

Progress Report

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|------------------------------------|--|----------------------------------|------------------|
| Title: | Supporting IPM on Diverse Massachusetts Farms through the Integration of Applied Res & Ext Outreach | | |
| Sponsoring Agency | NIFA | Project Status | ACTIVE |
| Funding Source | Non Formula | Reporting Frequency | Annual |
| Accession No. | 1013932 | Grants.gov No. | |
| Project No. | MASN00105 | Award No. | 2017-70006-27137 |
| Project Start Date | 09/01/2017 | Proposal No. | 2017-04501 |
| Reporting Period Start Date | 09/01/2017 | Project End Date | 08/31/2018 |
| Submitted By | William Miller | Reporting Period End Date | 08/31/2018 |
| | | Date Submitted to NIFA | 06/05/2018 |

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

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Recipient Organization

UNIVERSITY OF MASSACHUSETTS
COMMONWEALTH AVE
Amherst, MA 01003
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Performing Department

Cranberry Station - Extension

Co-Project Directors

Clements, Jon
Saalau Rojas, Erika
Campbell-Nelson, Katherine

Departments

U of Massachusetts Extension
Cranberry Station
Extension

Non-Technical Summary

Massachusetts is the 3rd most densely populated state; MA farm land is very valuable and often sought after for development. Despite this pressure, farmers steward over 523,500 acres, >10% of the MA land base. There are 7,755 farms (of which 2,651 are vegetable, berry, and fruit farms) in the state. The total number of farms has been steady since 2007, however the number of vegetable farms increased by more than 400 (28%) in the same time frame. Averaging 68 acres in size, 95% of MA farms easily fit the USDA definition of small farms, bringing in less than \$64,000 annually. Even with constant economic and biological pressures, MA farmers are committed to being efficient business owners and effective pest managers, optimizing the output of their small-scale specialty crop farms to meet consumer demands. MA farms generate over \$490 million in total sales per year with 47% from sales of specialty crops such as apples, strawberries, and cucurbits. MA has almost 300 farmers' markets and ranks 1st nationally by percentage of farms with Community Supported Agriculture (CSA).

Through increased adoption and implementation of effective IPM strategies, this EIP Project will support National Integrated Pest Management (IPM) Road Map goals of achieving increased profitability while reducing human health and environmental hazards. We will address stakeholder-identified priorities by integrating applied research and outreach activities for specialty crop growers in Massachusetts. Massachusetts produces more than 70 types of specialty crops and many of the farmers we work with grow more than 30 different crops on their farms. This project will focus on whole-farm IPM approaches tailored to fit diverse specialty crop growers. Specific commodity issues identified as high priorities by growers will be addressed through our applied research and demonstration trials and outreach programs.

We will promote IPM implementation by working closely with individual growers to adopt and apply IPM practices on their farms, conduct applied research trials to address grower-identified issues, host hands-on training and education, and collaborate with state agencies and Northeastern Extension personnel to develop and disseminate innovative educational and training resources. Evaluation and economic specialists on our team will provide expertise to increase our understanding of the influence of environmental and socioeconomic factors that affect farming decisions. We will use our current working relationships with individual stakeholders to engage Mentor, Partner, and Collaborator farmers, an outreach model we have

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successfully deployed over the past 6 years. Our leadership and partnership roles with Extension colleagues in New England and industry and regulatory organizations will continue to further IPM implementation for specialty crop farms in MA. Responding to stakeholder-identified needs, we will expand our skill capacity by participating in professional development programs to improve technical and educational support for MA specialty crop growers.

Accomplishments

Major goals of the project

Our Project has Three Overall Goals:

1. Improve IPM practices and strategies related to emerging, invasive, and established pests of specialty crops;
2. Increase IPM implementation and promote whole-farm sustainability through outreach and training activities and demonstrating effective technological strategies; and
3. Promote adoption of IPM by expanding and improving the skill capacity of Extension personnel, IPM practitioners, and growers.

Specific objectives for Goal 1 include establishing research and demonstration trials on Partner Farms, including University research stations, and obtaining monitoring data from Collaborator Farms that will direct management decisions and improve outcomes for the grower community at-large. Goal 2 objectives include training Mentor Farmers, providing timely diagnostics, bridging language barriers, and participating in regional digital reporting systems. Goal 3 objectives include acquiring skills in farm business management and information technology as well as obtaining and providing expanded capacity in weed research/outreach for vegetable and fruit farmers.

