



Why Fruit Trees Die

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Occasionally, fruit trees decline and often die. Diseases affecting the leaves, fruit, and twigs of fruit trees usually do not cause the trees to die, except for cherry leaf spot disease on sour cherries, the black knot disease on plums, and the fireblight disease on certain varieties of apples and pears. Leaf, fruit, or twig diseases weaken the tree, interrupt normal bearing, and reduce fruit quality, but the trees usually survive.

The cause of death for most fruit trees is damage to the trunk, the crown (that area around the ground level and just below), or the roots. Wet soil, winter cold, spring and fall freezes, mice, rabbits (young trees only), crown and root diseases, drought, and borers can cause injury to these parts. Frequently, a combination of two or more of these is the cause of death. These common problems are described below.

Wet Soil

This is a major cause of fruit tree loss in Illinois. Most Illinois soils are heavy, with an excellent moisture-holding capacity. They have poor internal water drainage, though, and tend to stay soggy wet during rainy periods in the fall, winter, and spring. Illinois soil may have an impervious subsoil and often have a high water table.

Sour cherries, peaches, and nectarines are especially sensitive to damage from wet soils. Pears, apples, apricots, and plums are somewhat more tolerant. An excessively wet fall, winter, or spring may cause damage to fruit trees growing in soils that are not normally wet or soggy. The damage may not become apparent for six months or more after it occurs. Damage occurs to the roots and below-ground portion of the trunk. The inner-bark of these parts will be brown instead of the normal light-yellow color.

Cold Injury

This is most likely to occur on the lower trunk and crown area, or on roots near the soil surface. In stone fruits (peaches, plums, apricots, and cherries), the crotches where the major branches join the trunk are also quite vulnerable. The smaller branches and twigs may suffer cold damage, but the trees usually recover from this type of cold injury. Cold injury is mainly to the inner-bark. The outer-bark is composed of dead cells. Injury to the inner-bark may not be notice unless the bark splits, cracks, or becomes

loose. Healthy, inner-bark should be greenish-yellow. Damaged inner-bark will turn brown.

Cold injury usually occurs from a sudden freeze following milder weather. This may happen in the fall, winter, or early spring. Cold injury may also be caused by fluctuating day-night temperatures during the winter when the sun warms the south and southwest sides of the trunk during the day, and then at sundown, the bark quickly cools to air temperature.

Cold-injured bark becomes especially susceptible to further damage by borers and by diseases such as canker on peach and collar and crown rots on apple.

Mice

Mice are serious pests of apple trees, and frequently damage other types of fruit trees as well. All ages of trees may be attacked. Meadow and prairie mice eat the bark (including the inner-bark) from the trunk and roots, both above and below the ground level.

Pine mice nest underground, eating the trunk from the roots as well as the lower trunk. Trees badly damaged by mice usually die the following summer.

Borers

Borers are the most serious on stone fruit trees (peaches, plums, nectarines, apricots, and cherries). The peach tree borer attacks the inner-bark from about 12 inches above to about 3 inches below the ground level. The lesser peach tree borer attacks the larger branches as well as the trunk. Serious infestations of these borers may cause individual branches or the entire tree to die. Trees damaged by borers are more susceptible to cold injury and perennial canker than healthy trees. Shot-hole borers may attack dwarf apple trees containing an interstem dwarfing piece. Round- and flat-headed borers may attack weak apple trees of all types.

Soil-borne Diseases

Various root and crown rot fungi may attack apple trees, and sometimes, other types of fruit trees. In many cases, the fungi invade the roots or crown following injury by cold, mice, wet soils, or borers. The inner-bark is attacked, turns brown, and dies.

Fireblight

This is an especially serious disease on Bartlett pears and on Jonathan, Lodi, and Paulared apples. Fireblight starts on the blossoms and new shoots, and may progress

into the major branches and the trunk. If the trunk becomes infected, the tree usually dies.

Bot Rot

Botryosphaeria rot is most serious on older apple trees. Cankers may form on larger branches, causing them to die. The entire tree may die eventually.

Black Rot

The black knot fungus causes enlarged, rough, blackish growths on the twigs and branches of plum trees. If the disease is not controlled, the growths may become numerous enough to kill the tree.

