

## Fruit Team FY2019

### Team Members (directly reporting outputs):

#### Professional Staff

*Sonia Schloemann, (SGS) MS, Extension Educator, Small Fruit and Viticulture, Fruit Team Leader, Interim Ag Prog. Dir.*

*Jon Clements, (JMC) MS, Extension Educator, Tree Fruit, Integrated Orchard Management*

*Elizabeth Garofalo (EWG) MS, Extension Educator, Tree & Small Fruit, IPM, Cider Apples*

*Katherine Ghantous (KMG) MS, Research Assistant, Integrated Pest Management, Weed Science*

#### Faculty

*Wesley Autio, (WRA) PhD., Pomology, Professor and Director Stockbridge School of Agriculture*

*Duane Greene, (DWG) PhD., Pomology, Professor Stockbridge School of Agriculture, Director of UMass Cold Spring Orchard Research & Education Center*

*Daniel Cooley, (DRC) PhD., Fruit Tree Pathology, Professor Stockbridge School of Agriculture*

*Jaime Piñero, (JCP) PhD., Fruit Entomology and IPM, Associate Professor Stockbridge School of Agriculture*

*Hilary Sandler, (HAS) PhD., Extension Faculty, Weed Specialist, Cranberry Specialist, State IPM Coordinator, Director UMass Cranberry Station*

*Elsa Petit, (ELP) PhD., Viticulture and Plant Pathology, Lecturer Stockbridge School of Agriculture*

#### UMass Cold Spring Orchard Staff

*Shawn McIntire, (SM) Farm Superintendent, UMass Cold Spring Orchard Research & Education Center*

*Kristin Hanley, (KMH) Technical Assistant, UMass Cold Spring Orchard Research & Education Center*

*James Cronk, (JC) Technical Assistant, UMass Cold Spring Orchard Research & Education Center*

*James Krupa, (JK) Technical Assistant, UMass Cold Spring Orchard Research & Education Center*

*Jacob Aliengena, (JA) Technical Assistant, UMass Cold Spring Orchard Research & Education Center*

### Description of Plan:

Fruit farms and vineyards provide open space and scenic vistas that add significantly to the quality of life in Massachusetts. The lands surrounding agricultural production provide buffer zones for native species of plants and animals and corridors for their movement or expansion. To remain a vital part of the Massachusetts economy, both new and established growers must learn to produce crops sustainably and to adapt production systems to market opportunities. New varieties provide fruit farmers with opportunities for enhancing production, quality, sales and consumption. Delivering appropriate research-based information on new and alternative fruit species and varieties, advanced horticultural management techniques, marketing and business management strategies, pest-ecology, and pest-management procedures that addresses the current needs of Massachusetts fruit growers is critical to the UMass Extension Fruit program to fulfill its mission and deliver high-quality services. Research on pest ecology and management informs approaches that optimize control, reduce chemical use and increase fruit quality. The knowledge and resources provided by Extension forge successful partnerships with Massachusetts's fruit producers that in turn foster a more secure, diverse and healthful food supply for the Commonwealth.

### Situation & Priorities:

- **Integrated Pest Management** - the fruit program delivers current IPM information and training via publications, newsletters, twilight meetings, educational programs, and other outputs.
- **Economically Viable Food Production** - the fruit program helps growers achieve more economically viable production practices by presenting research based information on new production practices, new crops or varieties, season extension practices, etc. via publications, newsletters, twilight meetings, educational programs, and other outputs.
- **Environmentally Sustainable Food Production** - the fruit program delivers information and training in environmentally sustainable production practices (beyond IPM), with particular attention to organic practices, via publications, newsletters, twilight meetings, educational programs, and other outputs.
- **Safe, local food** - the fruit program delivers information and training in food safety, including for Good Agricultural Practices (GAP) certification, via publications, newsletters, twilight meetings, educational programs, and other outputs.

### Stakeholder Input

The UMass Fruit Team has a long and valued research and education relationship with industry partners, through the Massachusetts Fruit Growers Association, New England Vegetable and Berry Growers Association, Massachusetts Farm Winery and Growers Association, The Massachusetts Cultivated Blueberry Growers Association and other clients and growers. Ongoing communication (via meetings, grower visits, etc.) with these partners is a valuable feedback tool to help plan research and education programs.

### Evaluation Overview

Evaluations are conducted during twilight meetings for pesticide credit. A year-end program survey is conducted to evaluate program outputs and assess impacts. In addition, we rely on observations and communication with growers who provide input.

### Program Goals

**Learning Outcome:** Participants develop knowledge and skills that ensure the economic viability of food production

**Learning Outcome:** Participants develop knowledge and skills that ensure the environmental sustainability of food production

**Action Outcome:** Participants adopt practices that ensure the economic viability of food production

**Action Outcome:** Participants adopt practices that ensure the environmental sustainability of food production

## OUTPUTS:

### PUBLICATIONS

GUIDES, NEWSLETTERS, FACT SHEETS	Number /Issues	Circulation/ Subscriptions
<b>GUIDES</b>		
<b>2019-2020 New England Tree Fruit Management Guide (JMC, EWG, SGS, DRC, JCP)</b> <a href="http://netreefruit.org">http://netreefruit.org</a> <b>J. M. Clements</b> - General Editor <b>E. W. Garofalo</b> - Print/Layout Editor	1	250 hard copies Online access – 30,000+ unique page-views
<b>2019-20 New England Small Fruit Pest Management Guide (SGS, HAS, EWG)</b> <a href="https://ag.umass.edu/fruit/ne-small-fruit-management-guide">https://ag.umass.edu/fruit/ne-small-fruit-management-guide</a> <b>S. G. Schloemann</b> - General Editor	1	800 hard copies Online access – 1,600+ unique page-views
<b>2019 27<sup>th</sup> Annual March Message to Massachusetts Tree Fruit Growers. (JCP, DRC, DWG, JMC, EWG)</b> <a href="https://ag.umass.edu/sites/ag.umass.edu/files/fruit/27th_annual_march_message_2019_.pdf">https://ag.umass.edu/sites/ag.umass.edu/files/fruit/27th_annual_march_message_2019_.pdf</a>	1	25 hard copies 165 email recipients
<b>2019 Core Eco Protocol. v. 2.5 (DRC, JMC, EWG, JCP)</b> <a href="https://ipminstitute.org/wp-content/uploads/2019/04/Red-Tomato-Core-Eco-Protocol-2019-v2_5-032219.pdf">https://ipminstitute.org/wp-content/uploads/2019/04/Red-Tomato-Core-Eco-Protocol-2019-v2_5-032219.pdf</a>	1	100
<b>2019 Eco Apple Supplement, v. 2.9</b> IPM Institute of North America ( <b>DRC, JMC, EWG, JCP</b> ) <a href="https://ipminstitute.org/wp-content/uploads/2019/04/Red-Tomato-Eco-Apple-Supplement-2019-v2_9-032219.pdf">https://ipminstitute.org/wp-content/uploads/2019/04/Red-Tomato-Eco-Apple-Supplement-2019-v2_9-032219.pdf</a>	1	100
<b>2019 Eco-Stone Fruit Protocol. v. 2.5.</b> IPM Institute of North America ( <b>DRC, JMC, EWG, JCP</b> ) <a href="https://ipminstitute.org/wp-content/uploads/2016/06/Red-Tomato-Eco-Stone-Fruit-Supplement-2019-v2_5-051319.pdf">https://ipminstitute.org/wp-content/uploads/2016/06/Red-Tomato-Eco-Stone-Fruit-Supplement-2019-v2_5-051319.pdf</a>	1	100
<b>2019 Eco Apple Spray Guide, v. 10.2</b> IPM Institute of North America ( <b>DRC, JMC, EWG, JCP</b> ) <a href="https://ipminstitute.org/wp-content/uploads/2019/04/Eco-Apple-Spray-Guide-2019-v10_2-032219.pdf">https://ipminstitute.org/wp-content/uploads/2019/04/Eco-Apple-Spray-Guide-2019-v10_2-032219.pdf</a>	1	100
<b>2019 Eco Apple App, (DRC, JMC, EWG, JCP)</b> UMass Amherst, Red Tomato, IPM Institute and Northeast SARE. App Store-Apple (IOS) and Google Play (Android). Play. <a href="https://play.google.com/store/apps/details?id=io.zigbop.ecoapple">https://play.google.com/store/apps/details?id=io.zigbop.ecoapple</a>	1	100
		<b>TOTAL: 1,740</b>

NEWSLETTERS, ALERTS AND QUARTERLIES produced by Fruit Team members	Number /Issues	Circulation/ Subscriptions
Fruit Notes ( <b>WRA</b> ) <a href="https://ag.umass.edu/fruit/publications/fruit-notes">https://ag.umass.edu/fruit/publications/fruit-notes</a>	4	130
Grape Notes/Northern Grapes Project ( <b>SGS</b> ) <a href="https://ag.umass.edu/fruit/grape-notes">https://ag.umass.edu/fruit/grape-notes</a>	11	144
Healthy Fruit Newsletter ( <b>JMC, EWG, JCP, SGS</b> ) <a href="https://ag.umass.edu/fruit/publications/healthy-fruit">https://ag.umass.edu/fruit/publications/healthy-fruit</a>	21	165
IPM Berry Blast ( <b>SGS</b> ) <a href="https://ag.umass.edu/fruit/ipm-berry-blast">https://ag.umass.edu/fruit/ipm-berry-blast</a>	15	508
Cranberry Station Newsletter ( <b>HAS</b> ) <a href="http://ag.umass.edu/cranberry/newsletters">http://ag.umass.edu/cranberry/newsletters</a>	6	226
<b>Total</b>		<b>1,173</b>

