery IPM First

- Continue to offer individual grower instruction and IPM Factsheets on key pests

Greenhouse/High Tunnel/Nursery Extension Outreach Education

- Ongoing activities (presentations, website, etc.)

Master Gardener Course

- Evaluate 2023 course
- Planning course to be held 2024

Master Gardener Helpline

- Ongoing service answering questions on insect, weed, and disease problems and IPM strategies

Master Gardener Advanced Training

- Offer webinars with factsheets on emerging insect, weed, and disease problems and IPM strategies for management

Agronomy Pollinator Education

- Pest Assessment Plan evaluation

Greenhouse/High Tunnel/Nursery Pollinator Plantings

- Continue to support established habitat plantings and bee nesting boxes

Master Gardener Pollinator Education

- Continue to offer on-line presentation and factsheets

Pesticide Education Pollinator IPM Training

- Continue to deliver pollinator module at Initial Pesticide Certification Meetings
- Invite pollinator speakers to 2024 Vermont Pesticide Applicator Meeting

Plant Diagnostic Clinic Diagnostics

- Continue to provide stakeholders with rapid and accurate diagnosis and current IPM recommendations that consider pollinator health.

Northeast Small Fruit and Vegetable IPM Working Group

- Query group for potential meeting in 2023-2024

Plant Diagnostic Clinic Extension Outreach Education

- Ongoing activities (presentations, website, etc.)

Pesticide Certification Meetings

- 2024 Initial Pesticide Certification Meeting
- 2024 Vermont Pesticide Applicator Meeting

Pesticide Applicator Report

- Fall 2023, Spring 2024 issues

IPM and Pesticide Basics

- Course will be available Summer 2023

Pesticide Applicator Extension Outreach Education

- Ongoing activities (presentations, website, etc.)

Participants

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

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	0.1	0	0	0	0.1
Professional	0.9	0	0	0	0.9
Technical	0.4	0	0	0	0.4
Administrative	0.3	0	0	0	0.3
Other	0.5	0	0	0	0.5
Computed Total	2.2	0	0	0	2.2

Student Count by Classification of Instructional Programs (CIP) Code

{NO DATA ENTERED}

Target Audience

Commercial field, forage and oil seed growers, vegetable and berry growers, apple and grape growers, nursery and greenhouse operators, landscapers, pesticide applicators, Master Gardeners, beekeepers, home gardeners and general public

Products

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	NO

Citation

Bradshaw, T. & S. Kingsley-Richards. 2023. Commercial Horticulture: Grapes. <https://www.uvm.edu/extension/horticulture/grapes>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	NO

Citation

Bradshaw, T. & S. Kingsley-Richards. 2023. Commercial Horticulture: Tree Fruit. <https://www.uvm.edu/extension/horticulture/tree-fruit>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	NO

Citation

Darby, H. 2023. Northwest Crops and Soils Program. <https://www.uvm.edu/extension/nwcrops>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	NO

Citation

Darby, H. 2023. Champlain Valley Crop, Soil and Pasture Team. <https://www.uvm.edu/extension/cvcrops>

United States Department of Agriculture
Progress Report

Accession No. 1027204	Project No. VTN-FP1180
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Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Hazelrigg, A. 2023. Plant Diagnostic Clinic. <https://www.uvm.edu/extension/pdc>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Hazelrigg, A. 2023. UVM Extension Master Gardener. <https://www.uvm.edu/extension/mastergardener>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Hazelrigg, A. & S. Kingsley-Richards. 2023. Pesticide Safety Education Program.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Awaiting Publication	2023	YES

Citation

Pelletier, B. and T. Bradshaw. Defining 'Natural' wine in New England: Results from a stakeholder survey. Submitted to III International Symposium on Beverage Crops. Acta Hort.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Awaiting Publication	2023	YES

Citation

Pelletier, B. and T. Bradshaw. Managing grape disease in Vermont with mineral-based and biologically-derived fungicides: Preliminary results. Submitted to III International Symposium on Beverage Crops. Acta Hort.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Under Review	2023	YES

Citation

Sullivan, C.F., Davari, A., Parker, B.L., Skinner, M. A Guardian Plant System for Management of *Frankliniella occidentalis* (Thysanoptera: Thripidae) in Greenhouse Ornamentals. Pest Mange. Sci.

