

Title: Intensive Training in the Tree Fruit Industry: An In-service Training Experience for Extension Employees

Personnel:

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Duration of Project: 1 year

Justification

Objective

The purpose of this proposed work is to develop an intensive, two-day immersive training experience in the essentials of the tree fruit industry for Extension personnel in the Mid-Atlantic region. The objectives of this project include:

1. Provide a foundational base of knowledge regarding the most current practices in orchard management to Extension educators.
2. Ensure all educators – from those who work with the industry on a daily basis to those who only occasionally are called upon to advise clients – have the same standard of practical knowledge across the state.
3. Develop this in-service programming as a pilot program for a continuing professional development program that will recur on a perennial basis.

Extension Advisory Committee Priorities

The proposed research meets the following SHAP priorities (among others):

1. Planning ahead for future retirements in pomology.
2. Interdisciplinary: Develop Educational Program for Independent Integrated Crop Management Scouts.

Narrative

The tree fruit industry is a vibrant horticultural industry in Pennsylvania, from the major producers in the Pennsylvania fruit belt that supply its many packing houses and processors, to the diversified enterprises that supply the urban population of the eastern seaboard with a steady stream of fresh fruits and vegetables. These enterprises are major drivers of the agricultural economy of the state, influencing affiliated industries involved in the supply chain (nurseries, chemical suppliers, equipment and implement dealers), financial institutions that provide capital to operate and expand capacity, and even the tourism industry.

Penn State Extension has been – and will continue to be – an integral part in the success of the orchard industry through educational programming developed specifically to support the vitality of the industry. This support manifests in a variety of ways, from the offering of free or low-cost workshops such as the winter fruit schools, or through the provision of evidence-based, site-specific counsel on a face-to-face basis. It is part of Penn State Extension’s mission to enable orchard owners and managers to make sound and profitable decisions regarding all aspects of their enterprises.

However, Extension is experiencing significant changes that will affect how this educational programming is developed and delivered. One change in particular with lasting implications relates to recent and pending retirements among the existing cohort of tree fruit industry-related faculty, specialists, and educators, both within Penn State and regionally. As these individuals depart, they take with them decades of accumulated experience that is increasingly difficult to replace. Fewer institutions of higher learning support horticulture programs, and fewer still retain a strong emphasis on tree fruit production for the Mid-Atlantic region of the United States. Consequently, as Extension personnel are replaced, perhaps with someone whose primary experience is in another area of horticulture, there may be gaps in that individual's education with respect to this particular discipline.

To ameliorate this pending loss of knowledge, and to ensure all horticulture Extension educators have the same foundational understanding of the principles of the industry, we propose to develop an intensive, two-day educational event dedicated to one specific goal: provide a comprehensive overview of best orchard management practices for the Mid-Atlantic region, covering the topics most likely to be encountered by an educator called upon to advise an orchard owner about a particular problem. In essence, this proposed in-service training workshop is a revival of an older annual/biennial training program previously offered to Extension employees throughout the Mid-Atlantic Region.

Every Penn State Extension educator has training in the fundamentals of horticulture: the basic knowledge of soils and nutrition, of physiology and development, of pathology and entomology. What this program will do is focus the attendee's attention on the most current knowledge, practices, and recommendations unique to tree fruit industry, and to do so in manner that includes hands-on field training.

The question may be rightfully asked as to how this proposed work differs substantially from existing conferences such as the Mid-Atlantic Fruit and Vegetable Convention or the Cumberland-Shenandoah Fruit Workers Conference, or how it would differ from enrolling in a Pomology course at Penn State, or even simply reading the *Tree Fruit Production Guide*. The answer lies in the specificity of the content and on the density of the material.

The Mid-Atlantic and Cumberland-Shenandoah conferences both present excellent content on current or in-progress research, usually on specific, single-topic issues, and are useful to supplementing an existing body of knowledge. However, they are too fragmented in nature to provide a comprehensive overview of the principles of managing an orchard. Furthermore, an educator for whom responding to tree fruit-related inquiries occupies less than 50% of their monthly responsibilities would most likely attend the Mid-Atlantic convention to bolster their knowledge of the primary industry in their region. (For example, an educator who spends 75% of their time consulting for vegetable growers and less than 25% on tree fruit, would likely forego sessions on tree fruit in favor of those devoted to vegetable production. Note that this may not entirely be by choice: conflicting schedules may dictate their course of professional development.)

At the opposite extreme, a graduate-level pomology course would provide a firm foundation in the base subject. But due to the desire to cover specific topics in depth, attending such a course would require a significant investment in time. A single course would require 48 contact hours with an instructor using the standard Carnegie unit of measurement adopted by most American institutions of higher education, including Penn State University. And while the *2020-2021 Penn State Tree Fruit Production Guide* is the definitive reference on the subject, the *Guide* can be overwhelming for the inexperienced user. In fact, one of the purposes of the proposed workshop is to teach how to maximize use of the *Guide*: how it is organized, how to locate the information needed, and how to seek information not contained within.