ARTICLES/PAPERS
<b>Articles in Refereed and Non-refereed Professional Publications:</b>
Bolton, L.G., <b>J. C. Piñero</b> , and B. A. Barrett. 2019. Electrophysiological and behavioral responses of <i>Drosophila suzukii</i> (Diptera: Drosophilidae) towards the leaf volatile $\beta$ -cyclocitral and selected fruit ripening volatiles. Environmental Entomology (in press).
Burcham, D.C., <b>W.R. Autio</b> , K. James, Y. Modarres-Sadeghi, and B. Kane. 2020. Effect of pruning type and severity on vibration properties and mass of Senegal mahogany ( <i>Khaya senegalensis</i> ) and rain tree ( <i>Samanea saman</i> ). Trees. ACCEPTED FOR PUBLICATION.
<b>Clements, J. M.</b> 2019. <i>IFTA Tours Ontario</i> . Fruit Notes 84 (4) pp 5-6.
<b>Clements, J. M., W. R. Autio</b> , M. Muehlbauer, W. Cowgill. 2019. Update on the 2014 NC-140 Honeycrisp and Aztec Fuji Rootstock Trials in New Jersey and Massachusetts. Fruit Notes 84 (2) pp 15-18.
<b>Cooley D. R.</b> , and Harriman, Inc. 2019. <i>The Impact of Climate Change on Agriculture</i> . Massachusetts Municipal Vulnerability Preparedness Program Proceedings. 41 pp.
Cowgill, W., <b>J. M. Clements</b> . 2019. Suggested New Apple Variety: Crimson® Gold (Svatava cv). Fruit Notes 84 (4) pp 11-12.
Follett, P.A., <b>J. C. Piñero</b> , S. Souder, L. Jamieson, B. Waddell, and M. Wall. 2019. Host status of 'Scifresh' apples to the invasive fruit fly species <i>Bactrocera dorsalis</i> , <i>Zeugodacus cucurbitae</i> , and <i>Ceratitis capitata</i> (Diptera: Tephritidae). J. Asia-Pacific Entomol. 22: 458-470
<b>Garofalo, E. W., D. R. Cooley</b> . 2018. <i>When Weather Goes Wrong: Managing Apple Scab Under a Changing Climate</i> . American Phytopathological Society. Plant Health Instructor Case Study. <a href="https://www.apsnet.org/edcenter/foreducators/TeachingNotes/Pages/WeatherGoesWrong.aspx">https://www.apsnet.org/edcenter/foreducators/TeachingNotes/Pages/WeatherGoesWrong.aspx</a> .
<b>Garofalo, E. W., J. M. Clements</b> . 2019. <i>Small Steps to a Big Future for Massachusetts Cider Apples</i> . Fruit Notes 84 (2) pp 11-14.
<b>Garofalo, E. W., D. R. Cooley, J. M. Clements</b> . 2018. <i>RIMpro and Apple Scab in New England: Accuracy and Grower Adoption</i> . New York Fruit Quarterly. New York Horticultural Society. Vol. 26. No. 4. Pp 14-16.
Ghostlaw, T., <b>W.R. Autio</b> , M. Corradini, and A. Kinchla. 2020. Impact of various postharvest wash water conditions on the performance of peracetic acid against <i>Escherichia coli</i> O157:H7 over time. Food Control. In press <a href="https://doi.org/10.1016/j.foodcont.2019.106891">https://doi.org/10.1016/j.foodcont.2019.106891</a> .

Giorgio, T., L.S. Adler, and <b>H.A. Sandler</b> . <i>Differential response to azoxystrobin by Colletotrichum species isolated from Massachusetts cranberries</i> . Plant Health Progress (under review).
<b>Green, D. W., J. Krupa</b> . 2019. <i>Evaluation of Metamitron as a Chemical Thinner on Apples</i> . Fruit Notes 84 (3) pp 8-10.
<b>Greene, D. W.</b> <i>Benefits of Using High Rates of ReTain on Honeycrisp</i> . 2019. American Fruit Grower 139(8):18-19.
<b>Greene, D. W.</b> <i>Evaluation of Metamitron as a Chemical Thinner for Apples</i> . 2019. Horticultural News 99:8-10
Kon, T., J Schupp and <b>D. W. Greene</b> . <i>Influence of BA and NAA and blossom thinning on thinning of Gala apples</i> . HortScience (In Press)
McArtney, S., J. D. Obermiller, J. Racsco, <b>D. W. Greene</b> and S. Drahn. <i>Evaluation of Trunk Injection as a Method for Delivering Fruit Thinning Agents to Apple Trees</i> . HortScience (In Press)
Muehlbauer, M., W. Cowgill, <b>J.M. Clements</b> , and <b>W.R. Autio</b> . 2019. <i>Update on the 2014 NC-140 Honeycrisp and Aztec Fuji rootstock trials in New Jersey and Massachusetts</i> . Fruit Notes 84(2):15-18. Horticultural News 99(2):15-18.
Olanyk, C. L. Ware, <b>E. W. Garofalo, J. M. Clements</b> . 2019. <i>Growers' Perspectives on Data Sharing and IPM</i> . Fruit Notes 84 (3) pp 17-19.
<b>Piñero, J. C., D. R. Cooley, J. M. Clements, S. G. Schloemann, E. W. Garofalo</b> . 2019. <i>Massachusetts Fruit IPM Report for 2018</i> . Fruit Notes 84 (2) pp 1-9.
<b>Piñero, J. C., N. Foley</b> . 2018. <i>Evaluation of diluted grape juice as an inexpensive attractant for the invasive fruit pest Spotted Wing Drosophila</i> . Fruit Notes 83 (3) pp1-7.
<b>Piñero, J. C.</b> , T. C. Leskey, 2018. <i>Managing Plum Curculio Using an Attract-and-kill Approach: 2018 On-farm Research Results</i> . Fruit Notes 84 (1) pp 1-4.
<b>Piñero, J. C.</b> , T. C. Leskey, D. Shapiro-Ilan. 2018. <i>Entomopathogenic Nematodes are Effective at Killing Plum Curculio Larvae in the Soil</i> . Fruit Notes 84 (1) pp 9-11.
<b>Piñero, J. C.</b> , Z. Wen and E. Begonis. 2019. <i>Using Diluted Grape Juice for Early-season Monitoring and its Potential for Attract-and-kill of Spotted Wind Drosophila, <u>Drosophila suzukii</u></i> . Fruit Notes 84 (3) pp 12-15.
<b>Piñero, J.C.</b> and A. P. Dudenhoefler. 2018. <i>Mass trapping designs for organic control of the Japanese beetle, <u>Popillia japonica</u> (Coleoptera: Scarabaeidae)</i> . Pest Management Science.
<b>Piñero, J.C.</b> and J. Keay. 2018. <i>Farming Practices, Knowledge, and Use of Integrated Pest Management by Commercial Fruit and Vegetable Growers in Missouri</i> , Journal of Integrated Pest Management, 9:1.
<b>Piñero, J.C.</b> , Barrett, B.A., Bolton, L.G., and Follett, P.A. 2019. <i><math>\beta</math>-cyclocitral synergizes the response of adult <u>Drosophila suzukii</u> (Diptera: Drosophilidae) to fruit juices and isoamyl acetate in a sexdependent manner</i> . Scientific Reports 9:10574.
<b>Piñero, J.C.</b> , K. Paul, P. L. Byers, J. Schutter, A. Becker, K. Kelly, and D. Downing. 2018. <i>Building IPM capacity in Missouri through train-the-trainer workshops and effective partnerships</i> . Journal of Integrated Pest Management 9: 1.
<b>Piñero, J.C.</b> , T. Shivers, P. Byers, and H. Johnson. 2018. <i>Insect-based compost and vermicompost production, quality and performance</i> . Renewable Agriculture and Food Systems, 1-7.
Reighard, G.L., W. Bridges Jr., D. Archbold, A. Atucha, <b>W.R. Autio</b> , T. Beckman, B. Black, D. Chavez, E. Coneva, K. Day, M. Kushad, R.S. Johnson, T. Lindstrom, J. Lordan, I. Minas, D. Oulette, M.L. Parker, R. Pokharel, T.L. Robinson, J. Schupp, M. Warmund, and D. Wolfe. 2018. <i>Rootstock performance in the 2009 NC-140 Peach Trial across 11 states</i> . Acta Hort. 1228:181-186. <a href="https://doi.org/10.17660/ActaHortic.2018.1228.27">https://doi.org/10.17660/ActaHortic.2018.1228.27</a> .
Reighard, G.L., W. Bridges Jr., D. Archbold, A. Atucha, <b>W.R. Autio</b> , T. Beckman, B. Black, D. Chavez, E. Coneva, K. Day, M. Kushad, R.S. Johnson, T. Lindstrom, J. Lordan, I. Minas, D. Oulette, M.L. Parker, R. Pokharel, T.L. Robinson, J. Schupp, M. Warmund, and D. Wolfe. 2020. <i>Nine-year rootstock performance of the NC-140 Redhaven Peach Trial across 13 states</i> . J. Amer. Pomol. Soc. ACCEPTED FOR PUBLICATION.

<b>Sandler, H.A.</b> 2018. Weed management in cranberries: <i>A historical perspective and a look to the future</i> . Agriculture Special Issue: Recent Advances in Horticultural Practices for Berry Crops, 8(9), 138. DOI: 10.3390/agriculture8090138.
Sarkar, D., Ankolekar, C., <b>Greene, D W.</b> , and Shetty, K. 2018. <i>Natural preservation for superficial scald reduction and enhancement of phenol-linked antioxidant responses in apple during post-harvest storage</i> . Journal of Food Science and Technology. 55:(5):1767-1780.
Shrestha, B., D. Finke and <b>J. C. Piñero</b> , <i>The botanical triad: the presence of insectary plants enhances natural enemy abundance on trap crop plants in an organic cabbage agro-ecosystem</i> . Submitted to Biological Control.
Shrestha, B., D. Finke, and <b>J. C. Piñero</b> . 2019. <i>The 'Botanical Triad': The Presence of Insectary Plants Enhances Natural Enemy Abundance on Trap Crop Plants in an Organic Cabbage Agro-Ecosystem</i> . Insects 10: 181.
Vargas, R.I., N. E. Miller and <b>J. C. Piñero</b> , 2018. <i>Effect of physiological state on female melon fly, <u>Bactrocera (Zeugodacus) cucurbitae</u> (Diptera: Tephritidae), attraction to host and food odor in the field</i> . Journal of Economic Entomology 111: 1318-1322. toy092.
Wong, K.M., M.G. Corradini, <b>W.R. Autio</b> , and A.J. Kinchla. 2019. <i>Sodium reduction strategies through use of meat extenders (white button mushrooms vs. textured soy) in beef patties</i> . Food Sci. Nutrition. 7:506-518. <a href="https://doi.org/10.1002/fsn3.824">https://doi.org/10.1002/fsn3.824</a> .
Zandvakili, O.R., A.V. Barker, M. Hashemi, F. Etemadi, and <b>W.R. Autio</b> . 2019. <i>Comparisons of commercial organic and chemical fertilizer solutions on growth and composition of lettuce</i> . J. Plant Nutrition <a href="https://doi.org/10.1080/01904167.2019.1589505">https://doi.org/10.1080/01904167.2019.1589505</a> .
Zandvakili, O.R., A.V. Barker, M. Hashemi, F. Etemadi, <b>W.R. Autio</b> , and S. Weis. 2019. <i>Growth and nutrient accumulation of lettuce under different regimes of nitrogen fertilization</i> . J. Plant Nutrition <a href="https://doi.org/10.1080/01904167.2019.1617313">https://doi.org/10.1080/01904167.2019.1617313</a> .
Zeng, Q., <b>D. R. Cooley</b> , N. Schultes. 2019. <i>Use of Biological Controls and Sterilants as Alternatives to Streptomycin Against Fire Blight Blossom Infections in Apples</i> . Fruit Notes 84 (3) pp 1-6.
<b>Total: 40</b>

