

Sustainable Greenhouse Management FY23

Status: NIFA REVIEW

Project Director

Jason Lanier

Organization Project Number

Accession Number

7001988

Start & End Date

10/01/2020

Organization

University of Massachusetts

To Project / Program

"Sustainable Greenhouse Management"

Primary Critical Issue

Commercial Horticulture and Landscape Management

Fiscal Year

2023

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

UMass Extension's Greenhouse Management & Production project supports the controlled environment horticulture and agriculture industries with research-based education and training. As Massachusetts undergoes cultural, economic and climatic changes, both new and established growers need to learn novel skills and apply practices that are economically, socially, and environmentally responsible for an evolving industry and market. Sustainable greenhouse management requires solutions to problems of energy, pest management, trained labor, water protection and conservation, production practices and plant nutrition for a diverse range of crops and complex agricultural and environmental issues.

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.

Education on pertinent topics including greenhouse crop production, integrated pest management, water and nutrient management, pest management, and sanitation was delivered to stakeholders through a variety of web resources, social media, publications, training programs and diagnostic services. Training programs are predominantly offered in an online, synchronous format at this time, coupled with one-to-one consultations and focused interaction with key industry groups. These approaches offer flexibility, convenience, and cost savings for both our program and our stakeholders and extend our reach to larger and more geographically diverse audiences. This is especially important for meeting growing and evolving demands for our time and expertise, considering significant and continuing capacity deficits in our program and transitional strategic objectives.

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

The greenhouse industry consists of wholesale growers and grower retailers, including a rising number of diversified operations that are adding greenhouse crops to their business strategies. This means that both established and nascent ventures stand to benefit from cutting edge knowledge. Lack of trained personnel to perform horticultural work is one of the consistent refrains of the industry segments that we serve, based on needs assessment. Our activities provided critically necessary training for large numbers of workers and managers, which served to grow their skill sets, employability, and value, and helped them to meet requirements for expedient industry certifications and licensure. As a result, businesses were better poised to meet the demands of clients and customers and remain profitable. Greenhouse crop production also provides a basis for many associated horticultural interests such as plant and seed propagators, equipment and materials suppliers and service providers.

For example, for the January 18, 2022 Get Ready For Spring Greenhouse Education Program:

- 100% of respondents indicated that they were at least "somewhat likely" to incorporate what was learned at the event into their management program.
- 83% of respondents indicated that knowledge from the program would help with cultural management decisions.
- 83% of respondents indicated that knowledge from the program would help with pest management decisions.

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

According to the most recent USDA Census of Agriculture (2022), horticultural production including greenhouse and floriculture (as well as nursery and sod) is ranked first among Massachusetts agricultural commodities with sales estimated at over \$164 million, which approaches 1/3 of total agricultural sales in the Commonwealth. In the same survey, 594 Massachusetts firms are credited with producing floriculture or bedding crops under 5.9 million square feet of glass or other protection, while 262 firms produced food crops under approximately 2.3 million square feet of cover. Best management practices for greenhouse production help to support healthy, high quality plant material, vibrant businesses and markets, recreation and leisure, beautified spaces and enhanced value of properties, while simultaneously promoting efficiency, input reduction, lower resource use, and sustainable and ecologically sound managed spaces.

Comments (optional)

Web and social media communications

- Greenhouse Email Subscription List:
 - **801 subscribers**
- ag.umass.edu/greenhouse web site:
 - **166,751 active users**
- Instagram posts
 - **13 posts**
 - **564 followers**
- Facebook posts
 - **4 posts**
 - **1363 followers**

One-to-one consultations

- Consultations based on direct inquiries (phone calls, e-mails, in-person): **103**
- Consultations based on samples submitted to UMass Extension's Plant Diagnostic Lab: **99**
- In-depth consultations and site visits: **16**

Single day education programs/workshops

- 2022 Virtual Fall Greenhouse Education Program (November 17, 2022 - half day - online): **56 attendees**
- 2023 Virtual Get Ready for Spring Greenhouse Education Program - Part 1 (January 18, 2023 - half day - online): **39 attendees**
- 2023 Virtual Get Ready for Spring Greenhouse Education Program - Part 2 (March 2, 2023 - half day - online): **52 attendees**

Development and revision of written resources

- Greenhouse Update Newsletter: **12**
 - Greenhouse Update: Impatiens Downy Mildew (<http://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-july-31-2023>): **72 unique readers**
 - Greenhouse Update: Tobacco Rattle Virus on Peonies (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-june-30-2023>): **97 unique readers**
 - Greenhouse Update: Downy Mildew of Sunflower (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-june-27-2023>): **90 unique readers**
 - Greenhouse Update: Tomato Brown Rugose Fruit Virus (ToBRFV) This Spring (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-may-22-2023>): **67 unique readers**
 - Greenhouse Update: Downy Mildew on Coleus (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-may-11-2023>): **89 unique readers**
 - Cold, Cloudy Weather Can Lead to Ammonium Toxicity (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-25-2023>): **19 unique readers**
 - Warm Weather Increased Aphid Populations (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-20-2023>): **21 unique readers**
 - Update: Botrytis Blight, Growers (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-18-2023>): **12 unique readers**

- Update: Iron/Manganese Toxicity in Geraniums (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-10-2023>): **32 unique readers**
- Greenhouse Update: Be On the Lookout for Broad Mites (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-4-2023>): **8 unique readers**
- Greenhouse Update: Pythium Root Rot of Dianthus, Growers (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-april-3-2023>): **13 unique readers**
- Keep an Eye on Substrate pH and EC (<https://ag.umass.edu/greenhouse-floriculture/greenhouse-updates-march-24-2023>): **97 unique readers**

Invited presentations/lectures

- Guest lectures within UMass:
 - Plant Disease Diagnostics (Madeiras - 8/15/20203 - REEU (Research and Education in Extension for Undergrads)): **9 attendees**
 - Introduction to Plant Pathology (Madeiras - 8/14/20203 -REEU (Research and Education in Extension for Undergrads)): **9 attendees**
 - Disease Management in the Greenhouse (Madeiras - 4/27/2023, Guest Lecture STOCKSCH 315): **39 attendees**
 - Disease Management in the Greenhouse (Madeiras - 12/1/2022, Guest Lecture STOCKSCH 315): **9 attendees**
- Invited presentations for outside organizations:
 - Downy Mildews in the Greenhouse (Madeiras - 8/16/2023, Massachusetts Flower Growers Association Summer Meeting): **48 attendees**
 - Plant Pathology for Master Gardeners (Madeiras - 2/14/2023, Barnstable County Extension, online): **25 attendees**
 - Fungicides 101 (Madeiras - 11/17/2022, UMass Extension Pesticide Education Program, online): **121 in attendance**

Educational program facilitation on the behalf of outside organizations

- Massachusetts Flower Growers Association Education Committee (Njue in FY23)
 - MGFA Summer Meeting and Education Program (August 16, 2023 – in-person, Sudbury, MA) **55 attendees**
- Northeast Greenhouse Conference Education Committee (Njue in FY23)

Liaison, leadership, and networking with industry and the public at large

- Massachusetts Flower Growers Association Board of Directors (Njue in FY23)
- Northeast Greenhouse Conference Board of Directors (Njue in FY23)