What was accomplished under these goals?

Massachusetts is the 3rd most densely populated state; MA farm land is very valuable and often sought after for development. Despite this pressure, farmers steward over 523,500 acres, >10% of the MA land base. There are 7,755 farms (of which 2,651 are vegetable, berry, and fruit farms) in the state. The total number of farms has been steady since 2007, however the number of vegetable farms increased by more than 400 (28%) in the same time frame. Averaging 68 acres in size, 95% of MA farms easily fit the USDA definition of small farms, bringing in less than \$64,000 annually. Even with constant economic and biological pressures, MA farmers are committed to being efficient business owners and effective pest managers, optimizing the output of their small-scale specialty crop farms to meet consumer demands. MA farms generate over \$490 million in total sales per year with 47% from sales of specialty crops such as apples, strawberries, and cucurbits. MA has almost 300 farmers' markets and ranks 1st nationally by percentage of farms with Community Supported Agriculture (CSA).

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Goal 1: Improve IPM Practices and Strategies for Emerging and Established Pests

- **Emerging Pests that Affect Multiple Specialty Crops.**

UMass Fruit Team members coordinated and maintained monitoring networks for brown marmorated stink bug (BMSB), spotted-wing Drosophila (SWD), winter moth (WM) and scale. Findings were shared with the UMass iPiPE project (Garofalo and Clements).

- **Advanced Apple IPM.**

Five weather station sites are established in southern New England established for the purpose of validating apple scab predictive models used in Decision Support Systems (DSS). Three Mentor Farms in MA worked with team members to increase their use of cultural controls and reduced-risk pesticides for apple scab and summer diseases. The same growers received additional training on fire blight prediction and management.

- **Brassica IPM.**

The 2018-2019 issue of the New England Vegetable Management Guide was published in print and on-line, with several project personnel serving as Editor or Contributor.

- **Efficacy of Organic Pesticides.** 2 presentations given (see "Other Products" section).

Goal 2A: Increase IPM Implementation and Promote Whole-Farm Sustainability through Outreach and Training

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Activities**• Training scouts and IPM implementation on Mentor Farms.**

We hosted our annual Advisory Group meeting for the EIP grant. Growers who had previously participated in our program as Mentor Farmers shared their experiences to enhance recruitment of new Mentor Farmers for our new grant. EIP Team members (Lass and Morzuch) gave a presentation on IPM Decision Making and Business Management. In Spring 2018, IPM planning sessions were conducted at all Mentor Farms. Farm visits started in April. EIP Economists participated in planning interviews to provide guidance for business and/or economic goals.

• Provide timely and accurate specialty crop disease/pest diagnostics.

Apple scab outbreak consultation was conducted at Mountain Orchard, Granville, MA on 5 acres of 'MacIntosh' apples. 9/13/17. Infestations of cranberry scale were confirmed at two different locations in mid-late April 2018.

• Conduct Workshops and Training.

More than 20 presentations were given during the reporting period to support the EIP Project. See "Other products section".

• Bridge Language Barriers.

We have generated a draft survey to be used as a needs assessment that will guide our future outreach efforts and development of resources for farmers to overcome language barriers on the farm. This assessment tool will be sent out to growers once the team has had a chance to review the survey questions.

• Promote Commonwealth Quality Program (CQP).

Sandler and Sylvia have worked with Botelho and other MDAR staff to create an audit package for cranberries destined for the fresh market. A feedback session with stakeholders was held May 8, 2018 (11 attending). A launch of the cranberry program is planned for Summer 2018.

Goal 2B: Increase IPM Implementation and Promote Whole-Farm Sustainability through Demonstrating Effective Technological Strategies**• Digital Recordkeeping.**

Currently growers can log in and access their plans and reports. Work is ongoing to improve this interface.

• Optimizing Technology Utilization on Specialty Crop Farms.

We met with Skycision, a drone-enabled software company. A flight demonstration was performed on-site at the UMass Cranberry Station and a workshop was conducted (by Skycision personnel) on the applicability and adaptability of UAS for specialty crops.

• Using Integrated Pest Information Platform for Extension and Education (iPiPE).

Two undergraduate interns have been hired as result of this project (see Training section). They will work in collaboration with EIP fruit team members to provide additional scouting and trap monitoring at all sites currently participating with the fruit program.

• Weather Stations and Sensors.