<b>Fact Sheets:</b>
<b>Garofalo, E. W., J. C. Piñero</b> . 2019. <a href="#">Guide to SWD Management in Blueberries</a> . UMass Program Factsheet, 2 pp.
<b>Garofalo, E. W., J. C. Piñero</b> . 2019. <a href="#">Brown Marmorated Stink Bug Identification in Massachusetts</a> . UMass Fruit Program Factsheet, 2 pp.
<b>Garofalo, E. W., J. C. Piñero</b> . 2019. <a href="#">Effective Brown Marmorated Stink Bug Monitoring and Management in Massachusetts</a> . UMass Fruit Program Factsheet, 2 pp.
<b>Madeiras, A. M.</b> , 2019 <a href="#">Raspberry Cane Borers</a> , 2 pp.
<b>Madeiras, A. M.</b> , 2019. <a href="#">Black Rot of Grapes</a> . UMass Fruit Program Factsheet, 2 pp.
<b>Sandler, H.A.</b> and K.M. Ghantous. 2019. <i>Dodder: Biology and Management</i> . Fact sheet. <a href="https://scholarworks.umass.edu/cranberry_factsheets/43">https://scholarworks.umass.edu/cranberry_factsheets/43</a> .
<b>Sandler, H.A.</b> , G. Mupambi, and P. Jeranyama. 2019. <i>Expectations for Cranberry Growth and Productivity under Solar (photovoltaic) Panels</i> . <a href="https://scholarworks.umass.edu/cranberry_factsheets/41">https://scholarworks.umass.edu/cranberry_factsheets/41</a> .
<b>Total: 7</b>
<b>Online access: 1,045 unique page views/downloads</b>
<b>Articles in Newsletters or Trade Publications:</b>
<b>Clements, J. M.</b> , <i>Degree Day Accumulations</i> . Healthy Fruit, Vol, 27. Nos. 1-15
<b>Clements, J. M.</b> , <i>Degree Day Accumulations, Current Bud Stages</i> . Healthy Fruit, Vol, 27. Nos. 1-8



- Clements, J. M.**, *Upcoming Meetings*. Healthy Fruit, Vol, 27. Nos. 1-21
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 1
- Clements, J. M.**, *Horticulture Update*. Healthy Fruit, Vol, 27. No. 1
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 2
- Clements, J. M.**, *Horticulture Update; Tree Planting, Apple Tree Pruning, Spring Herbicides*. Healthy Fruit, Vol, 27. No. 2
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 3
- Clements, J. M.**, *Horticulture Update: Pollen Tube Growth Model and Stone Fruit Pruning*. Healthy Fruit, Vol, 27. No. 3
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 4
- Clements, J. M.**, *Horticultural Update; Thinning with Prohexadione-calcium*. Healthy Fruit, Vol, 27. No. 4
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 5
- Clements, J. M.**, *Horticulture Update; Fruit Thinning, Malusim app*, . Healthy Fruit, Vol, 27. No. 5
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 6
- Clements, J. M.**, *Horticulture Update; Pollen Tube Growth Model???*. Healthy Fruit, Vol, 27. No. 6
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. Nos. 7-11
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 12
- Clements, J. M.**, *Horticultural Update; Return Bloom Spray Recipe*. Healthy Fruit, Vol, 27. No. 12
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 13
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 15
- Clements, J. M.**, *Horticultural Update; Retain<sup>®</sup>, Predicting Bitter Pit, Foliar Nutrient Analysis*. Healthy Fruit, Vol, 27. No. 15
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 16
- Clements, J. M.**, *Horticultural Update; Managing Ethylene, Retain<sup>®</sup> Label Limits, etc*. Healthy Fruit, Vol, 27. No. 16
- Clements, J. M.**, *The Way I see it*. Healthy Fruit, Vol, 27. No. 17
- Clements, J. M.**, *Apple Maturity Reports*. Healthy Fruit, Vol, 27. Nos. 17-21
- Cooley, D. R., E. W. Garofalo**. *Disease Management Update; Apple Scab*. Healthy Fruit, Vol, 27. No. 10
- Cooley, D. R., E. W. Garofalo**. *Disease Management Update; Summer Diseases*. Healthy Fruit, Vol, 27. No. 11
- Cooley, D. R., E. W. Garofalo**. *Disease Management Update; Sooty Blotch/Flyspeck*. Healthy Fruit, Vol, 27. No. 12
- Garofalo, E. W.**, *Hawkeye's Corner (notes from the field)*. Healthy Fruit, Vol, 26. Nos. 1-21
- Garofalo, E. W.**, *Disease Update*. Healthy Fruit, Vol, 27. No. 1
- Garofalo, E. W.**, *Disease Update; Apple Scab, Marssonina coronaria*. Healthy Fruit, Vol, 27. No. 2
- Garofalo, E. W.**, *Disease Update; Apple Scab, Brown Rot, Marssonina coronaria*. Healthy Fruit, Vol, 27. No. 3
- Garofalo, E. W.**, *Disease Update; Apple Scab, Brown Rot*. Healthy Fruit, Vol, 27. No. 4
- Garofalo, E. W.**, *Disease Update; Apple Scab, Fire Blight*. Healthy Fruit, Vol, 27. No. 5
- Garofalo, E. W.**, *Disease Update; Apple Scab, Fire Blight*. Healthy Fruit, Vol, 27. No. 6
- Garofalo, E. W.**, *Disease Update; NEWA Fire Blight Model – how to*. Healthy Fruit, Vol, 27. No. 7
- Garofalo, E. W.**, *Disease Update; Apple Scab, Fire Blight*. Healthy Fruit, Vol, 27. No. 8
- Garofalo, E. W., D. R. Cooley**. *Disease Update; Apple Scab, Climate Check-in, Summer Diseases*. Healthy Fruit, Vol, 27. No. 9
- Garofalo, E. W.**, *Disease Update; Apple Scab, Sooty Blotch/Flyspeck, Brown Rot*. Healthy Fruit, Vol, 27. No. 14
- Garofalo, E. W.**, *Disease Update; Brown Rot Resistance Management*. Healthy Fruit, Vol, 27. No. 15
- Garofalo, E. W.**, *Disease Update; Bitter Rot*. Healthy Fruit, Vol, 27. No. 16

- Greene, D. W.**, *Apogee and Kudos (Prohexadione-Calcium Application)*. Healthy Fruit, Vol, 27. No. 4
- Greene, D. W.**, *Bloom Thinning Thoughts*. Healthy Fruit, Vol, 27. No. 5
- Greene, D. W.**, *Chemical Thinning During the Coming Week – flip a coin!*. Healthy Fruit, Vol, 27. No. 6
- Greene, D. W.**, *Chemical Thinning Suggestions for the Coming Week*. Healthy Fruit, Vol, 27. No. 7
- Greene, D. W.**, *Chemical Thinning Suggestions for May 29, 2019*. Healthy Fruit, Vol, 27. No. 8
- Greene, D. W.**, *Chemical Thinning Recommendations for Week of June, 4, 2019*. Healthy Fruit, Vol, 27. No. 9
- Greene, D. W.**, *Choosing a Preharvest Drop Control Strategy*. Healthy Fruit, Vol, 27. No. 14
- Piñero, J.C., Garofalo, E., and Clements, J. M.** *Brown Marmorated Stink Bug update*. Healthy Fruit Vol. 27:18.
- Piñero, J.C.** *Apple maggot fly update*. Healthy Fruit Vol. 27:16.
- Piñero, J.C.** *Apple maggot fly and Spotted Wing Drosophila updates*. Healthy Fruit Vol. 27:15.
- Piñero, J.C.** *Codling moth (CM), Oriental Fruit Moth (OFM) and leafrollers*. Healthy Fruit Vol. 27:14.
- Piñero, J.C.** *Codling moth and apple maggot fly*. Healthy Fruit Vol. 27:13.
- Piñero, J.C.** *Monitoring OFM and other moths for biofix, peak flights, and seasonal moth densities*. Healthy Fruit Vol. 27:12.
- Piñero, J.C.** *Potato leafhoppers are active!* Healthy Fruit Vol. 27:11.
- Piñero, J.C.** *How ‘normal’ was the 2019 season for plum curculio?* Healthy Fruit Vol. 27:10.
- Piñero, J.C.** *The 1-2-3 Approach to SWD Management*. Healthy Fruit Vol. 27:9.
- Piñero, J.C.** *Rosy Apple Aphid and Winter Moth Update*. Healthy Fruit Vol. 27:8.
- Piñero, J.C.** *Plum curculio (PC) activity update and Spotted Wing Drosophila (SWD) has become active*. Healthy Fruit Vol. 27:7.
- Piñero, J.C.** *Plum curculio (PC), Oriental Fruit Moth (OFM), and Codling Moth (CM) activity update*. Healthy Fruit Vol. 27:6.
- Piñero, J.C.** *Plum curculio (PC) activity update and First OFM flight recorded in Belchertown (UMass CSO)*. Healthy Fruit Vol. 27:5.
- Piñero, J.C.** *Plum curculio (PC) and tarnished plant bug (TPB) got off to a slow start*. Healthy Fruit Vol. 27:4.
- Piñero, J.C.** *Dogwood borer monitoring and management*. Healthy Fruit Vol. 27:3.
- Piñero, J.C.** *Tarnished Plant Bugs have become active at the UMass Cold Spring Orchard*. Healthy Fruit Vol. 27:2.
- Piñero, J.C.** *New Mating Disruption Formulations for Oriental Fruit Moth (OFM) (Stone and Pome Fruit) and Codling Moth (CM) (Apple and Pear)*. Healthy Fruit Vol. 27:1.
- Sandler, H.A.** and K. M. Ghantous. *Emergency Exemption requested for Kerb in 2019*. Cranberry Station Newsletter, Vol. 19(6).
- Sandler, H.A.** and K. M. Ghantous. *Crop Summit notes and Kerb update*. Cranberry Station Newsletter, Vol. 19(7).
- Sandler, H.A.** and K. M. Ghantous. *2018 Weed Research and Extension highlights*. Cranberry Station Newsletter, Vol. 20(1).
- Sandler, H.A.** and K. M. Ghantous. *Intensity/IntensityOne update*. Cranberry Station Newsletter, Vol. 20(2).
- Sandler, H.A.** and K. M. Ghantous. *Weed management update*. Cranberry Station Newsletter, Vol. 20(4).
- Sandler, H.A.** and K. M. Ghantous. *Using fall herbicides, NACREW highlights and Extension assistance for hemp*. Cranberry Station Newsletter, Vol. 20(5).
- Schloemann, S. G.**, *Small Fruit Update*. Healthy Fruit, Vol, 27. Nos. 1-21
- Schloemann, S. G.**, *Small Fruit Update*. IPM Berry Blast, Vol, 2019. Nos. 3-14
- Schloemann, S. G.**, *Cyclamen Mites, Phomopsis Twig Blight*. IPM Berry Blast, Vol, 2019. Nos. 3

