

# Fruiting Wall Training Systems and High Tunnel Opportunities for High Value Stone Fruits: Nectarines, Apricots, Apriums, Plumcots, Plums, and Pluots

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## Project Research Objectives

The overall objective is to combine and advance two complementary technologies, *fruiting wall canopy training systems* and *high tunnel production systems*, that have the potential to significantly improve Michigan growers' ability to sustainably produce and market high value specialty stone fruit crops like apricots, apriums, nectarines, plumcots, pluots, and specialty plums.

*Hypothesis 1:* Fruiting wall production systems can be developed and adapted to high value apricot/aprium, nectarine and plum/plumcot/pluot varieties suitable for Michigan production.

*Hypothesis 2:* High tunnel production systems can be developed and adapted to apricots/apriums, nectarines, and plums/plumcots/pluots to expand specialty crop production opportunities for Michigan stone fruit growers.

## Stone Fruit Canopy Architectures:

- TSA, Tall Spindle Axe (nectarines); a spindle system with only the leader as permanent structure
- UFO, Upright Fruiting Offshoots (all stone fruits); a narrow fruiting plane with only the horizontal cordon as permanent structure
- PLM, Palmate (apricots, plums, plumcots, pluots, and apriums); a narrow fruiting plane of arched multiple leaders
- SSA, Super Slender Axe (all stone fruits); a narrow fruiting plane of closely-planted single leaders with many weak lateral shoots

## Tunnel Management Challenges

Dwarfing rootstocks are not available for most stone fruits, so innovative training systems are critical to 1) "diffuse" strong tree vigor into multiple upright structures creating space-efficient architectures and/or 2) utilize root competition to reduce canopy growth

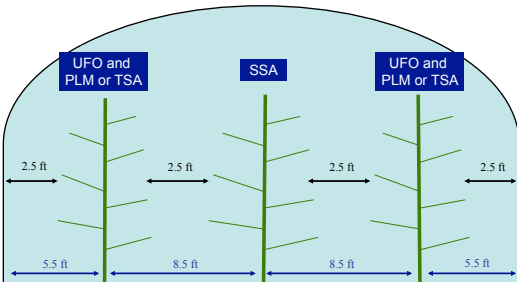
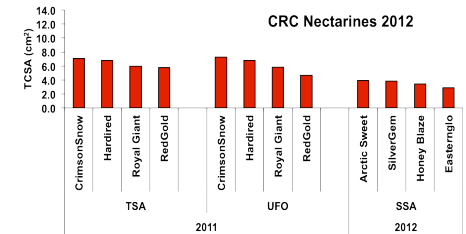
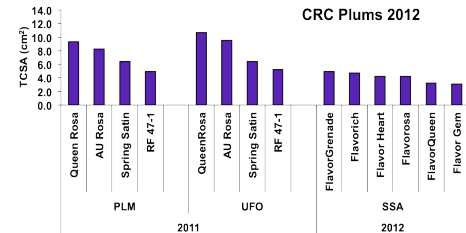
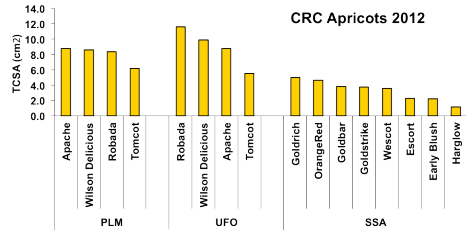


Figure 3. Tree vigor (as determined by trunk cross-sectional area, TCSA) of various nectarine varieties planted in 2011 (TSA and UFO training systems) and 2012 (SSA training system).

## High Value, High Tunnel Stone Fruit Production Optimization

- The Michigan stone fruit (peach/nectarine, plum, apricot) industries are minor compared to apples, cherries, and blueberries, but their proximity to the modifying effects of Lake Michigan and several strong consumer markets (Chicago, Indianapolis, Detroit, Cleveland) as well as strong agritourism / farm market opportunities provides a great potential for expansion.
- These tree fruits have been grown in Michigan historically, but diseases, scarce labor, and competition from fruit shipped long distances from drier western climates changed the economics of production over the past 40 years.
- Expanding regional market demand for high quality, locally-produced fruits due to the "Eat Local" movement, fuel costs for long-distance shipping, recognition of sustainable food growers' contributions to local economies, production carbon footprints, nutritional advantages of freshly-harvested local fruits, etc. are once again changing the economics of production, becoming more favorable for Michigan growers.
- High value, protected stone fruit production employing efficient, simplified canopy architectures may be suitable for emerging opportunities in urban fruit production enterprises.