We coordinated a network of 26 RainWise and Onset weather stations. Data were checked weekly and equipment was repaired as needed. Communications with growers about stations and data were accompanied with advice and questions about IPM and decision support systems (DSS). The EIP project finances the link between these 26 stations plus 20 more airport weather stations and New York State NEWA system.

Goal 3: Promote IPM Adoption by Improving and Expanding Skill Capacity and Evaluating Progress**• Business Management and IPM Decision Making.**

Lass and Morzuch met with several entering Mentor farmers to provide guidance on business goal planning. The Team reached a consensus to explore the development of an enterprise budget for one vegetable, one small/tree fruit and one cranberry farm for the project.

• Weed Management.

As soon as weeds emerged, cataloging of persistent weeds on Partner Farms began. A weed management workshop for organic vegetable farmers is planned for July.

• Assessing Change in Behavior and Condition from IPM Extension Efforts.

None to report at this writing.

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

Lass developed an instructional/outreach presentation on the microeconomic foundations for farm-level decision-making. The presentation focused on farm production choices, the related costs of production and the profits earned at different levels of production. The basic microeconomic principles that would drive optimal farm choices were presented and discussed at the IPM Planning meeting at Brigham Hill Community Farm (Grafton, MA) to 31 farmers and educators. In addition to the key principles of microeconomic theory, an illustration showing application of these principles to adoption of new production technology in the nursery industry was included. Extension personnel were interested in obtaining spreadsheets that could assist in computing costs of IPM practices.

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How have the results been disseminated to communities of interest?

We gave more than 40 workshops, presentations, and/or training sessions during the reporting period; more than 2,500 growers attended these educational sessions. We published 5 newsletters (35 issues total) that reached more than 4,000 specialty crop growers. We participate in Regional IPM "call-ins" and working groups, which help to strengthen our Extension network and re-focus our educational efforts as needed. Almost all of the EIP Team members are part of the organizing committee for the New England Vegetable and Fruit Conference, a bi-yearly event that attracts more than 1,500 growers from across New England. This 3.5 day event offers multiple opportunities for Extension personnel and growers to share experiences and information on specialty crop production.

What do you plan to do during the next reporting period to accomplish the goals?**Goal 1: Improve IPM Practices and Strategies for Emerging and Established Pests**

- **Emerging Pests that Affect Multiple Specialty Crops.**

We will monitor emerging pests in Mentor, Partner, and Collaborator Farms and other sites as dictated by need. We will collaborate with Integrated Pest Information Platform for Extension and Education (iPiPE) and UMassIT. Emerging pests include spotted wing Drosophila (SWD), winter moth (WM), brown marmorated stink bug (BMSB) and Scale (cranberry); we will also include Japanese Knotweed (JK).

- **Advanced Apple IPM.**

Team members will educate growers on fungicide alternatives against apple scab (AS), including orchard sanitation and use of forecasting models for AS and Summer Disease Complex (SBFS) to optimize pesticide efficiency. Mentor and Partner Farmers will receive alerts when medium and high risks for Fire Blight (FB) are present. In Year 2, growers' experience with weather stations and model outputs on the Network for Environment and Weather Applications (NEWA) should enable them to handle their own FB risk management. They will present results from applied research projects to growers at state and regional meetings and through Extension publications and will host a workshop demonstrating drift-reduction strategies and improve targeted spray application.

- **Brassica IPM.**

Outputs and expected deliverables will include presentations and other publications on improved strategies to manage Brassica pests. We will use results from trials and demonstrations to develop newsletter articles, web-based fact sheets, and workshops. New invasive pests will be monitored through our scouting efforts, Collaborator Farms, and in Brassica pest trials; best management practices will be developed and shared with growers.

- **Efficacy of Organic Pesticides.**

We will conduct at least one study in 2018 on organic pesticide efficacy. Results will be shared with growers through field days, newsletter articles and web-based factsheets. Results will also be shared with the extension community.

Goal 2A: Increase IPM Implementation and Promote Whole-Farm Sustainability through Outreach and Training Activities

- **Training scouts and IPM implementation on Mentor Farms.**

We will visit at least 10 Mentor Farms regularly throughout the season to scout, assess problems, and provide hands-on training for scouting and pest identification. Invasive pests will be monitored at all of these locations. We will interview all Mentor Farmers at the end of the season to determine implementation success and challenges.