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Sullivan, C.E.F. and Skinner, M. 2023. Greenhouse IPM: <https://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Sullivan, C.E.F. and Skinner, M. 2023. High Tunnel IPM:
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/HighTunnelIPM.html>

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2023	YES

Citation

Sullivan, C.E.F. and Skinner, M. 2023. Landscape IPM:
<https://www.uvm.edu/%7Eentlab/Landscape%20IPM/LandscapeIPM.html>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2022	NO

Citation

Bradshaw, T. Question those assumptions: Success with modern orchard systems demands attention to the details. Proc. 2022 New England Vegetable & Fruit Conference. Manchester, NH. <https://newenglandvfc.org/proceedings/>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2022	YES

Citation

Bradshaw T., Autio, W. Blatt, S. Clements, J. Einhorn, T. Elkins, R. Fallahi, E., Francescato, P., Lordan, J., Minas, I., Peck, G., Robinson, T., and Yao, S. 2023. Performance of 'Modi' apple trees after 5 years under Organic management as affected by several dwarf rootstocks in the 2015 NC-140 Apple Rootstock Trial. J Am Pom Soc. (APS) 77:14-27
http://www.pubhort.org/aps/77/v77_n1_a2.htm

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2022	YES

Citation

Bradshaw, T. and L.P. Berkett. Vineyard disease management that works: Using IPM to minimize pesticide applications while managing diseases in cold climate winegrape varieties. Proc. 2022 New England Vegetable & Fruit Conference. Manchester, NH. <https://newenglandvfc.org/proceedings/>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2022	YES

Citation

Foster, J. Kingsley-Richards, S.L., and Bradshaw, T. 2022. Effect of Summer Hedging on Return Bloom, Yield, Tree Growth, and Juice Quality of Apples Grown for Cider. Acta Hort. 1346, 439-446. DOI: 10.17660/ActaHortic.2022.1346.56

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2022	YES

Citation

Foster, J., Kingsley-Richards, S.L. and Bradshaw, T.L. (2022). Summer applications of NAA and ethephon show little effect on return bloom, yield, tree growth, and juice quality of cider apple cultivars. Acta Hort. 1346, 511-518 DOI: 10.17660/ActaHortic.2022.1346.65.

Accession No. 1027204

Project No. VTN-FP1180

Other Products**Product Type**

Other

Description

Agronomy Field Days & Winter Conferences (participants)

- Fall Field Day: hemp, small grains seed health relationship to crop health/yields 10/22/21 (116)
- Small Grain Webinar Series: small grains production, seed quality, head diseases, storage, IPM Provided links to scouting tools and factsheets 3/22,3/24, 3/30, 4/5, 4/6/22 (146)
- Hemp Conference: production, disease management, weed management, arthropod management. Shared links to scouting tools, factsheets, and goScout 3/15 & 3/16/22 (108)
- Annual Crop & Soil Field Day: hemp, hops, small grains pest identification, scouting, and management. Provided pest management guides and training on goScout 7/28/22 (180)
- Small Grain, Dry Bean Farm Tours: production, pest management, rotations, storage, seed quality. 2/14, 2/15/23 (64).
- Dry Bean Webinar Series: bean production, weed control, rotations, markets. Provided links to research reports and factsheets. 2/17, 3/3/23 (170)
- Small Grain Webinar Series: small grains production, seed quality, head diseases, storage, IPM Provided links to scouting tools and factsheets 3/23, 3/24, 3/31/23 (148)
- Hemp Conference: production, disease management, weed management, arthropod management. Shared links to scouting tools and factsheets. 2/23/23 (102)

Product Type

Data and Research Material

Description

Hop and Hemp Disease Survey

- 3 hop farms in MA/VT visited in August to assess hop cone disease incidence and severity. Samples taken from varieties exhibiting disease symptoms. Disease identification completed by the UVM Plant Diagnostic Clinic. Diseases identified included, downy mildew, Alternaria cone disease, botrytis, and powdery mildew. Farms provided results and disease management factsheets.
- 5 hemp farms in VT visited approaching harvest time. Plants assessed for overall health and signs of disease. Scouting sheets shared with the farmers.

Product Type

Data and Research Material

Description

Seed Quality Testing

- 225 small grain and corn samples submitted by farmers for mycotoxin analysis, seedborne disease assessment, and/or germination rate. A disease factsheet accompanies the results.

