

Extension Sustainable Fruit Production and Marketing

Status: NIFA REVIEW

Project Director	Organization Project Number	Accession Number
Jaime Pinero-Ramirez	-	7002070
Start & End Date	Organization	To Project / Program
10/01/2020	University of Massachusetts	"Extension Sustainable Fruit Production and Marketing"
Primary Critical Issue		Fiscal Year
Sustainable Agriculture and Food Systems		2022

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In Massachusetts, there is a high need to bring research-based information on all aspects of fruit production to the state’s citizens. For instance, over the past few growing seasons erratic weather has made thinning (the process of removing excess flowers and fruits from trees) challenging. If weather is not favorable for thinning during an optimal period of time, the chance of over- thinning or under-thinning is increased. In addition, Massachusetts fruit growers face tough choices about protecting crops from native and invasive insect pests. In recent surveys, 66% of growers were very concerned about the presence of the brown marmorated stink bug (BMSB) in their area, 89.7% expressed that research on this invasive pest needs to be conducted in MA and other New England states, and 100% of the respondents indicated that more Extension and outreach on BMSB (biology, management, biological control, effective insecticides, etc.) are needed.

The UMass Extension Fruit program seeks to address the following high priority issues related to fruit production with emphasis on the sustainability of fruit production systems. Horticulturalists, entomologists, plant pathologists, and weed scientist have worked collaboratively to provide growers with research-based information on the most effective ways to grow fruit crops and to minimize economic losses caused by adverse weather and pests.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

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.

During FY2022, the fruit team hosted, organized, and presented research-based information at face-to-face and online events across New England and the Northeast. At these events, we shared vital information ranging from invasive insect pest management to time-sensitive horticultural guidance to climate mitigation strategies and the integration of cutting-edge agricultural technologies. We reached 125,173 indirect contacts and 4,939 direct contacts, mostly commercial fruit growers. The most important Extension activities conducted include 11 different on-farm research and demonstration projects, workshops, 14 grower meetings and conferences, 14 Extension articles, 5 Fact Sheets, 1 Podcast, 23 YouTube videos, two production guides (New England Tree Fruit and New England Small Fruit production guides), 20+ Newsletter articles, and 6 Mass Aggies Seminars that targeted home-owners and small-scale growers.

Briefly describe how your target audience benefited from your project’s activities.

This project seeks to reach out to and support, via Extension and on-farm demonstrations, hundreds of small- and mid-scale fruit farmers located in Massachusetts and neighboring states. The research and Extension team has been able to set additional experiments at two commercial orchards in New Hampshire and at one commercial orchard in Maine. Therefore, project results are reaching out to growers in multiple states of the Northeast.

In addition, this project is disseminating locally-generated research-based information that will help fruit growers, including under-represented, low-income farmers, and beginning farmers, to improve crop, pest, and pollinator management. Short-and mid-term outcomes derived from our Extension programming were documented. Two examples of projects that resulted in documented mid-term outcomes (adoption of pest management practices leading to reductions in insecticide used by participant growers) are shown below.

Spotted-wing drosophila. Six growers reported using traps baited with diluted Concord grape juice for SWD monitoring. In addition, the broader public, including consumers, may benefit from this project because by using diluted Concord grape juice in traps the berry crops may receive less insecticides applied against SWD than when no traps are deployed. The monitoring system developed assisted growers who used it in their decision about whether or not to spray insecticides. For one grower, the monitoring system decreased insecticide use by 30%.

The Network for Environment and Weather Applications (NEWA). During the 2022 growing season there were 35 active NEWA (<https://newa.cornell.edu>) on-farm weather stations in Massachusetts. NEWA 3.0 has been operational for the full year. During the period Oct 1, 2021 - Sep 30, 2022, there were 979 total NEWA users in Massachusetts, including 761 returning users, 218 new users, 3,275 sessions and 8,470 page views (over 24 total NEWA resources). Massachusetts NEWA state coordinator (Clements) spent time monitoring, repairing, and replacing NEWA weather stations on Massachusetts fruit and vegetable farms.

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.

Briefly describe how the broader public benefited from your project's activities.

The UMass Stockbridge School of Agriculture and UMass Extension reach out to community members through a series of spring workshops on topics of general interest to homeowners and small-scale farmers. In the past, workshops have been offered in fruit tree grafting, pruning, wildflower identification, and cider making. An additional accomplishment is the documented increased collaboration between the University of Massachusetts Stockbridge School of Agriculture and UMass Extensions, and five New England Universities: University of Maine University of New Hampshire, University of Connecticut, University of Rhode Island and UMass. In 2021/22, Extension Educators and Faculty from New England and New York came together to organize a series of free online fruit educational meetings to provide growers across the Northeast and beyond important updates on horticultural and pest management topics.

