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Demonstration Farm Provides Educational Opportunity for IPM

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USU Extension Demonstration Farm Provides Educational Opportunities for IPM

Nick Volesky & Mair Murray

Abstract

The mission of USU Extension's Integrated Pest Management (IPM) program is to increase the use of sustainable pest management practices within urban and rural landscapes to provide economic, human, and environmental health in Utah. In the spring of 2022, the IPM program established a vegetable farm to test and demonstrate IPM practices. The farm served as an experiential learning classroom for almost 50 farmers and home gardeners.

Introduction

Pesticides, both organic and conventional, are often necessary for the production of healthy crops and landscapes. However, Integrated Pest Management (IPM) practices promote the use of non-chemical options first and pesticides as the last resort. A high level of IPM implementation uses a mix of these practices to prevent crop and ornamental plant losses, improve profits, and protect human health and the environment (USDA, 2018).

The IPM program identified an ongoing need for IPM education by reviewing comments and experiences of clientele in the 'Utah's Gardening Experts' Facebook group. This group was created in 2019 by USU Extension faculty and staff to provide research-based information direct to clientele on social media. The IPM team saw a need for a practical demonstration site due to the recurring questions and comments from clientele relating to non-chemical options to manage arthropod pests and plant diseases. Pests cause economic loss and aesthetic damage which can often be prevented or maintained at low levels by using proper IPM practices.

Response and Target Audience

In the spring of 2022, the IPM program established a vegetable IPM farm to test and demonstrate various IPM techniques for vegetable production. This one-acre farm is located at the Utah Agricultural Experiment Station Greenville Farm, adjacent to USU main campus in Logan, UT. The main goal of this farm was to provide a "real-life classroom" to demonstrate to clientele the cultural, mechanical, and biological control methods used to manage pests.

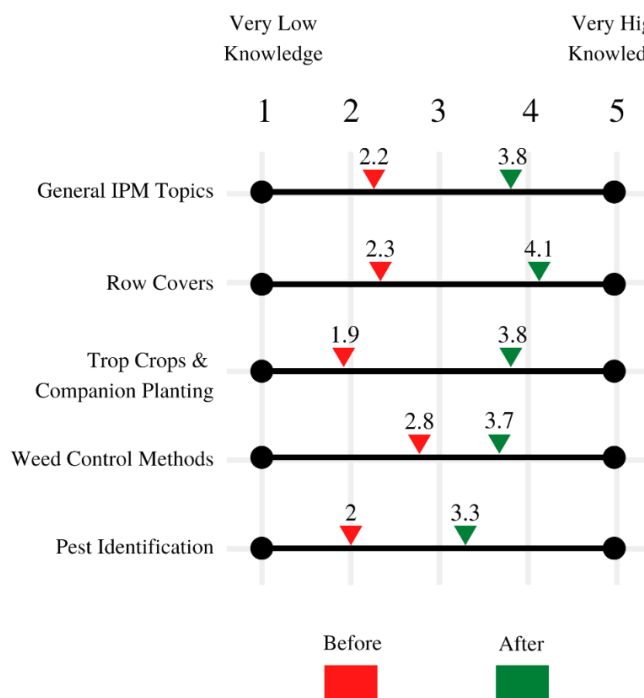
To showcase farm activities to clientele, the USU Extension IPM team hosted a tour in July of 2022. Topics included mulch use in dahlia production (Dr. Claudia Nischwitz), row covers, trap cropping (Nick Volesky), beneficial insect identification (Zachary Schumm), and weed management techniques (Bridger Carey). To complement the tour, we created videos (*Tomato Spotted Wilt Virus Overview* and *How to Manage Cabbage Aphids*) and used our existing social media platforms to reach a wide audience. We posted 11 updates of the work on the farm throughout the season to followers of "USU Extension – Utah Pests" Facebook (1,737 followers) and "USU Extension – Utah Pests" Instagram (1,174 followers). At the end of the tour, we asked participants to complete a retrospective evaluation to assess their knowledge of IPM topics and intentions to adopt best IPM practices at their own site.

Outcomes and Impact

The non-chemical pest control methods used on the farm were successful. The IPM weed management program used minimal labor and resulted in a weed-free area around the crops, and approximately 75% coverage of weeds elsewhere. Insect exclusion via covering crops with mesh netting or spun fiber is not commonly used by Utah farmers, but we found it to be 100% successful in the demonstration farm. The sunflower/sorghum trap crops harbored true bugs and other pests 50% more than what was found on the vegetable crops. The mulching trial for tomatoes and dahlias showed significantly less incidence of disease and pest presence.

