High Tunnel Fruiting Wall Nectarines, Apricots/Apriums, and Plums, Pluots, and Plumcots: Fruiting Phase

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“Fruiting Wall” Canopy Architectures:
- PLM, Palmette (apricots, plums, pluots, and plumcots)
- TSA, Tall Spindle Axe (nectarines)
- SSA, Super Slender Axe (all stone fruits)
- UFO, Upright Fruiting Offshoots (all stone fruits)

High Value, High Tunnel Stone Fruit Production Optimization

The overall objective of this project is to develop and evaluate two complementary technologies, fruiting wall production systems for stone fruits and high tunnel protective covering structures, to examine their potential for improving Michigan growers’ ability to sustainably produce and market high value specialty stone fruit crops like apricots, nectarines, and hybrid plums. The canopy architectures under development are depicted in the graph at left. Since dwarfing rootstocks are not available for these stone fruit crops, the impact of training system on tree vigor (e.g., see graphs above for nectarines) is an important outcome. Thus far, the high density SSA system has had the most moderate vigor, which also includes minimal regrowth following summer hedging, followed by the UFO and lastly the PLM.

The extremely cold winter of 2013-14 resulted in significant apricot tree mortality (see Table at left) and nectarine shoot and flower mortality (most trees had no fruit, and those that did only had a few), while plums (even pluots from California) had full crops. Surprisingly, the two apricots from the USDA breeding program in California, ‘Apache’ and ‘Robada’, survived and cropped very well. The June 28 ripening date for ‘Apache’ was particularly exciting. The tunnels were not covered until after fruit set, resulting in little impact of tunnel on harvest; in 2015, covers will be applied before bloom to explore the potential for even earlier ripening (as well as frost protection). Average ripening dates and fruit sizes are shown in the Tables at right.

Covering Effects on Fruit Blush and Disease Incidence

In the highly-blushed apricot ‘Robada,’ fruit blush development under the tunnel was minimal (see pictures below), resulting in beautiful large fruit with blemish-free orange skins. The tunnels slightly reduced blush on red-skinned nectarines, but not to the degree seen on apricot. Apricot fruit were 12% to 39% larger under the tunnel as well (see Table at right). Fruit scab (Cladosporium carpophilum) was absent under the tunnels, but was prevalent on ‘Wilson Delicious’ in the open orchard (see below). The high tunnels also protected against leaf diseases, such as bacterial spot (Xanthomonas campestris pv. pruni), which were prevalent in the open orchard on some varieties (see below, right). The tunnels did not protect against fruit brown rot (Monilinia fructicola), which required protective fungicide sprays.

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