High-tunnel resource manual and producer resource kit providing the tools for profitability

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Are fruit and vegetable farmers in Iowa interested in learning more about high-tunnel production?

Yes, because high tunnels require a different set of skills to maximize profitability.

Background

High tunnels are inexpensive, passive solar structures in which crops are grown directly in the soil. They enable farmers to plant earlier, control the environment, and produce high yields of quality produce through an extended season.

However, to be successful in high tunnel production, there is a steep learning curve for growers to understand the unique cropping systems and management skills needed. High tunnels require different equipment, fertilizer, and pest management strategies. The “trial and error” method of learning production methods puts growers at great financial risk.

The objectives of the project were to:
1. Develop a resource manual and resource kit for high-tunnel producers that provided quick access to construction, maintenance, pest management, production and marketing issues that will impact producer profitability.
2. Develop and offer three high-tunnel training workshops with in-depth production and marketing information and introduce producers to the resource kit and how to effectively use the resources provided, consequently improving the profitability of their high-tunnel crops.
3. Increase the number of full- and part-time fruit and vegetable producers in Iowa.

Approach and methods

The project consisted of three components:
1. Horticultural Crop Production in High Tunnels Manual. Using information gained from a previous Leopold Center-sponsored project (M2007-05) and research from other universities, a manual was developed to serve as a textbook for the workshops and resource for high-tunnel crop production. ISU Extension specialists Hank Taber, Donald Lewis, Eldon Everhart and the project investigators wrote the manual and developed the workshop curriculum. A CD containing additional resources and references also was developed for distribution at the workshops. This was the primary focus in the first year of the project with 100 copies of the manual printed in fall 2009.
2. Resource Kit. Resource kits were assembled using reference materials, pest
identification cards, and small equipment necessary to efficiently monitor and maintain a high tunnel. The kits were made available to workshop participants who had an existing high tunnel or planned to grow horticultural crops in a high tunnel within the next year.

3. Training Workshops. Between October 2009 and July 2010, five day-long high tunnel workshops were conducted around the state to provide fundamental information on high tunnel production, including site selection, size, construction, soil management and fertility, efficiency, pest management, harvest, and marketing. Participants toured high tunnels to observe the components and production during the growing season. The sessions were held at the ISU Horticulture Research Station, ISU Armstrong Research and Demonstration Farm, Iowa Valley Marshalltown Community College, and Decorah (two times). Participants completed post-workshop surveys. Approximately nine to 12 months after completing the training, participants were asked to complete an online survey to determine if they used the information presented and if it helped them make high tunnel production decisions.

Results and discussion

This project met the objective to increase the number of fruit and vegetable producers in Iowa. Of the 139 workshop participants, nearly 20 percent were traditional farmers, interested in diversifying into fruit and vegetable production and 22 percent were hobby gardeners with an interest in commercial production. After the workshop, 32 percent of the participants planned to construct a high tunnel for commercial production. Of the 35 participants who completed an online survey nearly a year after the training, 11 applied for and received a Natural Resources Conservation Service (NRCS) high-tunnel contract in 2010 and five growers purchased a high tunnel without NRCS support. At least 11 participants (8 percent) constructed new high tunnels in 2010. The survey showed that 22 plan to expand their business. One participant indicated the intent to add another high tunnel to his/her operation.

In late summer, the project coordinator visited the farms of four workshop participants. They were in various stages of high tunnel production – ranging from constructing a high tunnel to a grower who has grown a crop in a high tunnel for three years. All indicated that participation in a high tunnel workshop helped them make wise construction and production decisions.

Several other projects were funded and conducted as a result of this project, including reprinting the manual, translating and printing the manual in Spanish, four other grower workshops and four educator workshops around the state. The timely development of manual and workshop curricula enabled Extension staff to train 38 specialists from the NRCS to respond to a new USDA initiative and three-year pilot project. Introduced in late 2009, the project provides financial support for eligible farmers to construct high tunnels.

Conclusions

The interest in high tunnels was evident by the high number of participants in the
workshops, which led to presentation of two additional workshops beyond the original objective plans. The evaluations and survey results showed that the workshops provided valuable information for the producers to determine whether a high tunnel fit into their farming operation. Most felt confident after the workshop that they had the educational tools to be successful in high tunnel fruit and vegetable production.

The Iowa High Tunnel Fruit and Vegetable Production Manual has proven to be an asset to fruit and vegetable growers in Iowa. It will continue to be used for additional training programs and as a reference for Iowa fruit and vegetable growers. An online survey, completed by 32 percent of the participants, showed that this project improved their production skills, increased farm profitability, and has resulted in expansion of their farming business. The workshops provided participants with preliminary and basic information on high tunnel production. However, they indicated that they need more specific training in irrigation systems, organic methods, and the production of specific crops.

**Impact of results**

This project provided fruit and vegetable growers with the educational and resource tools necessary to grow crops successfully and profitably in high tunnels. The resources developed through this project will leverage additional projects in the future and serve as valuable resources to serve farmers, educators and NRCS staff.

**Education and outreach**

The project products included five, seven-hour training workshops for fruit and vegetable growers throughout the state that drew 139 participants. The Iowa High Tunnel Fruit and Vegetable Manual and a CD with additional resources were distributed to those attending. Participants who currently had high tunnels or were planning to construct a high tunnel in 2009 received resource kits: 16 kits were handed out at the workshops.

Approximately 300 copies of the English Iowa High Tunnel Fruit and Vegetable Production Manual and 100 copies of the Spanish version remain to be used at future workshops and other educational programs. The English and Spanish versions of the manual are available as downloadable pdf files through ISU Extension’s Online Store: www.extension.iastate.edu/store/ListItems.aspx?Keyword=high%20tunnel (English) and www.extension.iastate.edu/store/ItemDetail.aspx?ProductID=13343&SeriesCode=&CategoryID=25&Keyword (Spanish)

**Leveraged funds**

Three additional projects were leveraged from this one. The Iowa High Tunnel Fruit and Vegetable Manual and presentation materials were used for two educational projects. The manual also was reprinted, translated and printed in Spanish. The investigators received $17,727 from the ISU Publication Subvention Fund, $7,880 from the USDA’s Sustainable Agriculture Research and Education (SARE) program, and $10,000 from the Iowa Department of Agriculture and Land Stewardship Specialty Crop Grant program.