Product Type

Other

Description

Agronomy Extension Outreach Education

- 3 blog posts (174 subscribers) <http://blog.uvm.edu/outcroprn> : Industrial Hemp Regional Scouting Pest Survey update, When to Test for Aflatoxins, Managing Disease on Hemp Farms
- 1 factsheet: When to Test for Aflatoxins. https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/Aflatoxins_FactSheet.pdf

United States Department of Agriculture
Progress Report

Accession No. 1027204

Project No. VTN-FP1180

Product Type

Data and Research Material

Description

Orchard Scouting Network

- 4 orchards scouted by undergraduate UVM Agroecology and Extension (AX) Fellows weekly with growers, results reported in program newsletters
- 8 other orchards visited by AX Fellows with UVM Extension personnel for in-depth consultations on production issues

Product Type

Data and Research Material

Description

Grape 'Natural' Production Evaluation

- 2 vineyards conducted research on organic disease management: four biofungicides combined with low-rate sulfur and/or copper effects on disease/crop yield and quantity, cultivar evaluation better-suited for 'grower standard' organic disease management.
- Survey results: 'natural' methods included those used in organic production (mineral fungicides, biofungicides, biodynamic preparations and other alternatives) with few producers 'very satisfied' with management practices leaves considerable room for improvement.

Product Type

Other

Description

Tree Fruit/Grape Extension Outreach Education

- 162 subscribed to vtapplegrower@list.uvm.edu listserv; 298 subscribed to vermontgrape@list.uvm.edu listserv
- 56 UVM Fruit blog posts <http://go.uvm.edu/ogreu>
- 122 grower consultations
- Session planning/presentations: 2023 Vermont Tree Fruit Growers Assoc. Annual Meeting 2/17/23 (65 participants)
- Presentations (participants):
 - Vineyard disease management that works. 2022 New England Vegetable and Fruit Conference. Manchester NH. 12/15/22 (45)
 - Question those assumptions: Success with modern orchard systems demands attention to the details. 2022 New England Vegetable and Fruit Conference. Manchester NH. 12/14/22 (85)
 - Apple Insect Management in Cider Apple Production Systems. West Virginia University Cider School. Online 6/8/22 (35)
 - Northeast Cider Apple Project. New England Extension Fruit Consortium Winter Webinar Series 3/22/22 (100)
 - Defining 'Natural' wine in New England: Results from a stakeholder survey. Oral presentation to III ISHS International Symposium on Beverage Crops, Murcia, Spain. 4/25/23 (53)
 - Managing grape disease in Vermont with mineral-based and biologically-derived fungicides: Preliminary results. Poster presentation to III ISHS International Symposium on Beverage Crops, Murcia, Spain. 4/25/23 (53)
- 7 journal articles

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Tri-State IPM

- 100 participants (including presenters and organizers) The ABCs of a Better Crop: new pesticide chemistries and biocontrol compatibility, scheduling biocontrol releases, disorder diagnosis and management, sanitation strategies, UV light for thrips and powdery mildew, Systems Approach to Nursery

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

Certification (SANC), top diseases from 2022. Pesticide recertification certificates @4 credits each 1/19/23, 1/26/23
<https://go.uvm.edu/iu58h>

Product Type

Educational Aids or Curricula

Description

Greenhouse/High Tunnel/Nursery IPM First

- 40+ growers provided ongoing support as needed
- 120+ consultations (site visits, email exchanges, phone calls, insect id requests, etc.)

