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News Release

Fire blight and severe fruit drop; unrelated but damaging to fruit trees

Question: My apple trees have some limbs that are dying from the tips of small branches and a couple weeks back almost all the fruit fell off the trees. Can you tell me what is going on?

Answer: Two things are happening to your trees but the problems are not related and the second question is a wide spread mystery with dire consequences for apple farmers all over the eastern US. However, let me take the questions in order. First, the branch dieback problem is a fairly common occurrence with apples and many apple relatives. The disease is called fire blight and it does look like someone has burned the ends of the branches. Fire blight, caused by the bacterium *Erwinia amylovora*, is a common and destructive disease of pear, apple, quince, hawthorn, firethorn, cotoneaster, mountain ash and many other related plants. Badly diseased trees and shrubs are usually disfigured and may even be killed by this disease.

Symptoms appear in early spring as you have observed. Blossoms first have a water-soaked appearance, then wilt, and finally turn brown. Shortly after the blossoms die, leaves on the same shoot turn brown on apple and most other hosts or black on pear. The stems and midribs of diseased leaves often turn black as well. As the twig and leaf blight phase progresses, leaves die, curl downward, and cling to the blighted twigs. Succulent twigs, shoots, and water sprouts are easily infected. The tips of blighted twigs, shoots, and sprouts droop, producing the typical "shepherd's crook" shape to the dead limb. Leaves may be infected through pores as well as wounds.

The fire blight pathogen, *Erwinia amylovora*, overwinters in tissues around the edge of cankers on large branches and limbs. A gummy, amber-colored discharge oozes from cankers during warm, humid weather. The discharge, which contains bacteria, is dispersed by pollinating or other insects or even splashing rain to blossoms, leaves, and shoots. Dried bacterial discharge may form strands which are even carried by the wind. Apples are almost always infected while they are in bloom.

Soft, succulent shoots are very vulnerable to the disease. Mature apple and pear tissues are much more resistant to infection than young tissues. Cultural practices favoring rapid shoot growth increase the plants' susceptibility to attack. These practices include severe pruning and excessive nitrogen fertilization.

Warm, moist conditions, particularly during flowering, greatly increase incidence of the disease. Blight development can occur at temperatures between 65° and 95°F, but the 75° to 81°F range is most favorable. Rain is critical to the spread and development of the disease. Fire blight outbreaks are encouraged by warm, cloudy weather following a rain. A humid environment promotes bacterial growth and spread.

A control program combining resistant varieties, sound cultural practices, sanitation, fertilization, pruning out diseased wood and pesticides is needed to protect plants from fire blight. Visit the Alabama Cooperative Extension website, www.aces.edu, and search for publication number ANR 0542 to read more about this disease and its control.

The second problem you mentioned was severe fruit drop. This problem is quite a mystery but you are not alone. Apple fruit began falling off trees the weekend of May 7-9. Many varieties lost a significant number of fruit and some varieties lost most of their fruit. This disaster is region-wide and apple growers from North Alabama to Northern Virginia are seeing the same thing. This also includes North Georgia, Tennessee and Western North Carolina. Commercial orchards with high levels of management and home orchards and yard trees have all been affected. The trees most affected had used chemical thinning agents to reduce what looked to be an excessively heavy crop. A possible explanation came from Dr. Steve McArtney at the Mountain Crops Horticultural Research Station in Fletcher, NC. After reviewing climate data for this region from March 1 to May 10, Dr. McArtney says that it appears that unusually high night time temperatures and low light levels during the day in early May caused an increased respiration rate and all the carbohydrates the trees made during the day were burned up during the night. When carbohydrates are in short supply, the tree tends to use what's left for shoot growth at the expense of fruit growth. I would be very interested to hear from those of you with apple trees. Did your apple crop fall off? If not, what variety of tree are you growing? Drop me an email with a note about what you have observed at gloveta@aces.edu.