Perennial Canker

This is a serious disease of peach and nectarine trees. The fungus attacks the branches and crotches, causing individual branches or whole trees to die. The symptoms of perennial canker are rough bark areas covered with a black saprophytic fungus growth. The canker fungi invade an area damaged by cold, borers, branch breakage, or other injury. Cankers are favorite places for attacks by lesser peach tree borers.

Cherry Leaf Spot

If not controlled, the fungus producing cherry spot causes the leaves on sour cherry trees to turn yellow and drop in July. This premature condition weakens the tree. If premature defoliation occurs three or four years in a row, the tree becomes so weak that it may die. Weak trees are more susceptible to cold injury and borer attack.

Nitrogen Deficiency

Fruit trees seldom die from nitrogen deficiency. However, trees showing a severe nitrogen deficiency are more susceptible to cold injury, borer attacks, and fungal diseases. The leaves of fruit trees suffering from nitrogen deficiency are small, sparse, and yellow to pale green. Peach leaves also show reddish-colored lesions.

Drought

Drought alone usually will not kill healthy fruit trees, unless the drought is prolonged and severe. But short periods of hot, dry weather put severe stress on weak or injured trees and may cause them to die.

Time of Death

Death most frequently occurs in the early summer, during or just following the first heat wave. A heat wave puts a severe strain on a weakened tree. Weak trees frequently leaf out in the spring, bloom profusely, and set a heavy crop of fruit. Although the tree leafs out, the leaves usually are smaller than normal and are pale-green to yellowish-green in color.

Examining the Tree

Foliage. Examine the leaves for signs of disease or insect damage for size, color, and vigor. Fungus diseases and insects can be controlled by adequate pest control treatments. If the leaves are small, yellowish and weak, this could be a symptom of nitrogen deficiency, but more likely is a symptom of problems with the trunk or roots and these areas should be examined. If one branch shows symptoms of weakness but the remainder of the tree looks healthy, examine the bark on that branch.

Bark. The outer layer of the bark is composed of dead cells whose function is to protect the inner-bark from mechanical injury and dehydration. The phloem is adjacent to the outer-bark, consists of live tissue, and is the primary conduit for the movement of sugars, amino acids, and other substances manufactured by the various parts of the tree. The cambium lies between the phloem and the xylem (the woody part of the branch or trunk). Its function is to produce new live cells for both the phloem and xylem. The main parts of the bark, thus, are the dead outer-bark (epidermis) and the live inner-bark composed of the xylem and phloem.

The live inner-bark is the critical part to examine. Unhealthy inner-bark frequently gives a different appearance to the outer-bark – sunken, different color, different textures. These different appearing areas are a good place to start examining the inner-bark.

Using a sharp knife, remove a small portion of the outer-bark to look at the inner-bark. Healthy inner-bark is pale yellow to cream-colored to greenish-yellow. Dead inner-bark will be dark brown, and unhealthy inner-bark will be losing its natural color. If the inner-bark is healthy in that spot, try a few more spots, but always make the cuts small and shallow so the small wound will heal rapidly. If the inner-bark is dead, keep checking all around that spot to see where the dead inner-bark ends and the live inner-bark starts.

Branches. Examine the appearance of the bark on both the large and small branches. Look for discolored areas, disease lesions, bark splits, borer activity and injury caused

by storms, hail, machinery, sun scald, and cold. Examine the inner-bark in several places to see if it is healthy.

Trunk. Look for discolored or sunken areas, disease lesions, bark splits, borer activity and injury caused by rabbits, mice, storms, sun scald, cold and fluctuating winter temperatures. The south and southwest sides of the trunk frequently show the most cold injury. Examine the inner-bark. Long, narrow, vertical, dead areas of the inner-bark are less likely to cause death than horizontal areas that girdle half or more of the trunk.

Crown and Roots. The crown is the trunk area near, at and below ground level and is especially vulnerable to injury from wet soils, standing water, mice, machinery, winter cold, diseases, and borers. Remove soil from around the trunk to enable examining both the outer-bark and inner-bark. If the inner-bark of the crown is healthy, you may want to look at the inner-bark of the major roots.

What To Do

Little can be done to save trees suffering from severe injury to the trunk, crown, or roots. Fireblight and black knot damage confined to the smaller branches can be pruned out. Cherry leaf spot can be controlled by appropriate spraying.