



Primary Priority Area: IPM Implementation in Specialty Crops: Apples and Grapes Terry Bradshaw

Orchard/Vineyard Scouting Network

- x 11 orchards scouted weekly, 2019 season; 6 orchards + 1 vineyard fruit assessed
- x Third-party online reporting platform adopted.

IMPACTS:

- o



Primary Priority Area: IPM Implementation in Specialty Crops: Ornamentals/vegetables in greenhouses/high tunnels and nursery settings  
Margaret Skinner

#### Tri-State IPM Workshop

- x The 23<sup>rd</sup> annual event held in ME NH VT (New natural enemies, effective biocontrol, hand-quality control of product shipments, disease management, use of Agdia ImmunoStrip® pathogen tests, greenhouse lighting and a sprayer calibration demo, grower discussion how IPM works in their operation) Jan 7<sup>th</sup>, 2020 (125+attendees)

<https://www.uvm.edu/~entlab/Greenhouse%20IPM/Workshops/2020/IPMWorkshop2020.html>

#### IMPACTS:

- o 62% of the attendees were new to workshop series this year or did not attend the event last year, 78% of attendees had attended one of IPM workshops in the past
- o 93% learned new techniques they intend to use this year (spray techniques, beneficial release strategies, monitoring methods (indicator plants and sticky card placement), natural enemy quality control and efficient lighting strategies)
- o 69% used biological control in the past year, similar to the past 2 years.
- o 56% of the attendees indicated they used some form of a plant medicine system in their

- o 91% of past participants increased use of biological controls
- o 73% increased use of plant-mediated IPM systems
- o 73% decreased use of chemical pesticides
- o 55% increased use of biopesticides
- o 100% indicated an increased scouting and monitoring frequency and the ability to ID insect and biocontrols
- o 82% increased their prevention of pest problems through cultural controls.
- o 64% use of biological controls (predators, parasites, pathogens)
- o 82% use of plant-mediated IPM systems (trap, banker, habitat plants)
- o 27% use of biopesticides as chemical pesticide alternatives
- o 27% use of less toxic chemical pesticides
- o 91% ID pests prior to treating
- o 82% use of sticky cards for monitoring
- o 64% inspect incoming plant shipments for pests
- o 73% inspect plants by tapping on white surface
- o 64% routine crop scouting/monitoring
- o 45% weed removal
- o 73% use University insect/disease clinics
- o 55% attend TriState Greenhouse IPM workshop
- o 72% reduced the amount of chemical pesticide by >25%

Presentations:

- x Skinner, M., C.F. Sullivan & E. Sanchez. 2020. Habitat plants to support beneficials in high tunnels: The best things in life are free. Mid-Atlantic Fruit & Vegetable Conference, 28 Jan. Hersey, PA.
- x Skinner, M. & C. F. Sullivan. 2019. IPM for High Tunnel Vegetables: Practical Pathways for Organic Crop Protection. Farm-to-Farmer Conf., M0 1 Tf81 (f)49-4.11 (n)-4.2 Tw 1dt

- x 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 2019.
- x <https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/Habitat%20Plants%20in%20High%20Tunnels%20Natural%20Enemies%202019%20version.pdf>
- x Sullivan, C.E.F. & M. Skinner. 2019. Habitat Harbors Happiness. Habitat planting awareness sign for high tunnel production. Univ. of VT Entomology Research Laboratory. PennState Ag Progress Days, Rock Springs, PA. August 13-15, 2019.
- x <https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/Habitat%20Harbors%20Happ%200Awareness%20Sign%20Habitat%20Plants%202019%20UVM.pdf>

Next Round of Funding: Hold the 24<sup>th</sup> annual TriState Greenhouse workshops in ME, NH and VT. Continue individualized training at IPM First site visits and visits to previous participants. Prepare studies and continue to update website with resources, sending messages and resources via the Greengrower listserv and posts to social media.