- Schloemann, S. G.**, *Strawberry Rood Diseases, Haskap/Honeyberry*. IPM Berry Blast, Vol, 2019. Nos. 4
- Schloemann, S. G.**, *Mummy Berry, Raspberry Fruitworm*. IPM Berry Blast, Vol, 2019. Nos. 5
- Schloemann, S. G.**, *Strawberry Bud Weevil, Mummy Berry*. IPM Berry Blast, Vol, 2019. Nos. 6
- Schloemann, S. G.**, *Gypsy Moth Update*. IPM Berry Blast, Vol, 2019. Nos. 7
- Schloemann, S. G.**, *Tarnished Plant Bug, Gray Mold, Anthracnose, Cranberry/Cherry Fruitworm*. IPM Berry Blast, Vol, 2019. Nos. 8
- Schloemann, S. G.**, *Two-Spotted Spider Mites, Strawberry Aphids*, . IPM Berry Blast, Vol, 2019. Nos. 9
- Schloemann, S. G.**, *Spotted Wing Drosophila Update, Potato Leafhopper, Slugs, Leather Rot, Black Vine Weevil, Raspberry Spur Blight, Raspberry Cane Blight*, . IPM Berry Blast, Vol, 2019. Nos. 10
- Schloemann, S. G.**, *Strawberry Sap Beetle, Blueberry Maggot*, . IPM Berry Blast, Vol, 2019. Nos. 11
- Schloemann, S. G.**, *SWD Update, Black Vine Weevil and other related root weevils, Japanese Beetle*. IPM Berry Blast, Vol, 2019. Nos. 12
- Schloemann, S. G.**, *Blueberry Stem Gall Wasp*. IPM Berry Blast, Vol, 2019. Nos. 13
- Schloemann, S. G.**, *Strawberry Fall Check-List, Highbush Blueberry Fall Check-List, Raspberry Fall Check-List*. IPM Berry Blast, Vol, 2019. Nos. 14

**Total: 85**

**Other Papers & Reports:**

**Posters**

- Caicedo A.L., J. Scott, K. Ghantous, and **H.A. Sandler**. 2019. *Documenting the genetic variation of dodder species in Massachusetts cranberry bogs to optimize efficacy of dodder management*. North American Cranberry Research and Extension Workers conference, Vancouver, BC. August 18-20, 2019.
- Carabillo, E. A., S. M. Hall, M. Lyons, L. Ware, A. Zink. **E. L. Petit, S. G. Schloemann**. *Strategies for Canopy Management for Optimal Juice Quality*. American Society for Enology and Viticulture ASEV-Eastern Section Conference, Geneva, NY. 7/16-18/2019.
- Carabillo, E. A., M. Lyons, S. Hall, **E. L. Petit**. *Strategies for Canopy Management for Optimal Juice Quality*. UMass Undergraduate Research Conference. 4/2019.
- Foley, N. and **J. C. Piñero**. *Evaluation of Plant-based materials for attractiveness to the invasive spotted wing Drosophila, Drosophila suzukii*. CAFÉ Summer Scholar Program. UMass Campus Center, Amherst MA. 9/12/18 120 in attendance.
- Lyons, M., D. Ryley., S. Runshaw, I. Russo. **E. L. Petit**. *Cold-Climate Grape Microbiomes in Wild and Domesticated Cultivars*. UMass Undergraduate Research Conference. 4/2019.
- Lyons, M., **E. L. Petit**. *The Grape MicroBiome in Wild and Domesticated Varieties: Methods on DNA Extraction from Microorganisms on the Surface of Grapes*. Valley Microbes Conference. UMass Amherst MA. 1/18/2019.
- Maynard, E., **E. L. Petit**. *Study of the effect of endomycorrhizal inoculum on the propagation of grapes*. UMass Undergraduate Research Conference. 4/2019.
- Olanyk, C., **J. C. Piñero., E. W. Garofalo**. *Harnessing Chemical Ecology to Address Agricultural Pest and Pollinator Priorities*. CAFÉ Summer Scholar Program. UMass Campus Center, Amherst MA. 9/12/18. 120 in attendance.
- Piñero, J. C.**, *Research Update*. Entomology Society of America Eastern Branch Meeting. Blacksburg VA 3/10/19, 154 in attendance.



Scott, J., K. Ghantous, **H.A. Sandler** and A. Caicedo. 2019. *Population structure and diversity of parasitic dodder in Massachusetts cranberry bogs*. Evolution Meeting June 2019, Providence, RI.

Ware, L. A., E. A., Carabillo, M. Lyons, S. M. Hall, A. Zink, **E. L. Petit, S. G. Schloemann**. *Canopy Management Strategies to Optimize Wine Grape Quality*. CAFÉ Summer Scholar Program. UMass Campus Center, Amherst MA. 9/12/18. 120 in attendance.

Zink, A., **E. L. Petit**, *The wild relatives of Grapes in North America: Diversity and impact of climate change on flowering phenology*. Northeast Section of the NE American Society of Plant Biology, Durham, NH. 4/2019.

Zink, A., **E. L. Petit**. *The wild relatives of Grapes in North America: Diversity and impact of climate change on flowering phenology*. Botany 2019. Tucson AZ. 7/27-31, 2019.

Zink, A., **E. L. Petit**. *The wild relatives of grapes in North America: Diversity and impact of climate change on flowering phenology*. UMass Undergraduate Research Conference. 4/2019.

### **Technical Reports**

**Autio, W. R., J. M. Clements, J. Krupa, and D. R. Cooley**. (2018). *Annual Report To NC-140 From The Massachusetts Agricultural Experiment Station*. 4 pages.

**Autio, W. R.** (2018). *Annual Report To NC-140 On The 2015 Organic Apple Rootstock Trial*. 4 pages.

**Greene, D. W.** and S. Hon. *AD-21 Report on Postharvest Biology of Pome Fruit*.

**Greene, D. W.** Report on the influence of ReTain combinations on preharvest drop and fruit quality of Macoun apples. 7pp. E Report submitted to Valent BioSciences.

**Greene, D. W.** *Influence of Metamitron (Brevis) on Fruit Set and Fruit Quality of McIntosh Apples*. 7 pp. A report submitted to Adama Inc.

**Greene, D. W.** Evaluation of several rates of gibberellin GA7 injected into McIntosh apple trees. 7pp. A report submitted to Rainbow Tree Company.

**Green, D. W.**, Report on the potential for carbaryl to cause abscission of off-target flowers and fruit. 6pp. Submitted in support of the registration of carbaryl.

**Schloemann, S. G., J. M. Clements, A. F. Tuttle, K. M. Ghantous, A. M. Madeiras, W. R. Autio, D. R. Greene, D. R. Cooley, H. A. Sandler, E. Petit, E. W. Garofalo, S. McIntire, K. M. Hanley, J. Cronk, J. Krupa, J. Aliengena**. 2018. *UMass Extension Fruit Team Report for FY2018*. 22 pages.

### **Textbook Chapter**

**Greene, D. W.**, 2019 *Optimizing Plant Growth, Yield and Fruit quality with Plant Bioregulators*. In: *Achieving Sustainable cultivation of Temperate Zone Tree Fruits and Berries*, Vol. I: Physiology, Genetics and Cultivation. pp. 299-345 (Greg Lang (Ed.))

### **WEBSITES, SOCIAL MEDIA AND APPS**

<b>Title</b>	<b>Website</b>	<b>Page views (via Google analytics or comparable source)</b>
<i>Eco Apple App (DRC, JMC)</i>	<a href="https://ag.umass.edu/fruit/news/eco-apple-app-now-available">https://ag.umass.edu/fruit/news/eco-apple-app-now-available</a>	17 app downloads
<i>MyIPM (JMC, DRC, JCP, EWG)</i>	<a href="https://apps.bugwood.org/apps/myipmseries/">https://apps.bugwood.org/apps/myipmseries/</a>	2,500 app downloads/updates
<i>UMass Fruit Advisor (JMC, SGS, WRA, DRC, EWG)</i>	<a href="https://ag.umass.edu/fruit">https://ag.umass.edu/fruit</a>	5,368 unique page views/ 4,103 entrances
<i>New England Wine Grape Growers Resource Center (SGS, ELP)</i>	<a href="http://newenglandwinegrapes.org/">http://newenglandwinegrapes.org/</a>	4,613 unique page views/ 2,454 entrances

NC-140 Regional Rootstock Research Project ( <b>JMC, WRA</b> )	<a href="http://www.nc140.org">http://www.nc140.org</a>	4,752 unique page views
eXtension Apples CoP ( <b>JMC</b> )	<a href="https://apples.extension.org/">https://apples.extension.org/</a>	2,500 users
UMass Fruit Advisor YouTube Channel ( <b>JMC, EWG</b> )	<a href="https://www.youtube.com/channel/UCZgqD-vRgNXn2U0nWCEiX0Q">https://www.youtube.com/channel/UCZgqD-vRgNXn2U0nWCEiX0Q</a>	3,300 subscribers
Network for Environment and Weather Applications- NEWA ( <b>JMC</b> )	<a href="http://www.newa.cornell.edu">http://www.newa.cornell.edu</a>	<i>This website is not maintained by UMass but we contribute significant data to its content</i>
jmcextman, out and about in the UMass Cold Spring Orchard blog ( <b>JMC</b> )	<a href="http://jmcextman.blogspot.com/">http://jmcextman.blogspot.com/</a>	7,200 followers
Jon Clements on Facebook and Twitter ( <b>JMC</b> )	<a href="https://www.facebook.com/jmcextman">https://www.facebook.com/jmcextman</a> <a href="https://twitter.com/jmcextman">https://twitter.com/jmcextman</a>	650 followers
Elizabeth Garofalo Facebook, Twitter and Instagram ( <b>EWG</b> )	<a href="https://www.facebook.com/ew.garofalo">https://www.facebook.com/ew.garofalo</a> <a href="https://www.instagram.com/ciderchick007/">https://www.instagram.com/ciderchick007/</a> <a href="https://twitter.com/CiderChick007">https://twitter.com/CiderChick007</a>	450 followers

