

Cherries in two dimensions



Matthew Whiting with UFO cherry orchard system. *Robert Hubner*

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by [Nella Letizia](#) | © Washington State University

Two-year-old trees in the WSU Roza Experimental Orchards near Prosser are the first step in transforming a 100-year-old production system for sweet cherries. The trees' unique branches, called upright fruiting offshoots (UFOs), form the core of a novel architecture suited for mechanized harvesters in sweet cherry orchards of the future.

Planted at an angle, young trees are trained to grow on a two-dimensional plane, putting more of their effort into developing a fruiting wall instead of the nonproductive wood in a traditional, three-dimensional canopy.

The UFO tree architecture is taking off around the world, says Matthew Whiting '01 PhD, associate professor of horticulture at the WSU Irrigated Agriculture Research and Extension Center. Whiting co-directs a \$3.9 million, four-year, collaborative project funded by a USDA Specialty Crops Research Initiative (SCRI) grant to develop a sustainable, stem-free cherry production, processing, and marketing system.

Washington, California, and Oregon ranked first, second, and third for U.S. sweet cherry production in 2011 at 200,000, 75,000, and 43,200 tons. At the same time, says Whiting, sweet cherry harvesting requires the most investment of time and labor among all tree fruit operations. Cherry trees and the orchards they grow in don't accommodate mechanical harvesters; laborers still pick fruit by hand,

climbing and carrying 10- or 12-foot ladders all day. With each mature cherry tree producing between 50 and 200 pounds of fruit, harvesting takes many pickers—often hundreds in a given crew.

Unfortunately, those pickers are increasingly hard to find. State officials, petitioning Congress for help, estimated that nearly 72 percent of Washington seasonal workers are here illegally and claimed that many potential laborers are staying away because they're afraid of being deported.

Immigration reform could reduce the labor pool even further. Georgia's 2011 ordeal with its immigration enforcement law serves as a cautionary tale. An economic impact report estimates that after HB 87 took effect on July 1, labor-related losses to participating growers after the spring and summer harvest were \$75 million.

One Washington sweet cherry grower, Denny Hayden '73, president of Hayden Farms in Pasco, is paying close attention to the Georgia case.

"We're one political decision away from disaster," Hayden says. "That's why we started moving in this direction several years ago. But how do you mechanize? How do you move away from labor? The tough part is doing this fast enough. We're expecting big things to come out of this program."