Product Type

Other

Description

Greenhouse/High Tunnel/Nursery Extension Outreach Education

- 20 presentations (~ 1000 participants)
- Microbial Biocontrol: An Emphasis on Greenhouse Pests and Ticks with Fungal Biopesticides. BioControl Lecture Series. 4/27/23
- Annual Grower Tour: Claussen's Greenhouse led by Lori King, IPM Specialist. 4/13/23
- High Tunnel Pests Old & New. Vermont Vegetable & Berry Growers Association Spring Seminar Series. Online Webinar. 3/8/23 <https://www.youtube.com/watch?app=desktop&v=whmDx7X0sAk&feature=youtu.be>
- Communicating Scouting Information. Online Certificate Course/Webinar. 3/8/ 23
- How to Make Scouting Easier. Online Certificate Course/Webinar. 3/1/ 23
- Whitefly Natural Enemies. Greenhouse Scout School. Online Certificate Course/Webinar. 3/1/ 23
- Aphid Natural Enemies. Greenhouse Scout School. Online Certificate Course/Webinar. 2/22/ 23
- Some Critical Questions to Consider While Scouting Greenhouse Ornamentals. Greenhouse Scout School. Online Certificate Course/Webinar. 2/ 22/ 23
- Identification of spider mite natural enemies. Greenhouse Scout School. Online Certificate Course/Webinar. 2/15/ 23
- Identification of thrips natural enemies. Greenhouse Scout School. Online Certificate Course/Webinar. 2/8/ 23
- Identification of fungus gnat & shorefly natural enemies. Greenhouse Scout School. Online Certificate Course/Webinar. 2/1/ 23
- Vegetable IPM in High Tunnels. VT USDA NRCS Integrated Pest Management Training. (online). 2/6/23
- UV to Manage Western Flower. Pest management research short reports & open discussion. Tri-State Greenhouse IPM Workshop. Online 1/19/23
- Self-sustaining Beauveria bassiana granules for the biological control of Western flower thrips, Frankliniella occidentalis. ESA, ESC, and ESBC Joint Annual Meeting Incorporating Microbials into the Culture of IPM; On-Demand Presentations. Vancouver, British Columbia. Online 11/13-11/16/22
- Benefits for beneficials – habitat plantings discussion. Research Highlights Tour - Vermont Nursery and Landscape Association Summer Meeting. UVM Horticulture Research Facility 8/25/22
- Benefits for Beneficials: Habitat Hedges. Public webinar in place of cancelled on-site demo (rain). Online 8/17/22
- Habitat plantings in field vegetables to attract beneficials. UVM Farmer Training Program Guest Lecturer. UVM Horticulture Research Facility 7/13/22
- High Tunnel Pests & Natural Enemies 101. UVM Farmer Training Program Guest Lecturer. UVM Horticulture Research Facility 7/13/22
- Un-Bee-lievable Beneficials 101. UVM Master Gardener Seminar. Online 5/25/22
- Plant-Mediated Systems for High Tunnels. Mid Atlantic Fruit and Vegetable Convention February 2022.
- Attraction of Beneficial Insects in Field Vegetable Production. Poster. 20 23
- 2 factsheets: High tunnel scouting for beginners, Syrphid (hover) flies of Vermont
- 1 email listserv blurb (~900 subscribers)
- 2 newsletter articles:
 - Magnificent Marigolds and Awesome Alyssum: Plant-Mediated Systems for High Tunnels. Rodale Institute Pocono Organic Center Newsletter, October 2022

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

- Be on the lookout for Aphid Problems in High Tunnels. VVBA Electronic Newsletter 7/1/22
<https://www.uvm.edu/vtvegandberry/newsletter/7-1-22.pdf>

- 1 journal article
- 1 new high tunnel IPM webpage High Tunnel Production ToolKit <https://www.uvm.edu/~htunnel/>, maintained 5 existing webpages (> 4,000 visitors)

Product Type

Educational Aids or Curricula

Description

Master Gardener Course

- No course offered in 2022, 2023 course underway

Product Type

Other

Description

Master Gardener Helpline

- 953 IPM questions answered (3/1/22-4/30/23)
- Program uses a hybrid approach -- phone and online (through Ask Extension) -- to manage public gardening questions

Product Type

Other

Description

Master Gardener Advanced Training

- Soil Health Webinar: Nutrient Management Planning for Lawn & Garden. UVM Master Gardener Helpline Annual Spring Training 3/9/22 (19 participants and 9 recording views)
- Garden Pests for 2022 Webinar 4/21/22 (27 participants and 12 recording views)
- Mindful Pest Management Webinar 6/29/22 (20 participants and 212 recording views)
- "Bringing Nature Home to Vermont" and "IPM Update: Looking Back & Looking Forward" keynote presentations annual UVM Extension Master Gardener Conference 12/3/22 (120 participants)
- Winter Peas as Dual-Use Crops Webinar 2/22/23 (18 participants and 40 recording views)
- Jumping Worm Research Update Webinar 3/22/23 (56 participants and 103 recording views)
- Indigenous Culture & Plant Use Webinar 4/26/23 (27 participants and 22 recording views)

Product Type

Educational Aids or Curricula

Description

Agronomy Pollinator Education

- 3 Pollinator Protection Factsheets
- Neonicotinoids and Risk Management https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/Neonicotinoids_Risk_Management.pdf
- Seedcorn Maggot and Neonicotinoid Seed Treatments in Row Crops https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/Seedcorn_Maggot_and_Neonicotinoid.pdf
- Wireworm and Neonicotinoid Seed Treatments in Row Crops https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/Articles_and_Factsheets/Wireworm_and_Neonicotinoid.pdf
- 10 Pest Assessment Plans with corn and soybean farmers included scouting/monitoring techniques with bait and sticky traps for early season/other pests, suggestions to minimize movement of insecticide dust provided. Seed not treated with neonicotinoids provided to measure the impact of scouting on pest damage.