Primary Priority Area: IPM Implementation in Communities  
Ann Hazelrigg and Beret Halverson

Master Gardener Course

- x Delivered through web platform. Plant Diagnostic Clinic Program Support Team lectures: entomology, plant pathology, turf care. Jan 7-May 22, 2020 (110 students)
- x 326 EMG volunteers, 91 projects/events, 23,360 hrs, 1,319,515 contacts with public about pesticide reduction, pest identification, IPM strategies (2019).
- x Television: Across the Fence <https://www.youtube.com/watch?v=lcZqYkL5POA>
- x

## Master Gardener Advanced Training

### Workshops

#### x Forest Pests 07/29/2019 (12 attendees)

##### IMPACTS:

- o 100% of participants indicated moderate/considerable general knowledge following presentation on Emerald Ash Borer Habitat, Life Cycle, Detection (signs and symptoms), Management strategies, and How to report
- o 20% of participants learned something that will reduce use of pesticides.
- o "This was a very informative workshop! The information will be very valuable to me and to whom I pass it on to!"
- o "I look forward to more workshops like this. The information is the point, I appreciate that."

#### x Choosing Vegetable Varieties for Disease Resistance 08/22/19 (17 attendees)

##### IMPACTS:

- o 100% of participants indicated moderate/considerable general knowledge following presentation on choosing disease resistant vegetable varieties, research plants before buying and planting them, timing of planting to avoid

x Insect Identification 7/12/2019 (36 attendees)

IMPACTS:

- o 94.44% of participants indicated moderate/considerable general knowledge following presentation on timing of planting to avoid pest pressure, regularly inspect plants to detect possible problems early, use of traps or sticky cards to monitor insect, pest, weed or disease, proper weed control strategies, choice of biological control instead of pesticide, choice of less toxic pesticide to manage an insect pest, weed or disease, physically removing insect pests, keeping record of what management strategies have worked in the past.
- o 28.57% learned something that will reduce their use of pesticides
- o "It's always helpful to walk through an actual, local garden or farm and talk with an expert in real time - and even see some of the insects about which we were talking! This type of learning really helps to cement information that one might gain by reading or lectures."

Next Round of Funding: March of 2021 the 2018-2020 Master Gardener Course students will be surveyed to assess if they adopted an IPM practice and reduced their use of pesticides. We will survey Master Gardener Helpline clients at the end of the year to see if they adopted an IPM practice that reduced pesticide use. Offer EMG course in 2021. Factsheets will be developed to be used during workshops

Primary Priority Area: IPM for Pollinator Health

Orchard Pollinator Survey

- x 2 orchards surveyed monthly, 2019 season; abundance, diversity catalogued  
<http://www.uvm.edu/%7Efruit/pubs/2019pollinatorassessment.pdf>

Next Round of Funding: Pan traps in two orchard blocks collected monthly, identify and catalogue collected insects. Apple growers will be surveyed annually to assess level of adoption of specific pollinator protection practices such as timing and choice of pesticides.

Greenhouse/High Tunnel/Nursery Pollinator Habitat Program

- x 10 sites trained to establish pollinators through habitat plantings

IMPACTS:

- o 75% of growers indicated the plantings attracted public attention
- o 100% provided education to customers about their importance
- o 88% did not provide habitat plantings prior to taking part in this program.
- o 100% will continue to establish these plantings after the end of the project.
- o 63% gained considerable knowledge of beneficial insect id
- o 88% gained moderate to considerable knowledge of beneficial life cycles
- o 88% gained considerable knowledge of the types of plants used to attract beneficials
- x 300 habitat mix seed packets distributed at habitat demos and conference presentations.
- x 350 updated habitat planting brochures distributed to retail customers (Bringing In Unbelievable Beneficials)  
<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/Factsheets/UnBelievableBeneficials%20Brochure%20UVM%20updated%202019%2000online.pdf>
- x 1 updated educational sign (Unbelievable Beneficials)  
<https://www.uvm.edu/~entlab/Landscape%20IPM/PollinatorAwarenessSignUVM2019.pdf>



x Presentations & Factsheets

- o Attract & recognize your pest-fighting pollinators & other beneficial insects. Vermont Greenscape Association 27th Annual Turfgrass Conference & Trade Show. West Lebanon, NH. December 3, 2019 (>100 attendees)  
<https://www.uvm.edu/~entlab/Landscape%20IPM/Powerpoints/VT%20Greenscape%20Attracting%20Natural%20Enemies%20Cheryl%20Sullivan%20Dec2019.pdf>
- o Skinner, M. & C.F. Sullivan. 2019. Native Solitary Bees: How to Support Them. Univ. of VT, Entomology Research Laboratory, Burlington, VT. 2 pp.