## PRESENTATIONS

MEETINGS, WORKSHOPS & FIELD DAYS FOR COMMERCIAL GROWERS, PROFESSIONAL SERVICE PROVIDERS & INDUSTRY.				
On-Farm Meetings/Workshops <u>organized</u> by Fruit Team (in whole or part)				
Date	Meeting Title (credit)	Meeting Sponsor(s)	Locations	Attendance
4/11/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team	C.N. Smith Farm, East Bridgewater, MA	50
4/16/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team	UMass Cold Spring Orchard, Belchertown MA	35
5/15/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team	Red Apple Farm, Philipston, MA	60
5/16/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team/URI Extension	Sweetberry Farm Middletown, RI	30
6/11/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team	Bashista Orchards, Easthampton, MA	25
6/12/19	Fruit Program Twilight Meeting - ( <b>JMC</b> )	UMass Fruit Team	Tougas Family Farm, Northboro, MA	70
6/20/19	Fruit Program Twilight Meeting - ( <b>SGS</b> )	UMass Fruit Team	Red Fire Farm, Montague, MA	12
7/10/19	Annual Summer Field Day - ( <b>JMC, WRA</b> )	UMass Fruit Team/Massachusetts Fruit Growers Association	Sholan Farm, Leominster, MA	110

7/11/19	Fruit Program Twilight Meeting – (SGS)	UMass Fruit Team	Westport Rivers Vineyard & Winery, Westport, MA	20
<b>TOTAL:</b>				<b>412</b>
<b>Presentations given at on-farm meetings or workshops by Fruit Team members</b>				
<b>Date</b>	<b>Presentation Title (credit)</b>	<b>Meeting Sponsor(s)</b>	<b>Locations</b>	<b>Attendance</b>
3/22/19	<i>Apple Grafting Workshop (JCP, JK)</i>	UMass Fruit Program	Sholan Farm, Leominster, MA	8
3/28/19	<i>Pruning Fruit Trees (WRA)</i>	Massachusetts Horticultural Society	Tower Hill Botanic Garden Boylston, MA	20
3/29/19 and 4/1/19	<i>Fruit Pruning Workshop (SGS, WRA)</i>	UMass Permaculture Program	UMass Campus, Amherst, MA	12
4/2/19	<i>Apple Grafting Workshop (JCP, JK)</i>	UMass Fruit Program	Red Apple Farm, Philipston, MA	8
4/5/2019	<i>Research Update (JCP)</i>	Rutgers University Seminar	New Brunswick, NJ	45
4/11/19	<i>Insect Pest Update (JCP)</i>	Fruit Program Twilight Meeting	C.N. Smith Farm, East Bridgewater, MA	50
4/16/19	<i>Apple Grafting Workshop (JCP, JK)</i>	UMass Fruit Program	UMass Cold Spring Orchard, Belchertown, MA	9
4/16/19	<i>Insect Pest Update (JCP)</i>	Fruit Program Twilight Meeting	UMass Cold Spring Orchard, Belchertown MA	35
4/16/19	<i>Tree Fruit Disease Management Update (DRC)</i>	Fruit Program Twilight Meeting	UMass Cold Spring Orchard, Belchertown MA	35
4/16/19	<i>Suggestions for the use of Apogee and Kudos (Prohexadione-Calcium) for growth control and fire blight control in apples (DWG)</i>	Fruit Program Twilight Meeting	UMass Cold Spring Orchard, Belchertown MA	35
5/15/19	<i>Insect Pest Update (JCP)</i>	Fruit Program Twilight Meeting	Red Apple Farm, Philipston, MA	60
5/15/19	<i>Managing Fire Blight in Apples (DRC)</i>	Fruit Program Twilight Meeting	Red Apple Farm, Philipston, MA	60
5/15/19	<i>Chemical Thinning of Apples' suggestions and challenges (DWG)</i>	Fruit Program Twilight Meeting	Red Apple Farm, Philipston, MA	60
5/16/19	<i>Insect Pest Update (JCP)</i>	Fruit Program Twilight Meeting	Sweetberry Farm Middletown, RI	30
5/16/19	<i>Chemical Thinning of Apples' suggestions and challenges (DWG)</i>	Fruit Program Twilight Meeting	Sweetberry Farm Middletown, RI	30
5/23/19	<i>Blueberry Pruning Review (SGS)</i>	URI Berry Growers Association	Narrow Lane Orchard, North Kingstown, RI	25
5/23/19	<i>Invasive Pest Management -BMSB, SWD, SLF (JCP)</i>	URI Berry Growers Association	Narrow Lane Orchard, North Kingstown, RI	35

6/11/19	<i>Managing Summer Fruit Rots (DRC)</i>	Fruit Program Twilight Meeting	Bashista Orchards, Easthampton, MA	25
6/12/19	<i>Insect Pest Update (JCP)</i>	Fruit Program Twilight Meeting	Tougas Family Farm, Northboro, MA	70
6/12/19	<i>Managing Summer Fruit Rots (DRC)</i>	Fruit Program Twilight Meeting	Tougas Family Farm, Northboro, MA	70
6/20/19	<i>Fruit Program Twilight Meeting - (SGS)</i>	UMass Fruit Team	Red Fire Farm, Montague, MA	12
6/25/19	<i>BMSB &amp; SWD Update - (EWG)</i>	UMass Veg Team/UMass Fruit Team/ UMass EIP Grant Project Team	Indian Head Farm, Berlin, MA	18
7/10/19	<i>Invasive Insect Pests - (JCP)</i>	UMass Fruit Program/Massachusetts Fruit Growers Assoc	Sholan Farm, Leominster MA	110
7/10/19	<i>Update on Summer Diseases (DRC)</i>	UMass Fruit Program/Massachusetts Fruit Growers Assoc	Sholan Farm, Leominster MA	110
7/10/19	<i>Interpretation of chemical thinning results (DWG)</i>	UMass Fruit Program/Massachusetts Fruit Growers Assoc	Sholan Farm, Leominster MA	110
7/11/19	<i>Grape Trunk Disease ID &amp; Management (ELP)</i>	UMass Fruit Program Twilight Meeting	Westport Rivers Vineyard & Winery, Westport MA	20
	<i>Invasive Insect Pest Management (JCP)</i>	UMass Fruit Program Twilight Meeting	Westport Rivers Vineyard & Winery, Westport MA	20
<b>Total:</b>				<b>1,122</b>

**CONFERENCES OR SYMPOSIA ORGANIZED FOR COMMERCIAL GROWERS, PROFESSIONAL SERVICE PROVIDERS AND INDUSTRY.**

**Events Organized by Fruit Team member(s) (in whole or part)**

<b>Date</b>	<b>Event Title</b>	<b>Conference Sponsor (s)</b>	<b>Location</b>	<b>Attendance</b>
12/1/18, 1/4/19,	<i>New England Vegetable &amp; Berry Growers Assoc. Winter Meetings (SGS)</i>	NEV&BGA, New England Extension System	Portsmouth NH Hadley, MA Hudson, MA	225
11/14-15/17	<i>NC-140 Regional Rootstock Research Project Annual Meeting (JMC)</i>	NC-140 Regional Rootstock Working Group	Mills River, NC	50
1/10/19	<i>2019 Massachusetts Fruit Growers Association Annual Meeting (JMC, DWG, WRA)</i>	UMass Extension Fruit Program Massachusetts Fruit Growers Ass.	Fitchburg, MA	120

2/5-6/19	<i>iPiPE Prticipant Mixer (JMC, EWG)</i>	<i>iPiPE Program</i>	Raleigh, NC	60
2/24-28/19	<i>International Fruit Tree Association Annual Conference and Study Tour (JMC)</i>	International Fruit Tree Association	Rochester, NY	400
3/13 - 14/19	<i>Northeast Plant Growth Regulator Annual Meeting (JMC, DWG)</i>	Northeast Plant Growth Regulator Working Group	Wilkes Barre, PA	45
3/26-27/19	<i>In-Depth Fruit School (JMC)</i>	Precision Crop Load Management & Plant Growth Regulators in Apples Working Group	Syracuse NY	80
3/29/19	<i>eIPM Stakeholder Meeting (HAS JMC, SGS, , EWG)</i>	UMass Vegetable & Fruit Teams	Brigham Hill Farm, Grafton MA	27
7/22-24/19	<i>International Fruit Tree Association Summer Study Tour (JMC)</i>	International Fruit Tree Association, IFTA	Hamilton, Ontario	200
<b>TOTAL:</b>				<b>1,207</b>

**Presentations given at Conferences or Symposia and Webinars.**

<b>Date</b>	<b>Talk or presentation Title</b>	<b>Name of Meeting and Sponsor (s)</b>	<b>Location</b>	<b>Attendance</b>
10/6/18	<i>Tasting and evaluation of unique apple varieties</i>	Stockbridge School of Ag. Centennial Celebration	UMass-Amherst, Amherst, MA	25
10/23-24/2018	<i>App Guy Update: MyIPM, Malusim, EcoApple and NETFMG (JMC)</i>	80 <sup>th</sup> Annual New England, New York, Canada Fruit Pest Management Workshop	Burlington, VT	60
10/23-24/2018	<i>Research Update (JCP)</i>	New England, New York, Canada Fruit Pest Management Workshop	Burlington, VT	60
10/23-24/2018	<i>P. O. Alternatives to Antibiotics for Fire Blight: 2018 Field Trial (DRC, JMC)</i>	New England, New York, Canada Fruit Pest Management Workshop	Burlington, VT	60
12/1/2018	<i>Swing Arm Trellising for Blackberries (SGS)</i>	New England Veg & Berry Growers Winter Meeting	Portsmouth, NH	75
1/10/2019	<i>App Mash-up: MyIPM, NETFMG, Eco Apple App, and Malusim (JMC)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/10/2019	<i>Research Update (JCP)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120