Comments (optional)

OUTPUT SUMMARY:

- E. Garofalo, J. Clements, J. Pinero. 2022. Main coordinators of the Northeast Extension Fruit Consortium Winter Fruit Meeting Series. Nine online sessions with a combined attendance of 613 fruit growers (direct contacts).
- [New England Tree Fruit Management guide](#). 98,091 views during FY2022 (indirect contacts)
- [New England Small Fruit Management guide](#). 12,717 views during FY2022 (indirect contacts)
- [Apple Grafting Workshop for Commercial Orchardists](#) offered jointly by the University of New Hampshire Extension and the UMass Extension fruit team. February 16, 2022. Attendance: 52 fruit growers (direct contacts)

COORDINATED 6 MEETINGS, FOR A COMBINED AUDIENCE OF 269 GROWERS

- Clements, J. 2022. Apple tree pruning demonstration, March 2, 2022, Mann's Riverside Orchard, Methuen, MA. (20 attendees)
- April 19, 2022. UMass Fruit Team Twilight Meeting, UMass Cold Spring Orchard, Belchertown, MA. 1 pesticide recertification credit Audience: 37 growers.

- April 20, 2022 - UMass Fruit Team Grape Noon Zoom with Dr. Elsa Petit, Audience: 14 growers.
- May 4, 2022 - UMass Fruit Team Twilight Meeting, Mann Orchards Riverside Farm, Methuen, MA. 1 pesticide recertification credit. Audience: 48 growers.
- June 1, 2022 – UMass Fruit Team Twilight Meeting, Apex Orchards, Shelburne Falls, MA. Audience: 45 growers.
- July 14, 2022 – Annual Summer Meeting of the Massachusetts Fruit Growers’ Association, UMass Orchard, Belchertown, MA. Audience: 105 growers

Events organized by fruit team member(s) (in whole or part). Estimated audience: 180

Clements, J., and W. Cowgill. 2022. Northeast Plant Growth Regulator Meeting, March 8-9, 2022, Wilkes-Barre, PA. <http://virtualorchard.com/northeastpgr/> (35 attendees)

Clements, J., J. Pinero, D. Cooley, D. Greene, and E. Garofalo. 2022. UMass Fruit Team Open Office Hour (IPM and Healthy Fruit updates). Via Zoom, weekly on Tuesdays at noon, April 5 through June 28, 2022. 25 attendees per Open Office Hour.

Clements, J. 2021-2022. Apple Maturity Update(s). Via Zoom, weekly on Tuesdays at noon, August 24 through October 12, 2021 (8 total) and August 30 through October 11, 2022 (8 total, 8 total for the reporting period). 15 attendees per Update.

Clements, J. 2022. Home Orchard Establishment. Mass Aggie Seminars, 19-February 2022, via Zoom. (65 attendees)

Clements, J. 2022. Home Orchard Pruning. Mass Aggie Seminars, 26-February 2022, via Zoom. (65 attendees)

8 Grower conferences. Audience: 350+

Disseminate results to the academic community at conferences: 2022 Entomological Society of America – Eastern Branch. Oral presentation titled “If We Are Already Inside, We Can Hold the Door Open for Someone Else”. April 25, 2022. Audience: 48 people.

UMass Healthy Fruit Newsletter published by the UMass Extension fruit team. Vol. 30, 20 issues published in 2022. Subscription: 185 people. Example of a Healthy Fruit newsletter article: [Clements, J. 2022. NEWA 3.0 - What You Need to Know. Healthy Fruit, Vol. 30, No. 1, April 5, 2022.](#)

14 Extension articles: Estimated readership: 350

5 Fact Sheets published: Estimated readership: 80

1 Podcast. [UMass IPM Fruit Loop](#), the audio version of Healthy Fruit Newsletter. The podcast was interrupted in May 2022 due to staff shortage. Estimated views: 80.

15 UMass Extension Fruit program YouTube videos. Total views: 1,121.

8 Jon Clements YouTube channel. Total views: 3,549

Three grants funded during FY2022:

Garofalo, E., Piñero, J.C. Engaging Undergraduates in Research and Extension Training using Technology and Experiential Learning to Enhance the Sustainability of Food Production Systems. USDA AFRI Education and Workforce Development Program – Research and Education Experience for Undergraduate Students. (9.1.2021-8.31.2026) (\$708,070)

Clements, J. 2022. Precision Cropload Management for Apples. CORNELL 92884-20621 PRIME USDA (\$5,000)

Piñero, J.C. (PD) and Garofalo, E. (co-PI). Educating the Next Generation of Extension Through Experiential Learning of Applied Research Through Evaluating of Efficacy and Financial Viability of Water Sprout Removal for Pear Psylla IPM in Three New England States. Northeastern IPM Center Partnership Grants program (3/1/22 – 2/28.23) (\$29,707).

11 Professional development meetings were attended.

INDICATOR REPORT FY2022: 10 growers reported a decrease in insecticide use (1 grower – spotted-wing drosophila; 9 growers – apple maggot fly)

