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Why Home Fruit Trees Die

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Home fruit growers are understandably disappointed when their fruit trees die. Any injury to a tree that brings about irreparable damage to the trunk or roots will cause the tree's death. Usually mortality results from a combination of two or more of these factors interacting to weaken a tree to the point where it cannot survive an additional stress. Water management, winter cold, rodent damage, root and trunk disease, insect attack and improper use of herbicides alone or in combination can cause loss of trees.

Water Management

Inadequate irrigation or competition from lawn grass or weeds for moisture rarely kills trees but causes stunting that increases vulnerability to other problems. Fruit trees do not have the same water requirements as lawns, so they must be irrigated differently to prevent drought. Keep at least a 2 foot vegetation-free circle around the trunk of fruit trees to encourage more vigorous growth and avoid the incidence of lawn mower damage.

Excessive moisture can accumulate in soils with high clay content, an impervious subsoil or where a high water table exists. Roots of cherry, peach and nectarine trees are most susceptible to injury from wet soils and may be killed if they overwinter under these conditions. Pears, apples and plums are somewhat more tolerant but can also be injured by extended periods of wet soil. **Choose well-drained sites to promote good growth!**

Regardless of soil type, irrigation should be based on the need to replenish water used rather than on a certain calendar interval. When in doubt as to whether you need to irrigate, use your shovel and check the moisture level in the root zone at 12 to 18 inches. After harvest, water if necessary to ensure that trees go into the winter with adequate soil moisture.

Cold Injury

Winter injury can severely damage fruit trees which can result in death. Low-temperature injury is probably the most important factor determining the distribution of fruit species in Idaho. Even moderate amounts of cold injury to bark make trees more susceptible to infestation by borers and diseases. Winter injury occurs most frequently in the lower trunk, crown or roots near the soil surface. Winter injury is especially severe when excessive nitrogen fertilizer has been applied during the growing season coupled with cold weather in late fall or early winter. If damage is severe enough to destroy inner bark tissue, the plant will usually die shortly after growth begins in spring. Damaged inner bark will turn brown in contrast to healthy bark that will appear greenish yellow. Severe damage often results in the bark splitting or loosening.

Another problem peculiar to cold weather is winter sunscald, frequently called "southwest injury" since the south and southwest sides of tree trunks and limbs suffer more from this damage. Direct sunlight on one side of a tree causes temperatures to be as much as 15 to 20°F higher than temperatures on the shaded side of the tree. This variation in temperature causes bark and underlying tissue to crack or split. Rapid temperature changes on partly cloudy days or a quick drop to below freezing at sunset create tremendous stress on wood and bark tissues.

An application to tree trunks of white, water-based, exterior latex paint diluted to 50 percent is helpful in reducing injury, especially in young trees with thin bark. The white paint acts as a reflector reducing bark temperatures on the sunny side of the tree. Only water-based paints should be used, since oil-based paints may contain materials harmful to trees.

Spring frosts or freezes may cause loss of fruit or leaves. Trees will generally survive, however, if given proper care after the cold period.

Rodent Injury

Rodent injury, especially meadow mouse (vole) damage, is easily noted by carefully removing soil from around the base of the tree and over the larger roots near the soil surface. Bark completely removed around the trunk or roots by gnawing of the rodents girdle the tree and cause death or severe plant weakening. Keeping at least a 2 foot

vegetation free circle around the trunk of fruit trees will discourage mice from nesting nearby and from feeding on fruit trees.

Where trees are completely girdled by rodents, death usually occurs shortly after growth begins in spring. As with other types of mechanical injury caused by lawn mowers and weed eaters, the weakened plants are more susceptible to drought, cold injury and insect and disease infestations. Consult PNW Bulletin 154, *Meadow Mouse Control in Tree Fruit Orchards,* for more details.

Nutritional Deficiencies

Fruit trees seldom die as a direct result of nutritional deficiencies. Trees weakened by a deficiency, however, become more susceptible to cold injury, borer attacks and fungal or bacterial diseases. Nutritional deficiencies should be prevented rather than corrected after they occur. Consult CIS No. 655, *Idaho Fertilizer Guide: Orchards,* for more details.

Diseases

Diseases affecting leaves, fruit and twigs of fruit trees usually do not cause death if controlled before the diseases become severe. Fungal diseases such as peach leaf curl and Coryneum blight, if left uncontrolled, will eventually weaken trees sufficiently enough to result in death either directly or in combination with other environmental stress factors such as cold injury or drought.

Root and crown diseases such as crown rot on apples, peaches and cherries can girdle the trunk. Damage is not apparent for several months after it occurs. Trees may suddenly collapse and die when the weather becomes warmer in the summer. Planting fruit trees in a hole that allows water to collect and overwatering, especially on heavy textured soils, will increase the occurrence of these diseases.

For further information about diseases, consult the following University of Idaho publications: CIS 229, *Peachleaf Curl*; CIS 230, *Coryneum Blight of Stone Fruit and Ornamental Trees*; CIS 242, *Fire Blight — A Bacterial Disease of Pear, Apple and Certain Ornamentals*; CIS 668, *X-Disease of Cherry, Peach and Other Stone Fruit Trees*; CIS 690, *Apple Scab*; CIS 726, *Cytospora Canker Disease in Idaho Orchards*; CIS 752, *Phytophtora Collar-Rot of Orchard Trees*; and CIS 753, *Wood-Rot Diseases of Orchard Trees.*

Insects

Most insects do not kill fruit trees, especially if the pests are controlled before the infestation becomes severe. The peach tree borer is an exception; it kills many stone fruit trees (peach, apricot, plum, prune, cherry) every year by girdling the trees at soil level or just below. Even the ornamental stone fruit varieties are seriously affected.

Preventive sprays must be applied only to the trunk and lower scaffold limbs between July 1 and 10 and again in mid-August to prevent borer entry. Lindane is registered for use only on peaches and cherries. Consult CIS No. 605, *Insect Control on Stone Fruit,* for more details.

San Jose scale is another pest that can cause mortality to fruit trees if not controlled. Dormant season sprays using a dormant oil plus diazinon (Dzn diazinon 50W is registered) are recommended in early spring before buds or leaves form. In severe cases, a diazinon spray should be applied in late June to kill newly hatched crawlers. Dormant oil and insecticide sprays may be required annually for several consecutive years to bring persistent scale insect problems under control. Consult CIS No. 603, *Insect Control for Apples and Pears in the Home Garden,* for more details.

Other insects attack only trees that are weakened from other stress factors. To prevent insect attack, maintain fruit trees in best vigor possible by following good cultural practices.

Herbicide Damage

Herbicides are useful if used properly. However, one of the major reasons that fruit trees die in the home orchard is because of improper application of herbicides. Follow directions on the label. Do not use your herbicide sprayer to apply other pesticides. Please do not apply soil active herbicides, especially soil sterilant types, to control weeds near the home fruit planting. **Soil active herbicides can and will leach into the root zone of your fruit trees!**

Summary

The earlier in the growing season fruit trees are planted, the more opportunity that exists to make the necessary growth to develop into a healthy productive tree. Bargain trees late in the season that have made little new growth are not bargains!

Proper attention to approved planting techniques, adequate nutrition, vegetation management disease and insect control and good water management are essential to reducing fruit tree losses. The maintenance of healthy, vigorous trees is a key step in reducing losses to other stress factors such as cold injury or root diseases, thereby avoiding much disappointment and costly replanting for the prospective fruit grower.

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