1/10/19	<i>NC-140 Rootstock Research (WRA)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/10/19	<i>Here's Johnny! 2018 Brown Marmorated Stink Bug Update. (EWG, JMC)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/10/19	<i>Apple Scab and Other Nonsense (EWG, DRC)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/10/19	<i>Swing Arm Trellising for Blackberries (SGS)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/10/19	<i>Update on the use of Metamitron for Thinning Apples (DWG)</i>	Massachusetts Fruit Growers Association Winter Meeting	Fitchburg, MA	120
1/16/2019	<i>Research Update (JCP)</i>	Empire State Producers Expo	Syracuse, NY	85
1/18/19	<i>Horticultural Practice Impacts on Disease Development in Apple - What we need to know (EWG)</i>	International Apple Disease Working Group	La Moriniere Research Station, St. Epain, France	25
1/24/2019	<i>SWD Research Update (JCP)</i>	New England Vegetable & Berry Growers Winter Meeting	Hadley, MA	100
2/5/19	<i>iPiPE Crop-Pest Coordinator Experience: The Good, the Bad &amp; the Ugly (EWG, JMC)</i>	iPiPE Program	Raleigh, NC	60
2/12/19	<i>Brevis the next chemical thinner for apples (DWG)</i>	Michigan Tree Fruit Management School	Traverse City, MI	125
2/12/19	<i>Precision Thinning and Crop Load Management (DWG)</i>	Michigan Tree Fruit Management School	Traverse City, MI	125
2/20/2019	<i>Research Update (JCP)</i>	Eastern New York Fruit & Vegetable Conference	Albany, NY	120
2/24-28/2019	<i>On-Farm Research: Reduce Errors, Get Results (JMC)</i>	62 <sup>nd</sup> Annual International Fruit Tree Association Annual Conference.	Rochester, NY	400
2/28/19	<i>Use of unmanned aerial systems in specialty crops (HAS)</i>	UMaine Blueberry Growers Conference	Orono, ME	159
3/1/2019	<i>Research Update (JCP)</i>	Red Tomato Annual Growers Meeting	Hyde Park, NY	45
3/13-14/2019	<i>Precision chemical thinning and beta-testing the Malusim app in 2018 (JMC)</i>	Northeast Plant Growth Regulator Working Group	Wilkes Barre, PA	45
3/13-14/2019	<i>Influence of BA and NAA on Thinning of Gala Apples (DWG)</i>	Northeast Plant Growth Regulator Working Group	Wilkes Barre, PA	45

3/13-14/2019	<i>Influence of Metamitron on Thinning of McIntosh Apples (DWG)</i>	Northeast Plant Growth Regulator Working Group	Wilkes Barre, PA	45
3/13-14/2019	<i>Preharvest Fruit Drop: Is there a factor not discussed? (DWG)</i>	Northeast Plant Growth Regulator Working Group	Wilkes Barre, PA	45
3/21/2019	<i>Research Update (JCP)</i>	Northeast Harvest Ag. Conf.	Topsfield, MA	25
3/26-27/2019	<i>The New Phone App for Precision Thinning (JMC)</i>	In-depth School on Precision Crop Load Management and Plant Growth Regulator Use in Apples.	Syracuse NY	80
7/15/2019	<i>Mechanistic Overview of the chelator-mediated Fenton (CMF) system in brown rot fungi and it's potential role in fungal grapevine trunk diseases. (ELP)</i>	11 <sup>th</sup> International Working Group Trunk Diseases	Pentincton, British Colombia Canada	100
<b>Total:</b>				<b>2,749</b>

<b>MEETINGS OR WORKSHOPS FOR HOME GARDENERS OR MASTER GARDENERS</b>				
<b>Home Gardener or Master Gardener Workshops Organized</b>				
<b>Date</b>	<b>Workshop Title</b>	<b>Location</b>	<b>Attendance</b>	
2/23/19 - 4/6/19	2017 MassAggie Spring Seminar Series ( <b>SGS, JMC, EWG, JMC, WRA</b> ) <ul style="list-style-type: none"> <li>• Home Orchard Pruning</li> <li>• Pruning Grapes</li> <li>• For the Love of Cider!</li> <li>• Grafting Fruit Trees</li> <li>• Pruning Blueberries</li> <li>• Home Orchard Establishment</li> <li>• Home Orchard Pest Management</li> </ul>	Various (see below)		
<b>Total:</b>			<b>156</b>	
<b>Presentations for Home Gardeners/Master Gardeners</b>				
<b>Mass Aggie Workshops</b>				
2/23/19	Home Orchard Pruning – a hands-on workshop ( <b>JMC, EWG</b> )	UMass Extension Fruit Program	Park Hill Orchard, Easthampton, MA	30
3/2/19	Pruning Grapes ( <b>SGS</b> )	UMass Extension Fruit Program	UMass Cold Spring Orchard, Belchertown, MA	22
3/3/18	For the Love of Cider! ( <b>EWG</b> )	UMass Extension Fruit Program	Community Harvest Project Barn, Grafton, MA	00
3/16/19	Grafting Fruit Trees – a hands-on workshop ( <b>WRA</b> )	UMass Extension Fruit Program	UMass Cold Spring Orchard, Belchertown, MA	26
3/30/19	Pruning Blueberries ( <b>SGS</b> )	UMass Extension Fruit Program	Tougas Family Farm, Northboro, MA	19
4/6/19	Home Orchard Establishment & Basics ( <b>JMC, EWG</b> )	UMass Extension Fruit Program	Red Apple Orchard, Philipston, MA	30
4/6/19	Home Orchard Pest Management ( <b>JCP, EWG</b> )	UMass Extension Fruit Program	Red Apple Orchard, Philipston, MA	29
<b>Total:</b>			<b>156</b>	
<b>Master Gardener Trainings</b>				
10/16/18	Small Fruit Production ( <b>SGS</b> )	Mass Master Gardeners Assoc. Training	Tower Hill Botanical Garden, Boylston MA	45
10/18/18	Small Fruit Production ( <b>SGS</b> )	Mass. Master Gardeners Assoc. Training	Elm Bank Reservation, Wellesley, MA	50
2/12/19	Weed Management ( <b>HAS</b> )	Mass. Master Gardeners Assoc. Training	Barnstable, MA	19
2/20/19	Backyard Fruit ( <b>SGS</b> )	Western Mass Master Gardeners Assoc.	Holyoke Community College, Holyoke, MA	55
<b>Total:</b>			<b>169</b>	

<b>Other</b>				
10/31/19	<i>Growing Grapes in New England (SGS)</i>	Amherst Garden Club	Hitchcock Center, Amherst, MA	25
2/2/19	<i>Home Orchard Pruning (WRA)</i>	Holden Agricultural Commission	Holden, MA	45
2/2/19	<i>Climate Change and Agriculture (DRC)</i>	Harvard Agricultural Commission	Harvard, MA	76
3/9/19	<i>Climate Change and Agriculture; adaption strategies, tactics and tools (DRC)</i>	Harvard Agricultural Commission	Harvard, MA	67
3/28/19	<i>Pruning Fruit Trees Workshop (WRA)</i>	Mass. Hort. Society	Elm Bank Reservation, Wellesley, MA	20
4/13/19	<i>The Homegrown Cider Orchard (EWG)</i>	Sixteen Acres Farm Stand	Springfield, MA	8
<b>Total:</b>				<b>241</b>

<b>FIELD RESEARCH &amp; DEMONSTRATION PROJECTS (at UMass Cold Spring Orchard or Cooperating Grower Locations)</b>			
<b>Internally Funded Research Projects (through CAFE/CNS) and Demonstration Projects:</b>			
<b>Title of the Project</b>	<b>Collaborating or Supporting Agency(s)</b>	<b>Location of Project</b>	<b># of people educated or impacted</b>
<i>2010 NC-140 Apple Rootstock Trial (WRA, JMC)</i>	USDA Hatch Multistate Project	UMass Cold Spring Orchard, Belchertown, MA	100
<i>2010 NC-140 Fuji Apple Rootstock Trial (WRA, JMC)</i>	USDA Hatch Multistate Project	Various locations	100
<i>2014 NC-140 Honeycrisp Apple Rootstock Trial (JMC)</i>	USDA Hatch Multistate Project	UMass Cold Spring Orchard	100
<i>2015 NC-140 Geneva/Modi organic apple rootstock planting (JMC, WRA)</i>	USDA Hatch Multistate Project	Small Ones Farm, Amherst, MA	100
<i>2019 NE-1720 Multi-state Evaluation of Winegrape Cultivars and Clones (SGS, ELP)</i>	USDA Hatch Multistate Project	UMass Cold Spring Orchard, Belchertown, MA	60
<i>2019 UMass RIMpro Advisory Service <a href="http://fruitadvisor.info/rimpro/">http://fruitadvisor.info/rimpro/</a> (JMC, EWG, DRC)</i>	New England Tree Fruit Research Committee	Various locations (15) in New England/NJ/WI/ MN	200
<i>Apple Variety and Systems Demonstration Plantings (JMC)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	85
<i>Apple variety evaluation/demonstration planting(s) (JMC)</i>	Cornell University AC Nursery Midwest Apple Improvement Association Apple Variety Development	UMass Cold Spring Orchard, Belchertown MA	50
<i>Cold Hardy Seedless Table Grapes (SGS, SM, KMH, JK)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard, Belchertown MA	50

<i>Cold Hardy Wine Grapes (not part of NE-1720) (SGS, ELP)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard, Belchertown MA	60
<i>Effectiveness of odor-baited trap trees as an attract-and-kill strategy for adult plum curculio, and of and entomopathogenic nematodes (EPN) as biological control agents against plum curculio larvae in the soil (JCP, EWG)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	8 commercial orchards	40
<i>Effectiveness of pheromone-baited ghost traps for attract-and-kill of the invasive Brown Marmorated Stink Bug (JCP, EWG)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	3 commercial orchards with demonstration at field day	90
<i>iPiPE Northeast Apple Crop-Pest Program (JMC, EWG)</i>	North Carolina State Univ. & Pennsylvania State Univ.	Statewide in Massachusetts	250
<i>Native Pollinator Conservation Habitat Project (JK)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	25
<i>NEWA Weather Network (JMC, DRC)</i>	USDA EIP Grant, MA AES	25 on-site weather station across the state	100
<i>Peach Variety and Systems Demonstration Planting (JMC)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	50
<i>PF Flaming Fury peach and nectarine variety evaluation grown on quad-V peach system (JMC)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	30
<i>Precision apple thinning demonstration using the Malusim app in Gala, Honeycrisp, Fuji and DS-41/Pazazz apples (JMC)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	50
<i>Sweet and Tart Cherry Demonstration Plantings, Gisela 5 &amp; 6 rootstock at very high density, NY numbered sweet cherry selections (JMC)</i>	UMass Center for Agriculture, Food and the Environment (CAFE)	UMass Cold Spring Orchard	50
<b>Total:</b>			<b>1,590</b>