- **Provide timely and accurate specialty crop disease diagnostics.**

We will work with the Diagnostic Lab to prepare reports that emphasize cultural controls and promote the importance of IPM and the use of disease forecast models. Outreach activities will focus on hands-on activities to properly identify and manage pest problems during field days. We will provide education on forecasting models, fungicide efficacy and resistance management.

- **Conduct Workshops and Training.**

Our priority topics include pesticide training targeting organic growers, WPS and nutrient compliance and regulations, bee conservation and weed management training, with other subjects addressed as dictated by grower needs. Workshops and trainings are a mainstay of our education outreach efforts and will continue for 2018.

- **Bridge Language Barriers.**

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We will generate a survey to be used as a needs assessment that will guide our future outreach efforts and development of resources for farmers to overcome language barriers on the farm. In 2018-19, we will develop language resources such as factsheets, vocabulary and phrase guides, produce 1 short video, and to host IPM related workshops such as WPS training in Spanish.

- **Promote Commonwealth Quality Program (CQP).**

We will partner with MDAR/CQP Coordinator, Mr. M. Botelho, to work with Mentor Farmers to improve their IPM practices to meet CQP standards. The CQP fruit and vegetable checklists, which describe and assign point values to practices, will be reviewed and updated to ensure they are current, science-based, meaningful, and workable. Our Vegetable and Fruit Teams will include Botelho and MDAR's expanding CQP support staff in on-farm trainings, field walks and twilight meetings to prepare inspectors/auditors to use the IPM checklists in the field.

Goal 2B: Increase IPM Implementation and Promote Whole-Farm Sustainability through Demonstrating Effective Technological Strategies

- **Digital Recordkeeping.**

We plan to add grower self-service logins during the upcoming year. The IT Consultant (Cavanagh) will identify another IT expert who could assist the EIP Team in the event that he is not available.

- **Optimizing Technology Utilization on Specialty Crop Farms.**

We have a 1-year subscription for data analysis and image stitching with Skycision. We will share our experience using UAS and image sensing with growers via workshops and meetings. We will develop a fact sheet and/or BMP on the use of unmanned aerial systems on specialty crops.

- **Using Integrated Pest Information Platform for Extension and Education (iPiPE).**

We will evaluate the efficacy of three different organic weed control practices: straw mulch, wood chip mulch and acetic acid. We will implement a trial in hazelnuts and has potential use in other (tree fruit) perennial cropping systems. Information will be shared with our regional Extension colleagues to inform IPM decisions across state lines.

- **Weather Stations and Sensors.**

UMass Fruit team members will coordinate a network of weather stations. Data from all stations will be checked weekly and equipment will be repaired as needed. Communications with growers about stations and data will be accompanied with advice and questions about IPM and decision support systems (DSS). We will train the growers to maintain those stations. We will conduct outreach about DSS and encourage the use of the expanded HELP features available on the NEWA site.

Goal 3: Promote IPM Adoption by Improving and Expanding Skill Capacity and Evaluating Progress

- **Business Management and IPM Decision Making.**

The Team will explore the development of an enterprise budget for one vegetable, one small/tree fruit and one cranberry farm for the project. In 2018-19, Lass and Morzuch will conduct a workshop for growers and others to address the needs identified in Year 1. We will examine the factors that influence whole-farm management decisions.

- **Weed Management.**

During the 2018 season, Ghanous and Garofalo will interview growers to assess specific needs and survey orchards and vegetable and small specialty crop farms to determine the frequency and intensity of problematic annual and perennial weeds. Ghanous and Garofalo will implement an IPM plan with selected Mentor Farmers in 2018. They will conduct at least one workshop to promote use of effective IPM techniques for managing weeds on specialty crop farms in 2018-19. One Partner Farm project will be developed for 2018 and weed IPM support will be provided to other fruit and vegetable growers through field walks, newsletter articles, pest alerts, fact sheets and workshops.

- **Information Technology (IT) Professional Development.**

Extension personnel will conduct one (1) webinar (related to workshops, trainings, and identified priorities) in 2018-19. We will expand our knowledge, use and development of web-based applications.

- **Assessing Change in Behavior and Condition from IPM Extension Efforts.**

During 2018-19, we will use the IPM Toolkit as a guide to improve our evaluation process and focus on one-on-one interviews with growers to obtain relevant information and conduct analyses to identify trends in progress. This assessment will allow us the opportunity to make adjustments to optimize achievement of our short, intermediate, and long-range goals.