Procedures

Methods

The organization of the workshop will be as a two-day event, with one “day” devoted to classroom-based education and a second “day” consisting of field-based laboratories on topics such as disease identification or demonstrations of training systems. The focus will be on apple production, though peach and pear production will not be ignored. Each topic covered will intensively focus on recommended best practices for new, high-density orchards and (depending on the subject) best practices for managing existing medium-density orchards. Specific subject material will be left to the discretion of the specialist, and will be drawn from each of the following categories (with suggested subject matter in parenthesis):

- **General Horticulture** (e.g. site preparation; rootstock/cultivar selection; pollination requirements)
- **Basic Pomology** (e.g. canopy management for trellised high-density orchards; row and row middle management)
- **Disease/Insect/Pest Management** (e.g. major pathogens, pests, and integrated pest management techniques; postharvest diseases and disorders and their management; rapid apple decline monitoring and reporting)
- **Harvest and Postharvest Handling** (e.g. understanding fruit maturation and harvest windows; basic storage principles)
- **Business Management** (e.g. site preparation and production budgeting; insurance programs, grants, and risk management; labor concerns)
- **Emerging Technologies** (e.g. weather services and predictive models; harvest-assist platforms; soil moisture sensing)

The event will be hosted at the Fruit Research and Extension Center (FREC), whose grounds amply supply everything that would be need for the hands-on laboratories. Attendees would receive classroom training and “laboratory” training in the form of field experience and observations. In addition, attendees would be provided a copy of the *2020-2021 Penn State Tree Fruit Production Guide* and a full course packet of all of the presentations and any additional supporting materials deemed essential by the speakers. Attendees would be charged a small fee for food and for lodging.

The speakers will be drawn from the specialists at Penn State, and from the surrounding region. Dr. Kari Peter has committed to teaching the unit on pathology and is planning an outdoor training session as well.

As highlighted earlier, one impetus behind this proposal was the pending loss of knowledge among the educators and the research specialists. Dr. Chris Walsh, who has recently retired from the University of Maryland, has agreed to talk about harvest and postharvest handling. This proposal includes a request for funds to help defray his travel expenses, meals, and lodging. This proposal also includes a request to fund a second external retiring or emeritus faculty member or Extension person.

Expected Outcomes and Deliverables

The expected outcome of this event is that every educator would be able to do a site visit at any orchard and be able to address most problems presented by the orchard owner, including an ability to identify and recommend control methods for weeds, diseases, and pests common to Pennsylvania, offer advice on how to modernize orchard production training systems and to step the grower through the process of organizing and budgeting for a transition to a high-density system, and to assist the grower in obtaining assistance from other Extension offices/educators for tasks such as pesticide safety, guest worker / management services, and state or federal programs for grants and assistance. Should an answer not be immediately apparent, the educator should be equipped to discover a solution

– either in the *Production Guide* or other authoritative source applicable to our region – or when unsuccessful to direct inquiries to the appropriate specialist and assist that specialist in resolving the issue.

A secondary outcome of this project will be the development of additional in-service opportunities on a recurring multi-year cycle, to cover recent developments, changes in practices, and changes in the industry. Regular updates to the program will maintain a consistent knowledge base among educators until sufficient personnel changes warrant a second foundational workshop.

A tertiary outcome, though not necessarily one of direct interest to SHAP, is that a successful training event will serve as a model for the vegetable, small fruit, and mushroom industries as they develop similar programs. Their efforts would benefit any educator with a diversified orchard operation in their region and would benefit the owner of that operation by having a dependable resource to turn to when problems arise.

This workshop will produce materials in the form of PowerPoint presentations, videos, handouts, and reprints of refereed publications that will be made available to the general public via the FREC web site. All material not of a sensitive nature will be placed online as a resource for the growers of this state and region, in addition to Extension personnel throughout the Mid-Atlantic states.

Conclusion

Extension is at a crossroads, where a cohort of talented, long-serving generation of faculty, specialists, and educators has retired or is set to retire in the coming decade. This in-service workshop is designed to capture some of that departing knowledge and experience for those who remain. It also seeks to elevate the level of working knowledge about the tree fruit industry among all Extension employees associated with a horticultural profession. The expected impact of this workshop is the development of a body of knowledge and practical skills to be shared among Extension personnel throughout the region, and an in-service training format to serve as a foundation for subsequent programs in the future.

Budget

Hourly Wages	\$1,500	(Program assistant at 100 hours at \$15 per hour.)
Fringe Benefits.....	\$ 117	(7.86% of assistant wages.)
Supplies		
Printing and Copying.....	\$ 300	(Informational packets.)
<i>Tree Fruit Production Guide</i>	\$ 700	(20 copies at \$35 per copy).
Office Supplies	\$ 150	(Misc. pens, binders, etc.)
Honoraria	\$ 800	(\$400 per person, including hotel stay.)
Travel	\$ 115	(Program assistant travel at \$0.575 per mile.)
Total	\$ 3682	

A complete budget justification statement describing each category request in additional detail may be obtained from the College of Agricultural Sciences Grants and Contracts Office.

Other Support

No other financial support exists at this time for this project.