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Controlling Sunscald on Trees and Vines

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Introduction

Sunscald, also known as "southwest injury," is a common disorder of the trunks of some trees and vines. As its name implies, southwest injury occurs most often on the southwestern sides of trunks, which are exposed to the sun's direct rays in afternoon, when ambient air temperatures are usually highest. Because the sun rises in the east, moves across the southern sky and sets in the west, the northern sides of trees are shaded from direct sunlight and remain cooler than the southern sides.

Sunscald symptoms include split bark on the limbs and trunks and dead brown wood and inner bark. Sunscald is often associated with winter. A trunk exposed to the direct rays of the afternoon sun on a clear day with air temperatures below 32°F can have a temperature well above 32°F, depending upon bark color, moisture, wind and other factors. When the sun is obscured by clouds, buildings or the horizon, the temperature of the trunk often drops rapidly to the point at which ice forms in the bark and wood.

The actual cause or causes of sunscald are still not fully known but seem to involve rapid temperature changes, repeated freezing and thawing and a bleaching effect caused by intense sunlight. Snow cover can sometimes increase the incidence of sunscald by reflecting intense sunlight against the trunks.

Sunscald also occurs during summer when shaded trees are suddenly exposed to direct sunlight. Transplanting trees from a shaded spot in a nursery to a more exposed site or removing shading buildings or trees can create ideal conditions for sunscald. Trees that have been heavily pruned or "topped" are likely candidates for sunscald. Trees planted next to large expanses of light-colored pavement can also suffer sunscald when sunlight and heat reflect off the pavement and onto their trunks.

In addition to directly injuring bark and wood, sunscald predisposes plants to attack by diseases and insects. For example, many fungal diseases and a few bacterial diseases can kill trees through the formation of cankers and rot. A tree killed by canker or rot, however, may initially have been injured years earlier by sunscald. Intact bark is quite resistant to disease organisms and normally prevents fungi or bacteria from entering the living tissues. Sunscald or other wounds that damage the bark allow disease-causing organisms and insects to enter through the wound and attack the plant.

Susceptible Plants

Several woody species are susceptible to sunscald or to bark and stem cracking, which may sometimes be caused by sunscald. Susceptible species usually have thin, often dark-colored bark and include apple, cherry, peach, London plane, elm, horse chestnut, linden, oak, willow, beech, goldenrain (*Koelreuteria paniculata*) and walnut. Vines are occasionally injured by sunscald but less often than trees. Young trees and vines are generally more susceptible to injury than older plants whose bark becomes tougher and thicker with age.

Control

Controlling sunscald involves protecting trunks from direct, high-intensity sunlight. Several methods are available. Some are best suited to small plantings, others to ornamental uses and still others to orchards and vineyards.

As a general rule, ornamental plants that are susceptible to sunscald should be protected from the time they are transplanted as liners in a nursery until at least 2 years after being transplanted into a landscape. Ornamentals planted next to expanses of pavement may need to be protected for several more years, until they develop a thick, tough outer bark. Fruit trees in an orchard or home garden should, whenever possible, be protected throughout their lives by keeping their trunks painted white. Some commonly used sunscald control methods are described below.

Shield Trunks from the Light — Milk cartons, boards, burlap sacks, split plastic pipes and other devices are often used to shield the trunks of susceptible trees and vines from the afternoon sun. Usually these devices are better suited to home plantings than to commercial orchards, nurseries or vineyards. Occasionally, 4- or 6-inch diameter PVC pipes that have been split lengthwise and tied into place with twine are used to reduce sunscald in commercial nurseries (Fig. 1). The pipes are usually about 4 to 5 feet long and fastened with twine threaded through holes drilled into the top and bottom corners of the shield. Although the PVC shields are more expensive than most other shields and are not biodegradable, they are very durable, easy for one person to install and especially well suited to small ornamental nurseries.

