Care of Physically Injured Fruit and Nut Trees

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Freeze injury

Portions of a tree that go into dormancy early in the fall will show less winter injury than those in which the dormant stage is delayed. Trees that are only partially freeze-injured will show the most injury in crotches, bases of branches, and low on the trunk. Tips of branches may show no injury.

Freezing injury is identified in the spring by dead bark extending to the snow or soil line. The bark may crack and peel, exposing a discolored cambium and sapwood (black in the case of pear and walnut), or adhere and shrink as it dries out, forming a sunken area.

In other cases, the wood is killed, but the cambium and inner bark remain alive. Then a new bark is developed beneath the old, which eventually scales off. In such cases, a new sapwood cylinder is grown to cover a dead black or dark brown heart.

One form of winter injury is “winter sun scald,” which causes the daily swing between the sun's warmth on the tissue in daytime and the severe cold at night. This type of injury is always found in the south or southwest side of the trunk. Usually, the bark cracks or splits open. Sometimes it separates from the wood without cracking. You can detect this by tapping lightly with a hammer and listening for a hollow sound.

It’s advisable to inspect all trees in the orchard immediately after a severe freeze. But wait until the end of the following summer before you decide that trees have been killed—they sometimes recover amazingly well. Unless the bark is split, leave the trees alone until spring, when injured areas are well-defined.

When bark is split and loose because of freeze injury, lack it down to keep the wood from drying out. Large-headed galvanized roofing nails are suitable for this purpose. This will help to keep the outer layers of wood alive, prevent rotting, and promote more rapid recovery of the trees.

During the following spring, don’t prune trees that show considerable damage to fruiting spurs or shoots. Freeze-injured trees that are not pruned often recover better than those that are—they have a larger surface area and manufacture food and grow new conductive tissue faster than sound trees. If necessary, prune the following summer after the extent of injury is apparent.

Trees recovering from freeze injury and whose growth has been checked by “black heart” injury sometimes set a heavy bloom the following year and overbear. Prune such trees heavily the second spring to reduce the amount of fruit set and stimulate vegetative growth.

If the aboveground portion of the tree is killed, it’s sometimes possible to regrow the tree from shoots that originate on the uninjured portion of the trunk below ground. This is seldom practical with trees over 5 years old. Cut the tree back to the uninjured part. Either regraft or remove shoots that arise from below the bud or graft union.

Since filbert trees are usually grown on their own roots, you can regrow a filbert from a root sucker if the top is killed. Choose a sucker originating below ground, so that it develops its own root system—and doesn’t depend on the old root–top ratio.

Freeze trees with trunks less than 4 to 6 inches thick may be replanted from aboveground suckers. excavate the tree off just above a strongly growing sucker on the trunk. Head the sucker at about 2½ feet above ground to stimulate branching.

Wind-damaged trees

The feasibility of saving trees that have been prostrated by wind varies with the size and age of the tree and season of the damage to the root system. It’s usually feasible to save trees that have less than half of their roots broken—sometimes, trees with two-thirds of their roots broken. Older or larger trees are more difficult to save than younger or smaller ones. If the trees are dormant when blown over, their chances of survival are much greater.

Roots provide moisture, anchorage, and mineral nutrients. Root breakage affects anchorage most severely and mineral nutrition the least. Pruning the top in proportion to the amount of root damage will reduce both anchorage and water requirements.

If about half the root system is destroyed, removing about half the top will restore the root–top ratio. Prune the tops of the limbs to reduce anchorage requirements. It’s easier to reset trees that have been pruned first.

Where the roots have been lifted, dig under them so that the roots will be at approximately their original level after

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you raise the trunk to a vertical position. Otherwise, you may break the remaining roots when you raise the tree. When you raise it, be very careful not to twist or side pull.

If you puddle the soil around the roots before raising the tree (100 gallons or more of water for a large tree), less root damage is likely to occur. After you reset the tree, the roots will be in more intimate contact with the soil around them.

Tree roots are injured at 15 to 25°F above zero, even though the above-ground part of the tree may withstand 25° below zero. This means that before cold weather sets in, you must complete salvaging trees with roots near the surface or actually exposed.

You’ll need props, stakes, or guy wires to replace the lost anchorage. They must last until the root system has regrown, which could take several years. Props and guy wires make cultivation more difficult; stakes are better from this standpoint.

Since cultivation, particularly heavy disk ing, is likely to injure new root growth, it’s best to suppress weed growth by other means, such as herbicides and flailing.

When you use a herbicide, be sure to: read the herbicide label very carefully, follow label instructions closely, wear protective clothing and safety devices (if the label requires them), and apply the herbicide with caution.

It’s not advisable to fertilize in the first year after a windstorm; for two reasons: (1) you could injure the roots; (2) fertilization tends to force top growth more than root growth.

Where it’s feasible, more frequent irrigation is very helpful in the recovery of trees that have been blown over by wind.

### Burned or scorched trees

The extent of injury after a fire next to or in an orchard may not be apparent until the following year. Usually, the higher branches are the most seriously affected. As with freeze injury, delay pruning until the following year, when the extent of injury will be clearly evident.

### Mouse, rabbit, or porcupine damage

Especially in severe winters with snow cover, mice, rabbits, or porcupines sometimes eat the bark of fruit trees and girdle or partially girdle them. Although a girdled tree will usually survive at least one season without treatment, repair it as soon as possible after the injury occurs.

If sucker shoots arise below the girdle, you can graft these in above the injured area. Cut the sucker off high enough that you can bower it on two sides like a screwdriver, slip it under the bark above the injured area.

In the absence of suitable suckers, you can bridge-graft the area, rootstock trees alongside the injured tree and plant them into the bark above the injured area. You must graft on a bud when the tree is not under-going moisture stress. Good times are in spring before growth begins or when it’s actively growing.

Sharpen the cut end of the sucker, rootstock, tree or bridge-graft scion and insert it under the bark above the injured area. You may have to slit the bark area and make a groove just wide enough to inset the cut end. Be sure to leave an arc in the wood so that the end won’t be torn out when the tree blows in the wind.

Use small brads or finishing nails to hold the scion, sucker, or inarch until it has grown together with the trunk. Carefully paint all cut surfaces so that air is excluded. Polyvinyl acetate paints, which weather well and do not crack, are excellent for this purpose.

### Care of wounds and breakage

Treatment of injured areas and breakage is similar regardless of the source of physical injury. Usually it’s most practical to simply cut off seriously damaged limbs. Prune the cuts made flush with the trunk. If a limb leaves a larger area exposed wood than is necessary, cut and remove the branch collar, which provides important protection from microorganisms.

Remove limbs by cutting close to where they join a larger limb or trunk, but where their diameter is smallest. This preserves the branch collar where there’s a natural chemical defenses against active. Don’t leave a stub that doesn’t heal, and they provide an entrance for wood-rotting fungi.

Trees that have been severely damaged in their first or second summer sometimes recover most rapidly if cut off close to the ground and allowed to regrow. The shape or smoothness of the cut area does not affect the rate of which the injured area is covered. If you want to improve the appearance of the injury, cut off areas of dead bark with a drawknife.

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