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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 | 3.2 | 0 | 0 | 0 | 3.2 |
| Professional | 9.5 | 0 | 0 | 0 | 9.5 |
| Technical | 0.8 | 1 | 0 | 0 | 1.8 |
| Administrative | 0.8 | 0 | 0 | 0 | 0.8 |
| Other | 0 | 0 | 0 | 0 | 0 |
| Computed Total | 14.3 | 1 | 0 | 0 | 15.3 |

Student Count by Classification of Instructional Programs (CIP) Code

| Undergraduate | Graduate | Post-Doctorate | CIP Code |
|---------------|----------|----------------|-----------------------|
| 5 | | | 01.11 Plant Sciences. |

Target Audience

Specialty crop growers, Conventional and organic growers, Spanish and English speaking farm workers, Beginning and women farmers, Commonwealth Quality growers, UMass Extension staff, Regional Extension IPM specialists, IPM consultants and scouts, Agricultural service providers, Farm managers and decision makers, Newsletter subscribers, Workshop and meeting attendees, Industry representatives, including drone pilots and trainees

Products

| Type | Status | Year Published | NIFA Support Acknowledged |
|-------|-----------|----------------|---------------------------|
| Other | Published | 2017 | NO |

Citation

Dicklow, MB and L. McKeag, eds. 2017. New England Vegetable Management Guide, 2018-2019 edition.
<https://nevegetable.org>.

| Type | Status | Year Published | NIFA Support Acknowledged |
|-------|-----------|----------------|---------------------------|
| Other | Published | 2018 | YES |

Citation

Ghantous, K., M.Sylvia, and D, Gauvin, eds. 2108. Cranberry Chart Book-Management Guide for Massachusetts.
<http://ag.umass.edu/cranberry/publications-resources>.

Other Products

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Product Type

Other

Description

Campbell-Nelson, K. 2017. Growing our own nitrogen, Results from 6 on-farm trials: Nutrient Management Session. New England Vegetable and Fruit Growers Conference, Manchester, NH. December 14, 2017. 200 attending.

Product Type

Other

Description

Campbell-Nelson, K. 2017 Nitrogen contribution from cover crops for vegetable crop uptake. UMass Extension Research Twilight Meeting and Roundtable Discussion. South Deerfield, MA. September 5, 2017. 50 attending.

Product Type

Other

Description

Cooley, D., J. Clements, E. Garofalo, S. Schloemann, and A. Tuttle. University of Massachusetts Fruit IPM Report for 2017. Volume 82, Fall, 2017. <http://umassfruitnotes.com/v82n4/a3.pdf>.

Product Type

Other

Description

Garofalo, E.W. 2017. Moderator, Farmer to Farmer discussion, Essex City. Blueberry Growers Meeting, Westborough, MA. Nov. 5, 2017. 30 attending.

Product Type

Other

Description

Garofalo, E.W. 2017. Moderator, Farmer to Farmer discussion, Essex City. Blueberry Growers Meeting, Westborough, MA. Nov. 5, 2017. 30 attending.

Product Type

Other

Description

Sandler, H.A. Sprayer calibration. Pesticide Safety Meeting. April 25, 2018. Wareham, MA. 81 attending.

Product Type

Other

Description

Scheufele, S.B. 2018. Growing Fall Cucumbers, Efficacy and economics of downy mildew resistant varieties. 2018 CCE ENYCHP Winter Conference. February 21, 2018. 80 attending.

Product Type

Other

Description

Scheufele, S.B. 2017. Growing fall cucumbers; Efficacy and economics of downy mildew resistant varieties. New England Vegetable and Fruit Growers Conference, Manchester, NH. December 12, 2017. 150 attending.

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Product Type

Other

Description

Scheufele, S.B. 2017. Managing cucurbit downy mildew in fall cucumbers. UMass Extension Research Twilight Meeting and Roundtable Discussion. South Deerfield, MA. September 5, 2017. 50 attending.

Product Type

Other

Description

Sylvia, M. Bees and Pesticides. CPS Spring meeting, Northampton, MA. March 19, 2018. 125 attending.

Product Type

Other

Description

Sylvia, M. Pollinator information at Pollinator Expo, Hammond School, Onset, MA. April 21, 2018. 70 attending.

Product Type

Other

Description

Sylvia, M. Worker Protection Standard trainings. UMass Cranberry Station, East Wareham, MA. March 28, April 12, and April 25, 2018. 17, 15, and 10 attendees, respectively.

