Fall Chores for Cherry Tree Health

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Sweet and tart cherries need some attention in the fall to ensure tree health and strengthen fruit buds for next spring. The fall chores that I will focus on in this article will be controlling bacterial canker and foliar nutrition.

Bacterial Canker

Bacterial canker or bacterial gummosis of sweet cherry is caused by several *Pseudomonas* bacteria. This microbe infects flower buds and spurs. It can completely kill new spurs and leaves and then move into the trunk. This problem is especially difficult on Gisela dwarf cherry rootstocks as losing a scaffold or getting infection into the trunk will limit production, and the tree rapidly declines.

In our humid climate in the Northeast and Mid Atlantic, the cankers can continue to develop in lateral branches and the central leader. In some cases, the cankers have grown to girdle and kill two-year-old wood. I have observed central leader dieback as a result. In older wood, the canker looks very much like a fire blight canker in apple. In most cases the canker begins to ooze a brown to amber exudate. It appears that under our humid conditions, this disease is very hard to control and can be devastating if control measures and the proper horticultural practices are not followed. This bacterial disease is most troublesome in young plantings where it can cause loses of up to ten percent of the trees. On mature trees, it can reduce yields from 10–50%.

The source of inoculum may come from wild cherry trees in hedgerows. Black cherry, *Prunus serotina*, particularly, may be one source of inoculum for *Pseudomonas* during wind and rainstorms in the spring and summer months. Removal of these wild cherries may be beneficial.

My original source of information on controlling bacterial canker of cherry came from an Ontario Canada fact sheet, from Ontario Canada written by W.R. Allen, *Bacterial Canker of Sweet Cherry,* NO. 88-0886 which is no longer in print or posted on the web.

Figure 1: Bacterial Canker of Sweet Cherry, Rutgers Snyder Farm, New Jersey.

Mixing and Making -Bordeaux Mix

- Copper sulfate -- Use only powdered copper sulfate (bluestone or blue vitriol), often referred to as copper sulfate "snow" because it is finely ground and dissolves relatively quickly in water, to prepare tank-mix Bordeaux. Ordinary lump copper sulfate is not satisfactory. Store copper sulfate snow in a dry place. Moist snow becomes lumpy and is difficult to work through the screen into the tank. Use copper sulfate registered to make Bordeaux mixture.

- Hydrated Lime -- To prepare tank-mix Bordeaux, use only good quality hydrated lime (calcium hydroxide) also called builders lime. The hydrated lime should be fresh, that is, not carbonated by prolonged exposure to air. Hydrated lime is stable and usually is readily available under several trade names (Builders Lime) or Magnesium lime, a mixture of Ca(OH)2 and Mg(OH)2, may also be used.

- Bordeaux formulas are stated as three hyphenated numbers: 8-8-100. The first number refers to the pounds of bluestone (copper sulfate), the second number to the pounds of spray (hydrated) lime, and the last number to the gallons of water to be used. Thus, an 8-8-100 Bordeaux contains 8 pounds copper sulfate, 8 pounds spray lime, and 100 gallons water.

- Have your spray tank ½ full of water and the agitation turned on, then add the copper sulfate or copper sulfate solutions, let mix thoroughly, then add the hydrated lime solution and mix, and then add the Canola Oil at 2.8 quarts/100 gallons to safen the mix for the foliage.

Pruning Cherries. Focus on pruning in the summer immediately after harvest. Avoid large, dormant pruning cuts; and instead utilize summer pruning (immediately after harvest) to minimize the impact of this disease. Use the short stub method of pruning. On infected branches, leave stubs 6 to 8 inches long. This practice will prevent the canker from entering the trunk and scaffolds. The canker will not move down the stub. Watch the Pruning Video clips on our website (http://giselacherry.com/) and our view more recent videos on our YouTube channel (https://www.youtube.com/user/giselacherry/videos).

Note that on trees utilizing Gisela Rootstocks, some cuts may have to be made in the dormant stage. However, I suggest waiting until to close to bloom. Look for 3 days of clear sunny low humidity to begin pruning. Apply a copper spray before starting pruning, paint the cuts with a copper solution immediately after pruning, and before the next rain event, apply another copper spray.

Spray Copper Now as Bordeaux. Begin spraying early in the fall to control bacterial canker. Cankers get started mainly in the fall after most of the leaves have fallen and the trees are beginning to go dormant. The only effective way to control this disease is to reduce the number of bacteria before the trees enter their susceptible period. The bacteria that start these cankers are found on the surfaces of mature leaves and other green tissues, and do not come from existing cankers.

The only successful control we have found is repeated applications of the old Bordeaux mixture in September, October, and November and repeated again in the spring. Bordeaux Mix consists of hydrated lime (Builders Lime) and Copper Sulfate. The rates and methods of mixing are important. Begin your sprays as soon as the second week in September, make four applications in the fall. It would be my recommendation that in all cherry blocks a program of Bordeaux Mix applications should be made as soon as possible before the next rains. Note, however, that sprays of Bordeaux applied to green leaves must be safened with vegetable oil (Canola) to avoid burning the foliage. Three additional sprays 14 days apart will be applied.

Bordeaux mix will also be applied in the spring with several applications before bud break.

Spring Copper applications. In addition to the 4 fall applications of copper for bacterial canker, two additional applications of copper should be applied in the spring prior to bloom.

Foliar Nutrition

Foliar applications of Urea nitrogen on cherry have been shown to aid fruit size, increase set and increase cold hardiness (from Ouzounis, T. and G. Lang. 2011. Foliar applications of urea affect nitrogen reserves and cold acclimation of sweet cherries (*Prunus avium* L.) on dwarfing rootstocks HortScience 46:1015-1021).

With your airblast sprayer, apply two fall foliar applications of low-biuret urea at 20 lbs. per acre per application in 100 GPA spray water. The fall nitrogen applications increase the flowering spur nitrogen content going into winter and can improve spur leaf size the next spring. This translates into larger fruit size. Optimal timing is early-mid September and repeat with a second application 2 weeks later. The September application helps with cold hardiness. Dr. Greg Lang, MSU, reported that foliar urea was so strikingly consistent in its benefits and that he feels the mid-Sept through mid-Oct is the best window for Michigan growers. They usually expect leaf senescence from Halloween through the second week of November.

Nitrogen and carbohydrates are stored in tree tissues in fall and are vital for fruit tree growth and development in spring. Fruit trees accumulate carbohydrate and nitrogen reserves prior to leaf drop, which are stored through the winter until they are remobilized to growing points (flower buds, new shoots, and expanding spur leaves) the following spring. Reserves provide trees with the necessary energy for new growth when leaves are not yet present for photosynthesis and roots have not yet begun taking up adequate amounts of N from the soil.

Combining Nitrogen and Copper

I have had several growers over the years combine the copper spray with the urea spray. Copper-based fungicides also are effective and economical in controlling cherry leaf spot, but they can be phytotoxic to cherry leaves, hence the combination of Canola Oil to the tank to safen it.