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Sweet Cherry U.F.O Lands in Bayfield

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Introduction

The "island" of Bayfield has the soils and climate to support a wide range of fruit crops. The moderating effect of Lake Superior slows down the spring warm-up and extends the fall, reducing the chances of a killing spring frost and allowing for full ripening during the fall season. Despite the lake effect, the winter minimum temperatures can still fall below –20F. As a result, crops such as peaches, apricots, and sweet cherries can survive, but often suffer fruit bud loss or winter cracking injury and subsequent bacterial canker infections.

Apple Hill Orchard in Bayfield has had moderate success with Lapin and Cavalier sweet cherries and is currently growing 4 acres on Mazzard rootstock. Recently, there was no crop in 2008 or 2009, but there was a bumper crop in 2007 and 2010. The cause of the crop failures in 2008 and 2009 is unclear, but is likely due to bud injury. The incredible demand for the sweet cherries is spurring interest in developing sweet cherries into a more reliable crop for the Bayfield climate.

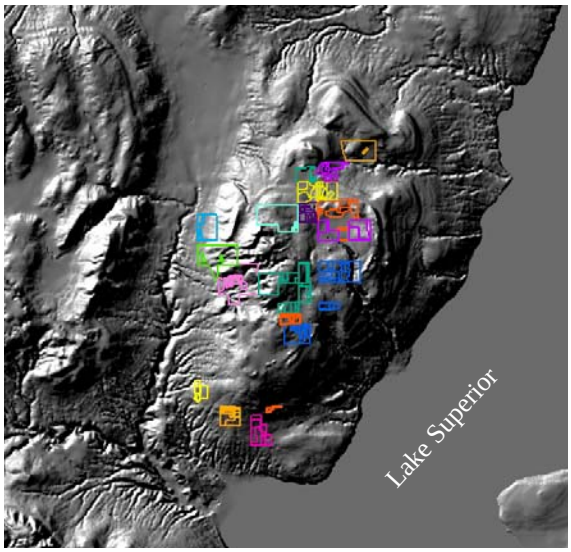

Photo 1. The micro-climate of Bayfield caused by Lake Superior, the steep slopes, and the well-drained soils, allows for excellent fruit production. Research on variety performance and management should help make sweet cherries a more reliable crop for the area.

The major challenges to an expanded sweet cherry crop in Bayfield are winter hardiness, spring frost, bacterial canker, and harvest labor. Over the coming years, UW-Extension will provide research assistance to address these challenges. We plan to establish cultivar trials to evaluate winter hardiness, relative flowering date, and fruit quality with the hope of finding winter hardy and late flowering cultivars with excellent taste and quality.

Upright Fruiting Offshoots (U.F.O)

Overcoming the harvest labor and winter injury challenges might be accomplished with the Upright Fruiting Offshoot (U.F.O) pruning and training system developed by Dr. Matthew Witing at Washington State University (http://fruit.prosser.wsu.edu/UFO.html). In the UFO system, the sweet cherries are grown on Gisela dwarfing rootstock and the main stem is trellised to a horizontal wire about 24" from the ground. The branches (offshoots) are trained perpendicular to the main stem and attached to a second horizontal wire 36" from the ground. The result is a sweet cherry wall that is very easy to manage and harvest with the majority of fruit presented between 2 and 5 feet from the ground. Another potential advantage of the UFO system in the Bayfield area is insulation provided to the horizontal stem by the typically deep winter snows. The primary risk from the UFO system is the lower profile of the trees and the higher chances of sun scald, bark herbivory by rodents, and spring frost. The spring frost risk can be miti-

Photo 2. First year growth of Lapin on Gisela 6 rootstock. Buds along the entire horizontal stem broke dormancy, but shoot elongation occurred primarily from the apical buds (arrow).

gated by landscape position to ensure adequate cold air drainage. Tree guards and white paint applied to the trees in fall will help mitigate rodent and sunscald damage.

Any expansion of sweet cherry production in the Bayfield region will depend on solving the labor challenges. Pick-your-own from full-sized cherry trees requires ladders and is a serious liability concern. Likewise, skilled and dependable picking crews are not available in the Bayfield area and would be slowed by the full-sized cherries. With the UFO fruiting wall, the cherries can be picked safely by pick-your-own customers and more efficiently by unskilled college and high school students or retirees. Also, there is potential for harvesting the fruiting wall mechanically, possibly with a blueberry harvester.

Photo 3. Year 3 of Lapin on Gisela 6 showing vigorous growth of uprights. The tree was originally planted upright in 2009. In the spring of 2010, it was tied to a horizontal trellis wire and all growth from the bottom side of the stem was removed. This method is not recommended due to possible stem breakage. Rather, the trees should be planted at a 30-60 degree angle and the stem tied horizontally. The photo is shown to illustrate the upright offshoots.

UFO Trials

In 2010, an UFO trial was established at three locations with three replications each of Benton, Lapin, Skeena, and Regina cultivars on Gisela 6 rootstock. The trial was planted at Blue Vista Farm in Bayfield on April 26, Apple Hill Orchard in Bayfield on May 4, and Bono Creek Orchard in Washburn on April 29. The farm in Washburn is within 2 miles of Lake Superior, but is on heavier soils than occur in Bayfield. The trees were planted at a 45 degree angle to the ground and attached to the first horizontal wire (Photo 2). Plant spacing was 8-10'. Additional cultivars will be added in 2011.

The recommendation for the UFO system is to plant unheaded and unfeathered whips. Due to limited plant availability from nurseries, headed and unfeathered whips with 1/2" or less stem diameters were planted. For these trials, the most apical bud on the stem will be trained to continue the horizontal growth of the main stem.

Key to the UFO system is uniform emergence of shoots along the horizontal stem in the first year. Blind wood with no vertical growth reduces the efficiency of the system. Ideally, the shoots should grow from buds on the topside of the horizontal stem with buds on the underside of the stem rubbed off in the early summer. Table 2 shows the number of buds per horizontal stem that had evidence of growth (leaves or shoot elongation) as of September 16 along with the number elongated shoots. Benton and Skeena had more buds per stem that broke dormancy and produced leaves or shoots than both Regina and Lapin, but all four cultivars produced roughly the same number of upright stems when averaged across location.

With adequate shoot growth in the year of planting, a small crop of cherries is possible in the summer of year 2 at the base of each vertical shoot. In the second year, the verticals are allowed to keep growing, with the most dominant verticals headed during the summer to maintain relatively uniform vertical heights. In the dormant season of the second year, the side branches of each vertical stem are removed. In the third year, the shoot growth from year 1 will produce cherries. In the dormant season of year 3, all side branches are removed and roughly 20% of all vertical shoots are stub-cut back to the main horizontal stem to initiate new vertical shoots. This same pruning strategy is used every year after that.

Over the coming years, data on cherry production, winter injury, and vegetative growth will be recorded. A field day will be held in 2011 to show the UFO fruiting wall system. Stay tuned for more information as this trial develops.

Cultivar	# of buds	# of elongated shoots
Regina	9.8	5.5
Benton	12.4	3.4
Skeena	15.4	4.6
Lapin	7.7	4.7

Table 2. Number of buds per stem with leaves or shoots and number of elongated shoots at least 1 inch long per stem averaged across location.

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