Next Round of Funding: Continue to establish and monitor habitat plantings, work ~~one~~ with growers, distribute consumer brochures and erect signs at participating sites about protecting beneficial insects and updates on websites and social media.

Master Gardener Pollinator Short Course

- x Currently under development to launch in May of 2020 on eXtension course website.

Next Round of Funding: We are currently developing the course website and the course advertising materials, such as the flyers website, social media posts, press releases and setting up the pre and post course surveys.

Secondary Priority Area: IPM Implementation in Pest Diagnostic Facilities - Hazelrigg

Plant Diagnostic Clinic Disease/Insect/Weed Diagnostics

- x 500+ samples diagnosed, IPM information provided
  - x 100+ email pictures diagnosed, IPM information provided
- IMPACTS:
- o 96% commercial clients used IPM to manage their pest problem
  - o 75% commercial clients were able to reduce pesticides
  - o "I got positive ID of specific pathogens and consult about how to deal with them".
  - o "It is a vital resource for farmers in VT."

Extension Outreach Education

- x Presentations (>1000 attendees)
  - o NE Vegetable and Berry Conference. High Tunnel Tomato Diseases. Manchester, NH. 12.12.19
  - o NE Vegetable and Berry Conference. Diseases and Pest Roundtable. Manchester, NH. 12.11.19
  - o NH Certified Crop Advisor Conference. Portsmouth NH. 1.30.20
  - o VT Vegetable and Berry Annual Conference Fairlee, VT. 1.28.20
  - o UVM Master Gardener (MG) State Conference. Diseases and Climate Change. Shelburne, VT. 11.2.19
  - o NH Supervisory Pesticide Training. Diseases of Trees and Shrubs. Goffstown, NH. 9.19.19
  - o UVM Master Gardener Advanced Training on vegetable diseases. Burlington, VT. 8.22.19
  - o Vegetable IPM Farm Workshop Series. Sunshine Valley Farm, Rochester, VT. 8.12.19
  - o UVM Farmer Training Program Disease Field workshop. Burlington, VT. 7.26.19
  - o Vegetable IPM Farm Workshop Series. Intervale Farm, Burlington, VT. 7.10.19.19
  - o Vegetable IPM Farm Workshop Series. Sam Mazza Farm, Colchester, VT. 6.10.19
  - o UVM Farmer Training Plant Pathology lecture. Burlington, VT. 6.5.19
  - o UVM Master Gardener Spring Training. Burlington, VT. 4.10.19 (25)
  - o Eighth Annual Garden & Landscape Symposium. Pests and Problems in 2018 and What to Watch for in 2019. Ft Ticonderoga, NY. 4.6.19
  - o Commercial Pesticide Applicators Meeting. Middlebury, VT, 4.5.19 (60)



- o Vermont Pesticide Safety Education: CORE Manual Review, Unit #4 (1 credit) (2)
  - IMPACTS:
  - 100% moderately/very comfortable with the manual information
  - 100% very likely to apply and use pesticides more safely & adopt at least one new IPM practice
  - "Presentations were clear, pleasant and a good summary of the manual."
  - "I appreciate the highlights and emphasis given to the most critical content."
- o Vermont Pesticide Education: Category 7A Manual Review (no credit) (new)
- x Online pollinator health training
  - o Currently in the process of developing 3 online short courses for Pollinator Health for Blueberry, Apple and Nursery growers and accompanying facts. Course will be launched summer 2020