Winter Injury In Young Montmorency Cherries

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Montmorency tart cherry is generally a very winter hardy tree as long as they do not defoliate too early in the growing season from cherry leaf spot infection. However, during 2002 and again in 2003 (to a lesser extent), some tree mortality occurred that is an example worthy of discussion.

The problem is limited to trees age 1 to 5, being most common in ages 2-4. This type of injury typically occurs on exceptionally cold sites, and is always worse in the lowest areas within an orchard. This is very typical of winter injury. What is not typical is where the injury occurs in the tree. Typically, when checking for winter injury in a tree one cuts into the inner bark (phloem) to check for discoloration. In this case, however, the damaged tissue is the wood (xylem), so some loppers are required for diagnosis.

The wood appears light brown in color in the damaged areas rather than white. In all cases, if snow was present at the time of the cold event, then the wood remains undamaged (white) below the snow depth at the time of the cold event.

Some trees may also have some dead or damaged phloem tissue, but this is often only found to a limited extent. When phloem injury is present, it is most commonly found on the SW side of the tree.

The location of this phloem injury, I believe, provides a clue as to what is likely the cause of this unusual phenomenon. I suspected last year and am now quite sure that this type of injury occurs only when above freezing winter temperatures are followed by a major cold event. It affects only young trees because, with their thin bark, the trees more readily lose internal cold hardiness. In both 2003 and 2004, the above freezing conditions occurred with snow on the ground. The snow reflects sunlight onto the trunk, warming them to temperatures well above the air temperatures. In 2003, the warm-up was only for a couple of days, but temperatures then plunged in 37 hours to about -20° F. In 2004, the warm-up was much greater, but the cold event that followed was not as severe, so the extent of injury in the state was less. The closest weather station to a seriously damaged orchard in 2004 recorded 22 days of daily highs above freezing during a 24 day period between February 18 and March 12. Then, on March 13, the temperature at the weather station dropped to a low of 6° F. It was likely at or below 0° F in the cold areas of the damaged orchard.

It is worth noting that we have seen young Montmorency orchards survive colder events with no injury when the event was not preceded by above freezing temperatures. Because it appears that de-acclimation plays a significant role in this xylem injury, the extent of the tree warm-up could be reduced simply by painting the trunks with white latex paint. This technique is often used to protect more tender trees like peaches and sweet cherries from the bark splitting associated with "southwest injury," but is not a common practice with the hardier Montmorency. So while this winter induced xylem injury in Monts is not a common occurrence, I suggest painting trunks with white latex paint during the first 5 years when blocks are planted in colder sites or in low areas within otherwise better sites.

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