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

Product Type

Data and Research Material

Description

Greenhouse/High Tunnel/Nursery Pollinator Plantings

- 6 sites habitat plantings, educational signs and brochure holders established
- 900 beneficial habitat plantings brochures distributed
- 1 factsheet
- 1 poster presentation
- 6 presentations (~175 participants)

Product Type

Other

Description

Master Gardener Pollinator Education

- Un-Bee-lievable Beneficials 101 5/25/22 (13 participants and 55 recording views)
- Solitary Bee Box House Making 7/10/22 (13 participants)
- Benefits for Beneficials: Habitat Hedges 8/17/22 (9 participants and 127 recording views)

Product Type

Educational Aids or Curricula

Description

Pesticide Education Pollinator IPM Training (participants)

- Reducing Pesticide Risk to Pollinators in Pest Management. Commercial Pesticide Applicator Meeting, live online: 3/28/22 (58)
- Reducing Pesticide Drift Risk to Pollinators in Pest Management. Vermont Pesticide Applicator Meeting, live online: 3/20/23 (64)
- Pollinators. Initial Pesticide Certification Meetings: White River Junction VT 4/19/22 (27), Burlington VT 4/21/22 (33), West Lebanon NH 4/18/23 (36), Burlington 4/20/23 (44)

Product Type

Other

Description

Plant Diagnostic Clinic Diagnostics

- 166 Commercial samples diagnosed, IPM information provided.
- ~100 email pictures diagnosed, IPM information provided

Product Type

Other

Description

Northeast Small Fruit and Vegetable IPM Working Group

- Met online with specialists to develop priorities. Priority rankings at <https://www.northeastipm.org/neipm/assets/File/Priorities/Priorities-VegetableIPMWG-2022.pdf>

Product Type

Other

Description

Plant Diagnostic Clinic Extension Outreach Education

- Newsletters: Four articles for The Dirt: "Observations from the UVM Plant Diagnostic Lab". <https://greenworksvermont.org/news-events/the-dirt/>. 350 subscribers.
- Presentations (participants)
 - Tree Diseases. UNH Pesticide Supervisory workshop. Online 1/12/22 (30)
 - Climate Change Panel VT Garden Network panelist. Online 1/12/22 (30)

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

- Planning committee and Root disease recap. Tristate IPM Conference. Online 1/20/22 and 1/27/22 (63)
- UVM Plant Diagnostic Clinic updates. Northeast Plant Diagnostic Network 1/31/22 (20)
- Pests and Diseases of Past and Future. Hanover Garden Club. Online 2/1/22 (35)
- Vermont Hemp research projects. Fourth Annual NE Hemp Conference. Online 3/16/22 (107) eval.
<https://na.eventscloud.com/website/35699/>
- PSS 124 Agroecology Class 3/17/22 (55)
- Diseases and Pests of the Garden and Landscape. Friends of the Horticulture Farm. Online 3/19/22 (40)
- Moderator and two presentations: Diseases of Vegetable Crops, Diseases of Landscape Plants. Ft Ticonderoga Garden Series. Ft. Ticonderoga, NY 4/2/22 (50)
- PSS 021 Sustainable Vegetable Class 4/8/22 (30)
- NE APS meeting President and Moderator online division meeting 4/21-4/22/22 (40)
- Pest and disease. UVM Master Gardener NW Chapter 4/21/22 (40)
- PSS 145 Farm Management Class 4/22/22 (35)
- VT Blueberry Twilight meeting on Pollinators. Stowe VT 6/2/22 (20)
- Vegetable Diseases. Farmer Training Program HRC. South Burlington VT 6/24/22 (40)
- Farm Practices for Pollinator Health, Soil Health, and Pest Management. Intervale Community Farm Burlington VT 7/13/22 (40)
- Disease Field walk. Farmer Training Program HRC. South Burlington VT 7/27/22 (20)
- Tree Diseases. UNH Pesticide Supervisory workshop. Manchester NH 9/21/22 (30)
- UVM PSS 124 Agroecology Class 10/12/22 (50)
- Master Gardener Fall wrap up. Pests and diseases of 2022. 11/10/22 (20) <https://www.youtube.com/watch?v=n-p8qRWbs1l>
- Plant Diagnosis. UVM P BIO Plant Pathology (40)
- Diseases Global to Local. UVM Master Gardener State Conference 12/3/22 (122, 9 states)
- NE Vegetable and Fruit Growers Conference. Manchester NH 12/13-12/15/22 (1200)
- = Farmer to Farmer Session on Vegetable disease (30)
- = Co-Moderator Blueberry Session I and II (90)
- = Winter Growing and Diseases presentation (100)
- Diseases and Pests of 2022. VT Nursery and Landscape Association Flower Show. Essex Jct VT 3/3/23 (100)
- VT Biofungicide Study. Connecticut Cannabis Symposium. Storrs CT 3/16/23 (40)
- MG Lecture Plant Pathology Q and A. Online 3/16/23 (100)
- Diseases and Pests of 2022 and Beyond. UVM EMG Southeast Chapter. Webinar 3/20/23 (60)
- FT Ticonderoga Gardening Symposium. Ticonderoga NY 4/1/23 (60)
- Middlebury Garden Club 4/11/23 (50)
- Rutland Garden Club 4/11/23 (50)
- UVM PSS 124 Sustainable Vegetable Production 4/14/23 (35)