**Externally Sponsored Activity**

<b>Type</b>	<b>Description</b>
Grant	<b>Autio W. R.</b> , Marini R, Cline J, Reighard G, Lang G, Einhorn T, <i>NC-140 Treefruit Research</i> , 4/1/2017 - 3/31/2018, \$10,000
Grant	<b>Autio W. R.</b> , Marini R, Cline J, Robinson T, Reighard G, Lang G, Einhorn T, <i>NC-140 Treefruit Research</i> , 4/1/2018 - 3/31/2019, \$10,000
Grant	Bradshaw, T., <b>D. R. Cooley, J. C. Piñero, E. W. Garofalo</b> , <i>New England Cider Apple Program: Optimizing Production for High-Value Markets</i> . NE-SARE Research & Education. 9/1/19-8/31/21 \$229,314 (MA-\$75,728)
Grant	<b>Clements, J. M., D. R. Cooley</b> , <i>NutriBP017 Evaluation for Management of Fire Blight and Scab on Apples, and Foliar Applications of ZincMax, CalciMac, BoronMax, and TruPhos Magnesium to Improve Fuji and Honeycrisp Apple Nutrient Levels and Fruit Quality at Harvest</i> . 4/1/18 – 11/1/18. \$ 8,000
Grant	<b>Cooley, D. R.</b> <i>Disease Management of Fruit Crops III</i> . 6/26/19-6/25/24. \$5,100
Grant	<b>Cooley, D. R., J. M. Clements</b> , <i>A New England Tree Fruit Management Guide for the Next Generation</i> . 3.1.2017 – 10/31/2018 \$17,858



Grant	<b>Goodell, B., E. L. Petit</b> , <i>Role of LMW fungal metabolites in Eutypa Dieback</i> . American Vineyard Foundation 119-1095. 9/1/19-8/31/21. \$70,000.
Revenue	<b>Greene D. R., McIntire S., Hanley K. M., Schloemann S. G., Clements J. M., Krupa J. S., Autio W. R.</b> , <i>Income in support of the operation of the UMass Cold Spring Orchard Research and Education Center</i> , 10/1/2018 - 9/30/2019 \$280,900
Grant	<b>Greene, D. W.</b> , <i>Evaluation of ACC as a Chemical Thinner on Apples</i> \$6,250
Grant	<b>Greene, D. W.</b> , <i>Evaluation of GA7 for Inhibition of Flower Bud Formation in Apples</i> . \$3,500
Grant	<b>Greene, D. W.</b> , <i>Use of Metamitron on Influencing Abscission of Apple Fruit</i> \$9,000
Grant	He L, Decker E, <b>Autio W. R.</b> , Xiao H, <i>Barcoding juice quality using SERS, simultaneous determining the content of phytochemicals and adulterants</i> . 1/1/2018 - 12/31/2021, \$498,838
Grant	Mupambi, G. G., <b>H. A. Sandler, D. W. Greene</b> and K. Demoranville. <i>Improving Fruit Quality in Cranberry: Focus on Color</i> 5/1/19-4/30/23 \$11,395
Grant	<b>Petit, E. L.</b> <i>Effect of Cluster Thinning on Sugar and Acidity of Fruits for the Emerging Grape Cultivar</i> . MSP Research Support Funds. 7/1/18-6/1/19 \$1,000.
Grant	<b>Petit, E. L., S. G. Schloemann</b> <i>Evaluation of Wine Juice Quality Following Various Shoot and Cluster Thinning Regimes</i> , UMass CAFE Summer Scholars Program. \$5,000
Grant	<b>Piñero, J. P.</b> , <i>Evaluation of aromatic compounds to improve attractiveness of traps and odor-baited trap trees for attract-and-kill of plum curculio using less inputs</i> . New England Tree Fruit Growers Research Committee. 5/5/2019-12/31/2018. \$2,500.
Grant	<b>Piñero, J. P.</b> , <i>Multi-cultivar grafting: a novel low-cost, grower-friendly Attract-and Kill approach to manage key apple pests in New England</i> . USDA-NIFA Crop Protection and Pest Management Program. 9/1/19-8/31/23. \$324,246
Grant	<b>Piñero, J. P.</b> , <i>Optimizing and 'attract-and-kill system for controlling plum curculio in New England apple orchards</i> . New England Tree Fruit Growers Research Committee. 5/1/2019-9/15/2019. \$2,082.
Grant	<b>Piñero, J. P.</b> , <i>Raspberry Plot Monitoring Contract for 'attract-and-kill' control of Spotted Wing Drosophila (SWD)</i> . USDA-ARS. 5/5/2018-11/1/2018. \$2,493
Grant	<b>Piñero, J. P., S. G. Schloemann, T. Simisky, E. W. Garofalo, J. M. Clements.</b> <i>Invasive insect pests threatening specialty crops in Massachusetts</i> . Mass. Department of Ag. Resources. 9/1/2018-8/31/2020. \$40,700.
Grant	<b>Piñero, J. P.</b> , T. C. Leskey, D. Shaprio-Ilan, H. Faubert, M. Concklin and G. Hamilton. <i>Developing a mult life-stage management strategy for apple maggot, a persistent tree fruit pest in the Northeast, through the integration of attract-and-kill and biological control</i> . USDA-NIFA Crop Protection and Pest Management Program. 9/1/2018-8/31/2021 \$324,854
Grant	<b>Sandler, H. A.</b> , K. Campbell-Nelson, and <b>J. Clements</b> , <i>Supporting IPM on Massachusetts Specialty Crop Farms through the Integration of Applied Research and Extension Outreach</i> . USDA-NIFA, Extension Implementation Program. 9/1/17 - 8/31/2020. \$867,007
Grant	<b>Sandler, H.A.</b> and A.L. Caicedo, co-PIs. <i>Documenting the genetic variation of dodder species in Massachusetts cranberry bogs to optimize efficacy of dodder management</i> . CAFÉ Integrated Research and Extension Grant. Jan-Sept 2019. \$40,000
Revenue	<b>Schloemann, S. G., J. M Clements, J. C. Piñero, E. W. Garofalo and W. R. Autio.</b> <i>Income from Mass Aggie Workshop Series</i> . 2/19 - 4/19. \$9,300
Donation	<b>Schloemann, S. G., J. M. Clements.</b> <i>Fruit Team2019 Sponsorship Donations</i> . \$5,000
	<b>Total: \$2,630,747*</b>

\* this figure includes projects that are multi-year and shared across interdisciplinary teams, states or institutions, not solely for work done in a single year or only within the UMass Extension Fruit Program. It also includes all projects whose funding fell, at least in part, within the FY19 fiscal year.

**STUDENT INVOLVEMENT**

<b>Classes and Tours</b>	
	<b>Student #</b>
<b>UMass classes</b>	
BIOCHEM 496 <i>Effect of Cluster Thinning on Sugar and Acidity of Fruits for the Emerging Grape Cultivar.</i> (4 credits) (ELP)	1
BIOCHEM/BIOL 496 <i>Microbiome of the Grape Berry.</i> (1-4 credits) (ELP)	4
CAFE Undergraduate Summer Scholar Internship - <i>Effect of cluster thinning on sugar and acidity of fruits for the grape variety Frontenac</i> (1 credit) (ELP)	1
ENVRSCI/STOCKSCH 396 <i>Effect of Cluster Thinning on Sugar and Acidity of Fruits for the Emerging Grape Cultivar.</i> (2-4 credits) (ELP)	5
ENVRSCI/STOCKSCH 396 <i>Microbiome of the Grape.</i> (1-3 credits) (ELP)	2
STOCKSCH 196 Ind. Study – Intern as an organic vegetable farm production specialist (3 credits) <b>DWG</b>	1
STOCKSCH 196 Ind. Study – Intern at a hydroponic vegetable farm developing a new production facility (3 credits) <b>DWG</b>	1
STOCKSCH 196 Ind. Study – Intern at an organic vegetable farm (3 credits) <b>DWG</b>	1
STOCKSCH 196 Ind. Study – Intern at two organic vegetable farms (3 credits) <b>DWG</b>	1
STOCKSCH 198F Ind. Study – Intern at a fruit farm learning management skills (3 credits) <b>DWG</b>	1
STOCKSCH 101 <i>Insects and Related Forms</i> (JCP) (2 credits)	50
STOCKSCH 235 <i>Pruning Fruit Crops labs</i> (WRA- 8 labs)	17
STOCKSCH 298: <i>Effect of Cluster Thinning on Sugar and Acidity of Fruits for the Emerging Grape Cultivar.</i> (1 credits) (ELP)	1
STOCKSCH 305 <i>Small Fruit Production</i> (3 credits) (DWG)	18
STOCKSCH 390G <i>Sustainable Grape Production</i> (2 credits) (ELP – 8 labs)	16
STOCKSCH 397GB ST <i>Grapevine Biology</i> (3 credits) (ELP_ – 8 labs)	8
STOCKSCH 496 <i>Study of the Effect of Endomycorrhizal Inoculum on the Propagation of Grapes.</i> (2 credits) (ELP)	2
STOCKSCH 499Y <i>The Wild Relatives of Grapes in North America: Diversity and Impact of Climate Change on Flowering Phenology.</i> (3 credits) (ELP)	1
STOCKSCH 550 <i>Plant Hormones &amp; Applied Plant Physiology</i> (3 credits) (DWG)	14
<b>Sub-total</b>	<b>145</b>
<b>Non-UMass classes</b>	
<b>Farm School class/lab:</b>	
– <i>Grape Production</i> (ELP, lecture)	25
– <i>Grape Pruning</i> (ELP, lab)	25
<b>Greenfield Community College Horticulture Class</b>	
– <i>IPM Basics and Invasive Species</i> (EWG)	15
<b>Eureka! Apple Growing Class</b>	
– <i>IPM and Invasive Species</i> (EWG)	15
<b>Educational Tours at UMass Cold Spring Orchard</b>	
<i>School Tours (Pre-K to High School ages)</i> (SM, KMH, JC)	960
<i>Ecohydrology and Economic Botany Classes (UMass, Wheaton) and others</i> (HAS)	56
<b>Total:</b>	<b>1,191</b>

**DIAGNOSTICS AND CONSULTING**

<b>Grower consultation/recommendations</b>		
	<b>Number</b>	<b>Comments</b>
<b><u>Phone or email consultations</u></b>		
S. Schloemann	195	
J. Clements	475	
E. Garofalo	75	
J. Piñero	40	
		<b>Total: 785</b>
<b><u>Diagnostic recommendations</u></b>		
S. Schloemann	17	
J. Clements (including 50 eXtension 'ask the expert' recommends)	57	
E. Garofalo	55	
J. Piñero	10	
Diagnostic Lab	48	
		<b>Total: 187</b>
<b><u>Site visits</u></b>		
S. Schloemann	9	
J. Clements	84	
E. Garofalo	70	
J. Piñero	25	
		<b>Total: 188</b>

**AWARDS**

<b>Awards And Other Recognition</b>	
<b>Title</b>	<b>Recipient(s)</b>
<i>Distinguished Teaching Award (finalist)</i>	<b>E. L. Petit</b>
<i>Student-run Organic Vineyard Media Coverage – (UMass News Office, New England Public Radio, Greenfield Recorder, MassLive, USNews) -</i> <a href="https://www.umass.edu/newsoffice/article/umass-amherst%E2%80%99s-stockbridge-school-2">https://www.umass.edu/newsoffice/article/umass-amherst%E2%80%99s-stockbridge-school-2</a>	<b>E. L. Petit</b>
<i>Outstanding Educator Award, Northeastern Weed Science Society</i>	<b>H.A. Sandler</b>

