A VIRTUAL TOUR FOR PUBLIC EDUCATION: HIGH TUNNEL FOR SUSTAINABLE CROP PRODUCTION

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INTRODUCTION

Climate change is a critical issue that poses risks to growers and creates a greater need to adopt resilient farm practices that can endure environmental problems. Responses to the risks can be anticipatory, concurrent or responsive. A far more powerful mitigation tool for climate change is the education. Figure 1 below provides a projection on the crops by year 2030.

Knowledge on climate change will substantially improve the farm practices and better prepare farmers for natural and catastrophic events. Before adopting a new practice, farm and forest managers may want to see the new technique being effectively utilized Figures 2a and 2b,c below.

ABSTRACT

The USDA Northeast Climate Hub and all our land grant partners have worked together on the production of a robust, detailed, and innovative digital experience that can engage people in climate informed decision-making, and immerse the user into a digital field "visit" that feels "as if you were there". We envision that this project will help build a bridge to climate adaptation strategies. Field visits are a powerful teacher, and we believe virtual field trips can achieve similar results with greater accessibility.

The Northeast Climate Hub, building on capacity within USDA, delivers science-based knowledge and practical information to farmers, ranchers and forest landowners in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, West Virginia and D.C.

It is the mission to develop and deliver science-based, region-specific information and technologies to agricultural and natural resource managers to enable climate-smart decision-making and provide assistance to enable land managers to implement those decisions (Figure 4).

VIRTUAL TOUR

Virtual demonstrations of climate adaptations using 360° photography and videos!

Concerning decisions related to climate change, managers and other stakeholders want to gain awareness of, and learn more about, adaptation and mitigation practices; much can be gained by seeing the strategy in action.

High tunnels as an adaptation tool

High tunnels create an environment that is a hybrid between the field (uncontrolled) and a functional greenhouse (controlled). Many growers in Delaware are very enthusiastic about them as season extension tools that confer better pest management compared to field production. High tunnel management is very important for consistent crop production and good cash flow (Figure 8). We suggest:

- Crop diversity, disease-resistant plant varieties, vertically growing plants for efficient use of space and efficient scheduling of crops
- Sanitation within and around the high tunnel, including banker plants, adequate trellising and timely pruning, crop rotation and cover cropping.
- Water and nutrient management mainly through drip irrigation and fertigation.
- Weed control using mulches—black plastic, straw, and landscape fabric.
- Passive ventilation through side and roof vents, use of insect screens for pest exclusion etc.

Virtual tour becomes a critical extension tool. Helps our colleagues and clientele see, understand, and become comfortable with new technologies, practices, and systems. Education occurs before adoption.

HIGH TUNNELS

High tunnels are polyethylene covered structures (Figure 7a) constructed in the field to protect crops (Figures 7b and 7c) from the weather and sometimes, pests.

They confer some level of environmental control, hence their use for season extension. They can be considered a climate change mitigation strategy. The standard production practices include; raised beds (Figure 7d) and drip irrigation, use of various mulches (Figure 7e) and cover cropping, passive ventilation through side and roof vents (Figure 7f), use of insect screens for pest exclusion etc.

High tunnel facility tour and interviews with Dr. Rose Ogutu. Pictures taken by Erin Lane.