Product Type

Other

Description

UMass Extension Staff. April 10, 11, and 12, 2018. Fruit Twilight Meetings. Timely pest management and horticultural updates. 135 attending.

Product Type

Other

Description

Sandler, H.A. and K.M. Ghantous. 2018. Pest management on new cranberry plantings: Horticultural, regulatory, and economic drivers. International IPM Symposia Proceedings, p.97.
https://ipmsymposium.org/2018/Documents/IPMSymp18_Full_Program_with_Abstracts.pdf.

Product Type

Other

Description

Cranberry Newsletter (230 subscribers). Ghantous, Sylvia, and Sandler. Vol 18-19, 5 issues during reporting period.
<http://ag.umass.edu/cranberry/newsletters>.

Product Type

Other

Description

Fruit Notes. (330 subscribers). Autio, editor. Cooley, Clements contributors. 4 issues per year.
<https://ag.umass.edu/fruit/publications/fruit-notes>.

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Product Type

Other

Description

Healthy Fruit (175 subscribers). 9 issues during this reporting period: <https://ag.umass.edu/fruit/healthy-fruit-archive>.

Product Type

Other

Description

IPM Berry Blast (456 subscribers) – 6 issues during this reporting period <https://ag.umass.edu/fruit/ipm-berry-blast>.

Product Type

Other

Description

Veg Notes. (>2800 subscribers). Campbell-Nelson, Scheufele, and McKeag. Vol 29-30, 11 issues during this reporting period. <https://ag.umass.edu/vegetable/newsletters>.

Product Type

Other

Description

Averill, A. Scale, False blossom and blunt-nosed leafhopper. Research and Extension Update Meeting, January 18, 2018. Plymouth, MA. 196 attending.

Product Type

Other

Description

Schloemann, S.G. 2018. Spotted Wing Drosophila Management Update. Rhode Island Fruit Growers Assoc., URI Extension. Ward's Berry Farm, Sharon, MA. April 24, 2018. 45 attending.

Product Type

Other

Description

Clements, J. et al. 2017. "Massachusetts Fruit IPM Report." 79th Annual New England, New York and Canadian Fruit Pest Management Workshop/Working Group. October 24-25 Burlington, VT. App. 65 attending. <http://www.northeastipm.org/neipm/assets/File/TFWG-Massachusetts-Clements.pdf>.

Product Type

Other

Description

Clements, J. 2018. "New Apple Plantings: Rootstocks and Other Decisions." Wisconsin Fresh Fruit & Vegetable Conference. January 22-23, 2018, The Dells, WI. 85 attending.

Product Type

Other

Description

Garofalo, E.W. 2017. Disease Forecast Models: When Climate Changes the Rules. Stockbridge School of Agric. Seminar, Dec. 4, 2017. 25 attending.

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Product Type

Other

Description

Garofalo, E.W. 2017. Disease Forecast Models: When Climate Changes the Rules. New England Vegetable and Fruit Conference Poster Session. Dec. 13, 2017. Manchester, NH. 100+ attending.

Product Type

Other

Description

Garofalo, E.W. 2017. Tree Fruit IPM Workshop. Sixteen Acres Farm, Springfield, MA. March 17, 2018. 28 attending.

Product Type

Other

Description

Scheufele, S.B. 2017. Alternative strategies for managing cabbage aphid in fall brassicas. UMass Extension Research Twilight Meeting and Roundtable Discussion. South Deerfield, MA, September 5, 2017. 50 attending.

Product Type

Other

Description

Scheufele, S.B. 2017. Brassica Pest Management. Growing Better Brassicas, Cornell Cooperative Extension of Eastern NY-Commercial Horticulture Program. Saratoga Springs, NY. November 7, 2017. 70 attending.

Product Type

Other

Description

Schloemann, S.G. 2017. Organic IPM for Strawberries, Maine Organic Farmers & Growers Assoc. Farmer to Farmer Conference. Point Lookout, Northport, ME. Nov. 5, 2017. 30 attending.

Product Type

Other

Description

Campbell-Nelson, K. 2017. Nitrogen Management for Vegetable Farmers: Organic Session. New England Vegetable and Fruit Growers Conference, Manchester, NH. December 13, 2017. 290 attending.

Product Type

Other

Description

Ghantous, K. and M. Sylvia. Resistance management in cranberry. Research and Extension Update, January 18, 2018. Plymouth, MA, 196 attending and Pesticide Safety Meeting, April 25, 2018, Wareham, MA, 81 attending.