**OTHER OUTPUTS**

<b>Working Group Participation and Other Collaborations</b>		
<b>Title</b>	<b>Meeting dates</b>	<b>Fruit Team Participants</b>
<i>eXtension Apple Community of Practice</i>	Ongoing	<b>JMC</b>
<i>Great Lakes Fruit Workers</i>	November 7-9, 2018	<b>JMC</b>
<i>iPiPE Working Group</i>	February, 5-6, 2019	<b>JMC</b>
<i>MyIPM Working Group</i>	October 9-10, 2018	<b>JMC</b>
<i>NE-1720 Multi-state Evaluation of Winegrape Cultivars and Clones</i>	Nov. 12-14, 2017	<b>SGS, EP</b>
<i>NC-140 Regional Rootstock Project, Technical Committee</i>	Nov. 14-15, 2018	<b>WRA, JMC</b>
<i>Northeast Berry Call-In</i>	Weekly April-July '19	<b>SGS, HAS, EWG</b>
<i>North Central IPM Critical Issues Working Group</i>	Jan 1 – Feb 15, 2019	<b>JCP</b>
<i>Northeast Plant Growth Regulator Working Group</i>	March 13-14, 2019	<b>JMC, DWG, JK</b>
<i>Organic IPM Working Group</i>	Monthly calls	<b>DRC</b>
<i>Northeast Tree Fruit IPM Working Group</i>	October 23-24, 2018	<b>DRC, JMC, JCP, EWG</b>
<i>Network for Environment and Weather Applications</i>	Monthly calls	<b>JMC, DRC</b>
<i>UMassAir 5-College Collaborative with UMass Transport Center</i>	Quarterly meetings	<b>HAS</b>

<b>OTHER MAJOR RESPONSIBILITIES OF TEAM MEMBERS</b>	
<b>Name</b>	<b>Description</b>
Autio, Wesley	<ul style="list-style-type: none"> <li>• Director (head) of UMass Stockbridge School of Agriculture (<a href="http://stockbridge.cns.umass.edu/">http://stockbridge.cns.umass.edu/</a>)</li> <li>• Alpha Tau Gamma Fred P. Jeffrey Professorship</li> <li>• Senior Editor Fruit Notes Journal</li> <li>• Co-Editor Horticultural News</li> <li>• Ad hoc reviewer for Journal of the American Pomological Society</li> <li>• Resident agent for the American Pomological Society</li> <li>• Member Pomology, Postharvest, and Rootstock/Rhizosphere working groups of American Society for Horticultural Science</li> <li>• Member, Executive Committee, NC-140 Technical Committee</li> <li>• Project Coordinator NC-140 Honeycrisp Apple Rootstock Trial</li> <li>• Project Coordinator NC-140 Fuji Apple Rootstock Trial</li> <li>• Project Coordinator NC-140 Organic Apple Rootstock Trial</li> <li>• Member School of Earth &amp; Sustainability Steering Committee</li> <li>• Member of UMass Academic Matters Council</li> <li>• Secretary &amp; Treasurer, Massachusetts Fruit Growers Association</li> <li>• Member of numerous graduate student committees (16)</li> </ul>
Clements, Jon	<ul style="list-style-type: none"> <li>• State Contact/Coordinator, Massachusetts Network for Environment &amp; Weather Applications (<a href="http://www.newenglandvfc.org/">NEWA</a>)</li> <li>• Member International Fruit Tree Association Board of Directors (<a href="http://www.ifruittree.org/dnn/default.aspx">http://www.ifruittree.org/dnn/default.aspx</a>)</li> <li>• Member of New England Vegetable &amp; Fruit Conference Program Committee, Media chair and session chair for Stone Fruit session. (<a href="http://www.newenglandvfc.org/">http://www.newenglandvfc.org/</a>)</li> </ul>
Cooley, Daniel	<ul style="list-style-type: none"> <li>• Member AQAD Administration Committee</li> <li>• Member of School of Earth &amp; Sustainability Steering Committee</li> <li>• Member of Plant &amp; Soil Science Graduate Program Committee</li> <li>• Member of Stockbridge School Executive Committee</li> <li>• Member Stockbridge School Undergraduate Curriculum Committee</li> <li>• Member Stockbridge School Educational Effectiveness Plan Committee</li> <li>• Ad Hoc member CNR Curriculum Committee</li> <li>• Ad Hoc member UMass Faculty Senate</li> </ul>
Garofalo, Elizabeth	<ul style="list-style-type: none"> <li>• Member, Tree Fruit IPM Working Group</li> <li>• Member, Small Fruit IPM Working Group</li> <li>• Member, Apple Disease Working Group</li> <li>• Program Co-Chair, New England Vegetable and Fruit Conference Steering Committee</li> <li>• Member, National Association County Agricultural Agents</li> <li>• NC-140 Regional Rootstock Research Project</li> </ul>
Greene, Duane	<ul style="list-style-type: none"> <li>• Member Department representative on the College Personnel Committee</li> <li>• Member Stockbridge School of Agriculture Awards committee</li> <li>• Member Stockbridge School of Agriculture Undergraduate Program committee</li> <li>• Director of UMass Cold Spring Orchard Research and Education Center</li> <li>• Associate Editor International Journal of Fruit Science</li> <li>• Ad hoc member Plant Growth Regulators in Fruit and Nut production Working Group, American Society for Hort Science.</li> <li>• Ad hoc member Viticulture and Small Fruit Working Group, American Society for Hort Science</li> <li>• Ad hoc member of the Postharvest Working Group, American Society for Horticultural for Science</li> <li>• Steering Committee member New England Vegetable and Fruit Conference</li> <li>• Session Chairperson, section organizer and moderator for the Tree fruit sessions at the New England Vegetable and Fruit Conference.</li> <li>• Ad hoc reviewer for HortScience</li> <li>• Ad hoc reviewer for HortTechnology</li> </ul>

	<ul style="list-style-type: none"> <li>• Ad hoc reviewer for Scientia Horticulturae</li> <li>• Ad hoc reviewer for Canadian Journal of Plant Science</li> <li>• Ad hoc reviewer for Journal of Horticulture and Biotechnology</li> <li>• Ad hoc reviewer for Plant Growth Regulation</li> </ul>
Petit, Elsa	<ul style="list-style-type: none"> <li>• Member General Education Council member (since Fall 2015)- Involves monthly 3-hours meeting and reviewing 1-2 courses /month that are submitted as GenEd or IE.</li> <li>• Member Senior lecturer review committee at the CNS college level (since Spring 2016) - Involves reviewing promotion files for lecturers going for the senior-level promotion and 2 meetings.</li> <li>• Co-chair, Ad Hoc Committee on Language Proficiency</li> <li>• Member, SSA Seminar Committee</li> <li>• Ad hoc reviewer for Nature Communication in Biology</li> <li>• Ad hoc Panelist for Sustainable Agriculture Research and Education (SARE), Northeast, Partnership grants.</li> <li>• Member AQAD Review Committee</li> <li>• Member International Program Office</li> </ul>
Piñero, Jaime	<ul style="list-style-type: none"> <li>• Member Lotta Crabtree Graduate Fellowship Evaluation Committee</li> <li>• Member Stockbridge School of Agriculture Undergraduate Recruitment Committee</li> <li>• Member Stockbridge School of Agriculture International Affairs Committee</li> <li>• Member Stockbridge School of Agriculture Graduate Program Committee</li> <li>• Member UMass Center for Ag., Food and the Env. Director of Ag. Programs Search Committee</li> <li>• Ad Hoc Reviewer Agronomy Journal</li> <li>• Ad Hoc Reviewer Journal of Integrated Pest Management</li> <li>• Ad Hoc Reviewer Scientific Reports</li> <li>• Ad Hoc Reviewer Journal of Economic Entomology</li> <li>• Ad Hoc member USDA NIFA OREI Grant Proposal review committee</li> <li>• Ad Hoc member Israel Ministry of Science and Technology Proposal Review Committee</li> </ul>
Sandler, Hilary	<ul style="list-style-type: none"> <li>• Director, UMass Cranberry Experiment Station</li> <li>• State Coordinator, Northeast Extension Integrated Pest Management Program (<a href="http://nifa.usda.gov/program/integrated-pest-management-program">http://nifa.usda.gov/program/integrated-pest-management-program</a>)</li> <li>• Associate Editor, Weed Science</li> <li>• Representative for NEERA 1604 at National IPM Coordinators Committee, 2019-2021.</li> <li>• Chair, (Chair-Elect and Past Chair) Northeast Regional Technical Committee on IPM (NEERA 1604), 2019-2021.</li> <li>• Member, NE-IPM Center, Advisory Council, 2018-present.</li> <li>• Member of New England Vegetable &amp; Fruit Conference Program Committee</li> <li>• Ad hoc reviewer Weed Technology, Torrey Botanical Society</li> </ul>
Schloemann, Sonia	<ul style="list-style-type: none"> <li>• Interim Co-Director of UMass Extension Agriculture &amp; Commercial Horticulture Program</li> <li>• Member UMass Center for Ag., Food and the Env. Director of Ag. Programs Search Committee</li> <li>• Leader, UMass Extension Fruit Team</li> <li>• Program Chair, 2017 New England Vegetable &amp; Fruit Conference (<a href="http://www.newenglandvfc.org/">http://www.newenglandvfc.org/</a>) and session chair for Specialty Fruit and Table Grape sessions</li> <li>• Senior Editor 2017-18 New England Small Fruit Management Guide (<a href="https://ag.umass.edu/fruit/ne-small-fruit-management-guide">https://ag.umass.edu/fruit/ne-small-fruit-management-guide</a>)</li> <li>• Member of New England Vegetable &amp; Berry Growers Program Committee</li> <li>• Member of UMass CAFE Strategic Review Committee</li> <li>• Technical Advisor SARE Grower Grant; <i>FNE18-913 System Modifications and Varieties for Extending the Organic Strawberry Plasticulture Ripening Season in MA</i></li> <li>• Technical Advisor SARE Partnership Grant; ONE19-354 <i>Measuring Soil Health and Carbon Sequestration in an Emerging Chestnut Agroforestry System.</i></li> <li>• Member Advisory Board for NIFA Funded "Elucidating mechanisms underlying the medicinal effects of sunflower pollen on bee pathogens" project (Adler, L. et al)</li> <li>• Member Small Fruit IPM Working Group</li> <li>• Member Small Fruit IPM Working Group</li> </ul>