Paper tree-wrapping tape is available from horticultural suppliers and lends itself well to use in commercial ornamental nurseries, the yard and the landscape. The waterproof paper, normally about 2 to 4 inches wide, is wrapped around

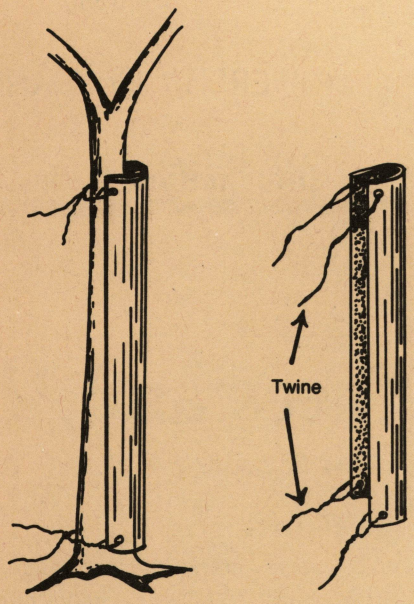

Fig. 1. PVC pipe split lengthwise and tied around a trunk provides a reusable barrier against sunscald.

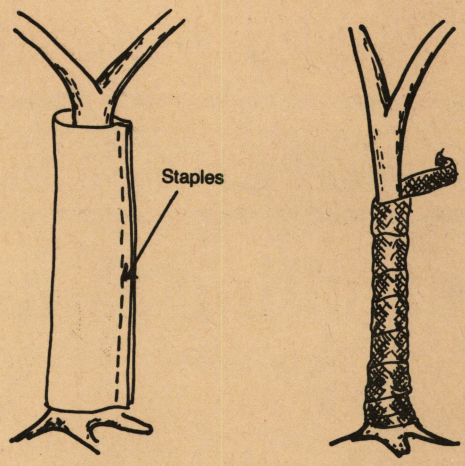

Fig. 2. Paper or burlap tree wrap helps to prevent sunscald.

the trunks of young trees. Folding the tape lengthwise around a trunk and fastening it with staples is faster and easier than winding the tape on in a spiral (Fig. 2). Burlap strips can be used in the same way as tree tape. Make sure tapes or other shielding materials extend from the ground to the branches.

Do not fasten paper or other tree wrapping materials tightly around trunks, especially the trunks of fast-growing trees or trees on vigorous rootstocks. Tight wrappings can create pressure on the bark as the trees grow, leading to girdling, bark splitting and the discharge of gummy sap from the trunks. These disorders become especially evident during the next dormant season. Tree wraps also can hide and protect damaging insects such as borers. A good practice is to remove the tree wraps after one year and inspect the trunks for insect damage. The wraps can then be reapplied, if necessary.

When protecting a plant from sunscald by blocking sunlight, be sure not to shade the leaves since they produce all the plant's energy and food reserves. Shading plants that require full or partial exposure to sunlight weakens them and makes them more susceptible to environmental stresses, insects and diseases.

Paint the Trunks — If plants are not intended to be ornamental, their trunks can often be protected from sunscald by painting them white. This method is often used in fruit orchards and works by reflecting some of the light and heat in sunlight away from the trunks. As a result, the temperatures of painted trunks fluctuate less than those of unprotected trunks. Use only interior white latex paint. Avoid enamel or exterior paints, which may contain chemicals that can injure plants. Paint those portions of the trunk and major scaffold limbs that face south or west; don't paint small branches or twigs. Apply paint during the fall or spring when foliage is absent, and paint from the branches to the ground.

Painting trunks white may retard budbreak slightly by slowing the rate at which trees warm and break dormancy in spring. Retarding budbreak by several days may help reduce losses to spring frosts in some plantings.

Select, Plant and Care for Trees Properly — Select trees and vines that are adapted to your growing area. If sunscald and winter injury are problems at your site, select plants that are known to be cold hardy and resistant to sunscald. Avoid planting susceptible trees on the north side of an expanse of light-colored pavement or stones.

When transplanting a tree from a nursery or shaded area to a location with full sun or high-intensity light, acclimate the tree gradually by slowly increasing the amount of sunlight to which the trunk is exposed. A common recommendation is to shield the trunks of susceptible trees for 2 years after transplanting.

Providing ample moisture can also help to reduce sunscald. Don't let plants go into or through the winter in a water-stressed condition.

When pruning, don't remove the entire tops of trees. Rather than remove all watersprouts during late spring, leave a few and cut them back to about 6 inches in length to provide shade from their leaves during summer. Rejuvenate old trees over about 3 years instead of cutting off all unwanted wood at once.

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