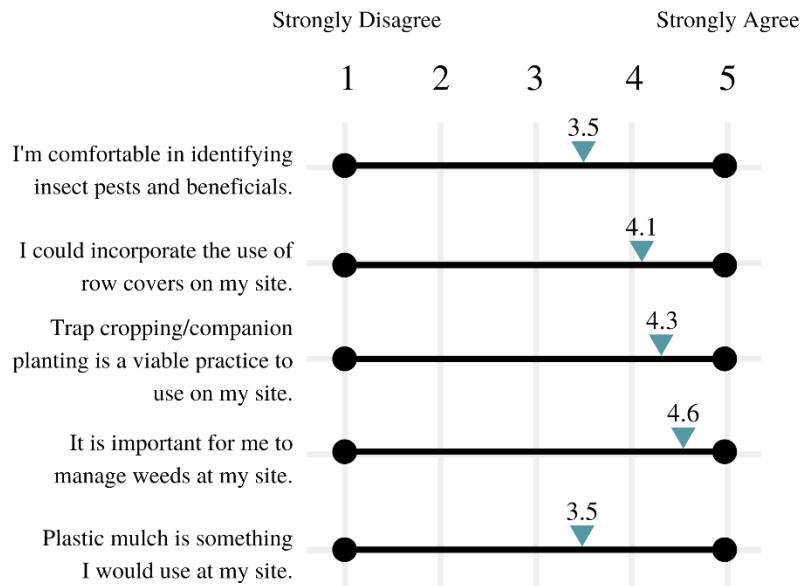
A total of 48 individuals participated in the on-farm workshop, and a total of five (5) CEU credits were awarded to attendees with a pesticide applicator’s license. Based on the retrospective evaluation results ($n = 28$) shown in Figure 1, there was an improvement in participants’ knowledge of all IPM topics covered in the workshops. Results indicated there was a 73% increase in participants’ knowledge of general IPM tactics, a 78% increase in row cover use to control pests, a 100% increase in trap crop/companion planting, a 32% increase in weed control methods, and 65% increase in pest identification.

Figure 1: Participants’ Mean Knowledge Rating on IPM Topics Demonstrated at the Farm



The evaluation also assessed participants’ intentions to implement IPM methods demonstrated at their own sites. As shown in Figure 2, participants were likely to use row covers, trap cropping, and plastic mulch. The online videos and social media interactions led to follow-up questions regarding IPM. The *Tomato Spotted Wilt Virus Overview* video reached over 1,500 individuals and had 644 views on Facebook and 269 views on Instagram. The *How to Manage Cabbage Aphids* video has reached over 1,100 individuals and has 593 views on Facebook.

Figure 2: Participants' Opinions about IPM Topics Demonstrated at the Farm



Public Value and Next Steps

Evaluation results from the IPM demonstration farm indicated participants increased their knowledge of vegetable IPM practices and intended to apply what they learned in the workshop. The demonstration farm effectively responded to the needs and interests of stakeholders by providing outreach education on using IPM to manage insect and disease pests on Utah farms and home landscapes. Our outreach activity provided participants with the skills to identify, monitor, and manage pest problems, which can ultimately reduce pesticide use. The potential long-term outcomes of IPM adoption include reduced human and environmental exposure to pesticides and reduced yield losses for producers. Moving forward, the USU Extension IPM Program team will continue to use the demonstration farm and deliver research-based education and outreach opportunities to more Utah stakeholders. In the future, we hope to routinely use the farm for tours, videos, and experiential learning opportunities for Utahns.

References

USDA. (2018). A national road map for Integrated Pest Management. Washington, DC.
<https://www.ars.usda.gov/ARUserFiles/OPMP/IPM%20Road%20Map%20FINAL.pdf>

Appendix

Pictures taken during the IPM demonstration farm tour.



Above: Dr. Claudia Nischwitz discusses the use of different colored mulches to deter pests at the IPM demonstration farm tour.



Above: Bridger Carey demonstrates different weed control methods at the IPM demonstration farm tour.



Above: Zach Schumm discusses how to identify beneficial insects found in the companion plants at the IPM demonstration farm tour.