Overview of Field Day featuring UV-C Treatment of Cucurbit Downy Mildew Research
Held August 18, 2021 at Ward's Berry Farm, Sharon, MA

Presenters:

Sue Scheufele, University of Massachusetts Cooperative Extension Vegetable Program
Nick Skinner, Mt Sinai Light & Health Research Center
Jim Ward, Ward's Berry Farm
Andy Radin, University of Rhode Island Cooperative Extension

Attendee Demographics:

14 total (not including organizers)

- Ag service provider – 4
- Commercial producer – 4
- Industry rep – 1
- UV engineer – 1
- Extension Educators – 1
- Not Specified – 3

Summary of survey questions responses relating to UV pest management topics:

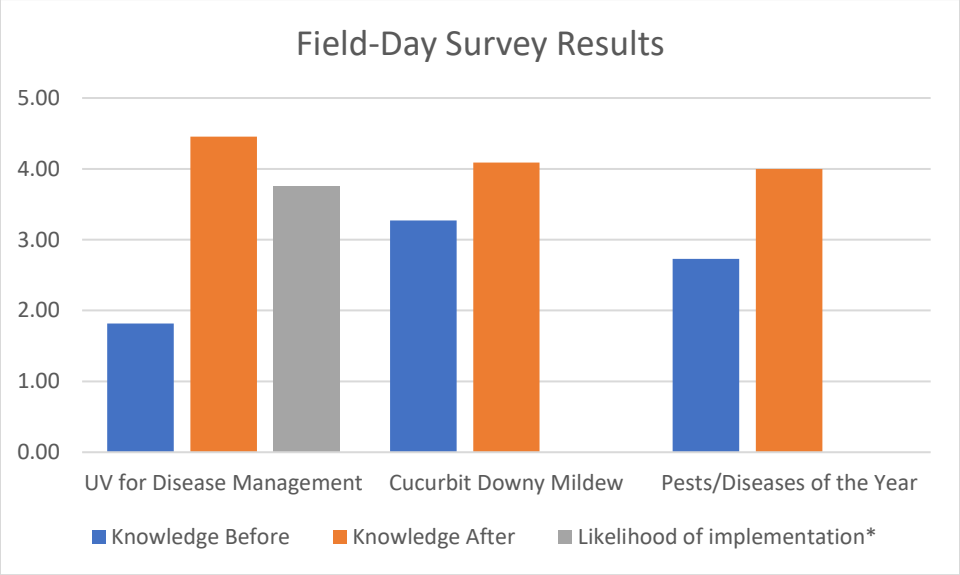

Figure 1. Summary of UV and pest management related question responses. Knowledge question scale: 1 = no knowledge, 5 = expert; Likelihood of implementation scale: 1 = not at all likely, 5= extremely likely
*Likelihood of implementation question was only answered by the 4 respondents that identified as "commercial producers".

Topics covered included:

Cucurbit Downy Mildew - information about the pathogen

- How it interacts with the plants
- Seasonality and forecasting
- How to identify cucurbit downy mildew and differentiate it from similar appearing diseases like angular leaf spot
- How it is managed conventionally

UV Light – what is it?

- Technical definition.
- 3 bands of UV (A, B, C), their properties, and what produces them
- History of germicidal effects

When did the study of UV control of plant pests start and what crops and diseases have been treated with UV?

- Brief history on UV use to control pathogens
- Recent work on the UV treatment crops: cucurbits, strawberries, basil, beets
- Effect on various disease: powdery mildew, downy mildew, angular leaf spot, and others

How does UV treatment work?

- Explanation of theorized mechanisms: direct action and immune response
- Plant/pathogen repair mechanisms for UV damage and importance of treating after sundown

UV treatment from the Producer's Perspective

- Discussion of the UV treatment experience by Jim Ward and his staff

Safety

- Results of UV Exposure (skin and eye)
- Personal Protective Equipment
- Safe practices

Building a unit yourself – what resources are available and how to find them

- Build it yourself plans
- Complete bill of materials (BOM)
- Construction drawings
- Cost – parts, labor requirements
- Wiring instructions

Other use for UV at Ward's Berry Farm

- Farm's experience using the UV unit for control of powdery mildew on Zinnia flowers

Event Photos:

Attendees getting a tour of Ward's Berry Farm (Sharon, MA).

Jim Ward (center-right wearing blue) describes his experience with using UV as part of this research project.

Sue Scheufele (center) of UMass Extension explains the 2020 and 2021 UV-C/cucurbit downy mildew trials at Ward's Berry farm. UV-C treatment attachment was on display and can be seen on the left.

Sue Scheufele explains how to scout cucurbit DM by using an infected leaf as an example.

Ward's Berry Farm was able to successfully control powdery mildew in a field of Zinnia flowers using the UV-C application attachment designed and built for the NE SARE cucurbit downy mildew research project. This additional successful use was highlighted as part of the farm tour.