Product Type

Other

Description

Pesticide Certification Meetings (participants)

- Commercial Pesticide Applicator Meeting, live online 3/28/22 (58)
- Initial Pesticide Certification Meetings: White River Junction 4/19/22 (27), Burlington 4/21/22 (33)
- Vermont Pesticide Applicator Meeting, live online 3/20/23 (64)
- Initial Pesticide Certification Meetings: West Lebanon NH 4/18/23 (36), Burlington 4/20/23 (44)

Product Type

Other

Description

Pesticide Applicator Report

- Spring 2022, Fall 2022, Spring 2023 issues (1574 subscribers)

Progress Report

Accession No. 1027204

Project No. VTN-FP1180

Product Type

Educational Aids or Curricula

Description

IPM and Pesticide Basics

- "IPM: Integrated Pest Management" brochure published with Vermont Master Gardener

<https://www.uvm.edu/sites/default/files/Extension-Community-Horticulture/Resources/IPMOverview2023.pdf>

Product Type

Other

Description

Pesticide Applicator Extension Outreach Education

- Mindful Pest Management. Master Gardener Advanced Training Webinar <https://youtu.be/b2HN88X4-7E> 6/29/22 (20 participants) & included in 2023 Master Gardener Course assignments
- Pesticide Certification Intro. PSS 281 Professional development for undergraduates. 2/28/23
- On-demand online training <https://www.uvm.edu/extension/pseponline> (participants)
 - Vermont Pesticide Safety Education: CORE Manual Review (no credit) (24)
 - Vermont Pesticide Safety Education: CORE Manual Review, Unit #1 (1 credit) (4)
 - Vermont Pesticide Safety Education: CORE Manual Review, Unit #2 (1 credit) (2)
 - Vermont Pesticide Safety Education: CORE Manual Review, Unit #3 (1 credit) (2)
 - Vermont Pesticide Safety Education: CORE Manual Review, Unit #4 (1 credit) (2)
 - Vermont Pesticide Education: Managing Pests While Protecting Pollinators (1 credit) (2)
 - Vermont Pesticide Education: Category 7A Manual Review (no credit) (6)
 - Vermont Pesticide Education: Category 7A Manual Review, Unit #1 (1 credit) (2)
 - Vermont Pesticide Education: Category 7A Manual Review, Unit #2 (1 credit) (3)
 - Vermont Pesticide Education: Category 7A Manual Review, Unit #3 (1 credit) (2)
 - Vermont Pesticide Education: Category 7A Manual Review, Unit #4 (1 credit) (2)
 - Vermont Pesticide Education: Category 7F Manual Review (no credit) (2)
 - Vermont Pesticide Education: Category 7F Manual Review (2 credit) *new* (0)
- Pesticide credit administration
 - 2022 Northeast Extension Fruit Consortium Winter Webinar Series (7 events)
 - = 306 VT certificates @1 credit each
 - = 180 participants certified
 - Commercial Pesticide Applicator Meeting, live online 3/28/22
 - = 58 VT certificates @4 credits each; 4 NY certificates @1.75 credits each
 - = 60 participants certified
 - Vermont Pesticide Applicator Meeting, live online 3/20/23
 - = 48 VT certificates @4 credits each; 8 NY certificates @3.5 CORE credits each
 - = 55 participants certified
 - Vermont Pesticide Safety Education: On-demand online training
 - = 19 VT certificates @1 credit each

Changes/Problems

- Master Gardener Course: not offered in 2022 due to staff changes.
- Tree Fruit/Grape: a late spring destructive frost in Vermont will impact fruit assessment in 2023.
- No changes/problems of note for other program areas.