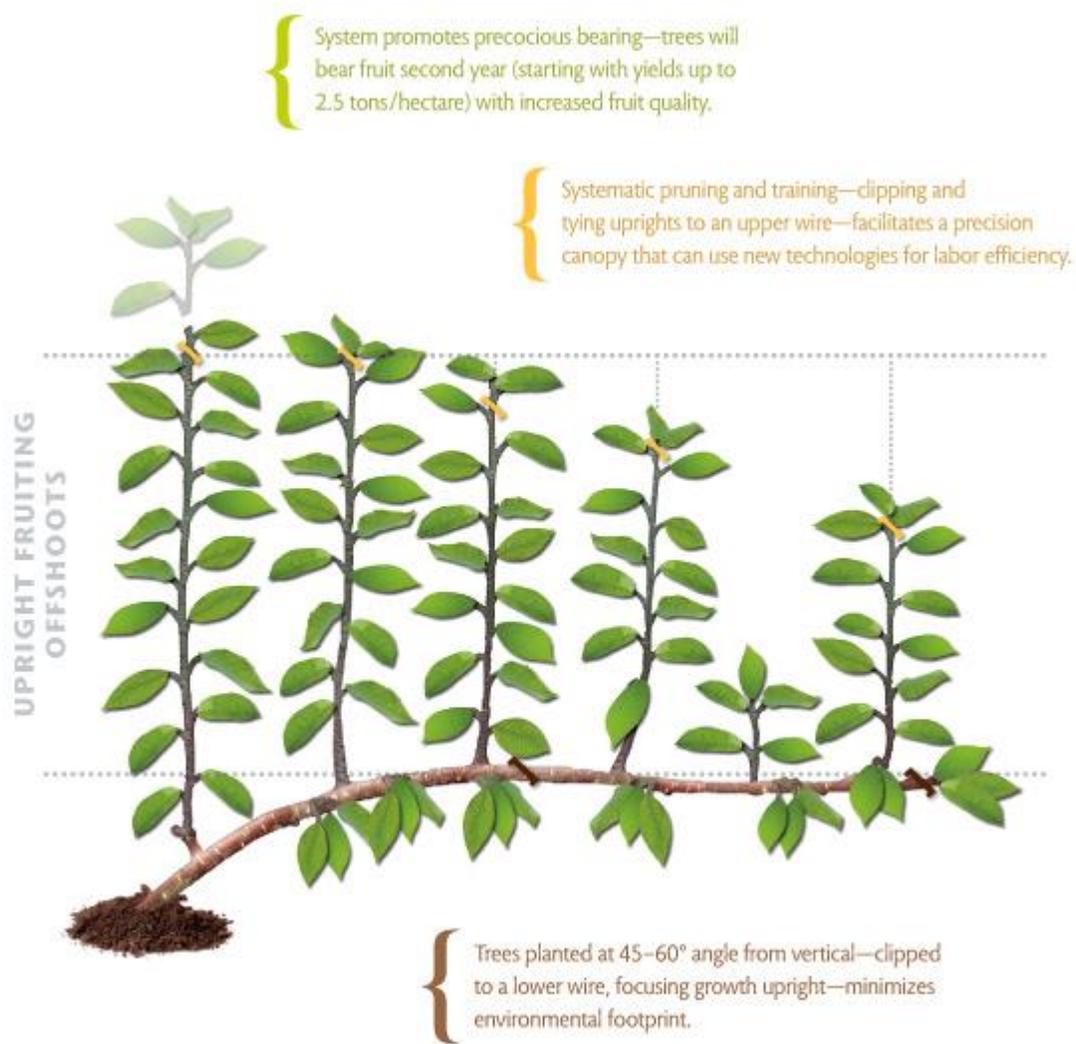
Five years ago, a few growers in Washington, Oregon, and California planted test UFO blocks in their orchards. Keith Oliver of Olsen Brothers Ranches in Prosser saw a 2011 harvest of 8.6 tons of Tieton cherries per acre on his UFO block, not counting the fruit from pollenizer trees. The state average on 40-year-old, traditional sweet cherry trees is 5 to 5.25 tons per acre, says Whiting. Oliver credits the architecture for the improved yield.

"We had less doubling [a stress-induced doubling of fruit on each stem], and with Tietons, that's always a concern," Oliver says, "and because of the architecture, that was a benefit that we hadn't counted on ... the harvest efficiency was also better. The pickers filled the bins a lot faster with the UFO..."

"We decided we're never going to plant a traditional cherry tree again," he adds. "We've seen the advantages of the UFO. It cost a lot to get the block in, but we think in the long run that the yield advantages that we've seen so far and the picking advantages will outweigh the initial cost of establishment."

The key is in promoting uprights. The more uprights in the first year, the better the chance for fruiting sooner—and the higher the yields. In 2011, Whiting, graduate student Antonia Sanchez-Labbe, Joseph Grant of University of California, and Lynn Long of Oregon State University tested how timing the horizontal training of initial growth affects shoot numbers. The team discovered that the earlier the trees were tied down horizontally, the more upright shoots sprouted. Along with training, proper pruning techniques ensured renewal of upright shoots.

Now completing their second year of the USDA grant, SCRI researchers from around the country are also working to breed a sweet cherry variety with fruit that falls easily off the stem, develop a mobile cherry harvester, extend shelf life through better packaging, assess consumer preference of stem-free cherries, and delve into the economics of mechanical harvest.



Staff illustration based on *The U.F.O. System: A Novel Architecture for High Efficiency Sweet Cherry Orchards* by Matthew Whiting at the WSU Irrigated Agriculture Research and Extension Center in Prosser.
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