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, plums, nectarines, plumcots, pluots, and especially plums.

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

Hypothesis 2: High tunnel production systems can be developed and adapted to apricot/opalums, nectarine, and plum/plumcot/pluot varieties suitable for Michigan production.

Stone Fruit Canopy Architectures:
- TSA, Tall Spindle Axe (nectarines): a spindle system with only the leader as permanent structure;
- PLM, Palmate (apricots, plums, plumcots, and pluots): a narrow fruited plane of arched multiple leaders;
- UFO, Upright Fruiting Offshoots (all stone fruits): a narrow fruited plane with only the leader as a permanent structure;
- SSA, Super Slender Axe (all stone fruits): a diffuse fruited 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 competition to reduce canopy growth.

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 agricultural/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.

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