Product Type

Other

Description

Sylvia, M. Weevil, bee, and cranberry fruitworm update. Research and Extension Update, January 18, 2018. Plymouth, MA, 196 attending.

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Product Type

Other

Description

Sylvia, M. Fungus and fruit rot-Sampling and Diagnosis. Pesticide Safety Meeting, April 25, 2018. Wareham, MA. 81 attending.

Product Type

Other

Description

Clements, J. and E. Garofalo. 2017. "iPiPE Northeast Apple Crop Pest Program." 79th Annual New England, New York and Canadian Fruit Pest Management Workshop/Working Group. Oct. 24-25. 65 attending.

<http://www.northeastipm.org/neipm/assets/File/TFWG-Clements-iPiPE-Northeast-Apple-Crop-Pest-Program.pdf>.

Product Type

Other

Description

Clements, J. and E. Garofalo. 2017. "iPiPE Northeast Apple Crop Pest Program." Great Lakes Fruit Workers. November 1-2, 2017, Port Huron, MI. App. 45 attending and published in Proceedings of the Great Lakes Fruit Workers.

Product Type

Other

Description

Clements, J. and E. Garofalo. iPiPE Northeast Apple Crop-Pest Program (CPP). Fruit Notes, Volume 83, Winter, 2018.

<http://www.umassfruitnotes.com/v83n1/a1.pdf>.

Product Type

Other

Description

Foley, N., J. Clements, E. Garofalo and P. O'Connor. 2018. "Innovating Apple Pest Data Incidence Collection." iPiPE Mixer, February 6-7, 2018, Raleigh, NC. 55 attending.

Product Type

Other

Description

Clements, J., D. Cooley, and E. Garofalo. 2017. "2017 UMass RIMpro Advisory Service." 79th Annual New England, New York and Canadian Fruit Pest Management Workshop/Working Group. App. 65 attending.

<http://www.northeastipm.org/neipm/assets/File/TFWG-Clements-2017-UMass-RIMpro-Advisory-Service.pdf>.

Product Type

Other

Description

Clements, J., D. Cooley, and E. Garofalo. "2017 UMass RIMpro Advisory Service." Great Lakes Fruit Workers. November 1-2, 2017, Port Huron, MI. App. 45 attending and published in the Proceedings of the Great Lakes Fruit Workers.

Product Type

Other

Description

Clements, J., D. Cooley, and E. Garofalo. 2017 UMass RIMpro Advisory Service. Fruit Notes, Volume 83, Winter,

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2018. <http://www.umassfruitnotes.com/v83n1/a3.pdf>.

Product Type

Other

Description

Clements, J. et al. 2018. "MyIPM: A Smartphone App for Orchard Management." Wisconsin Fresh Fruit & Vegetable Conference. January 22-23, 2018, The Dells, WI. App. 85 attending.

Changes/Problems

Personnel: Dr. Erika Saalau-Rojas, originally a co-PD, left University employment and relinquished her leadership role in the project. She is employed in another sector of the cranberry industry and we anticipate that she will play a minor collaborator role with regards to cranberry disease diagnosis and development of unmanned aerial systems for cranberry. Dr. Angela Madeiras changed responsibilities within the University and has significantly reduced her role in the project. She will continue to provide diagnostic services only. Despite multiple and concerted efforts to recruit a summer weed technician, we were not able to identify a suitable candidate. We decided that Garofalo and Ghantous, with their current expertise and knowledge of weed science, would attend to the extension weed management objectives for Year 1. Budget: Adjustments to meet budget changes for Year 1 were made by eliminating costs associated with hiring a videographer to assist with production of educational videos and reducing IT consulting. Activities: Activity assignments associated with Saalau-Rojas and Madeiras were eliminated. The number of videos anticipated from this project was reduced from 8 to 5 (eliminated videos relating to disease diagnosis and IT development and one of 2 videos on resistance management). IT consulting services for Year 1 were scaled back to focus on the reporting aspect of the grower portal interface. After much discussion, it became apparent that our proposed goal to make the current digital recordkeeping software compatible with Drupal was not logistically viable. Our hope was that this compatibility would enable us to shift the upkeep of the software from the consultant to UMass. Due to various security hurdles, we realized this would not work. We have ceased efforts on this objective and have identified a workable solution.