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## Pruning Sealants

Gardeners want to do the absolute best for their plants – especially when a limb has been broken or the bark has been accidentally damaged. Some have learned that pruning wounds should be sealed with a pruning compound to “protect” the plant from insects and pathogens. However, scientific research tells us that pruning compounds and sealants actually do more harm than good when applied to plants (with one exception which I will mention later). Claims made by the manufacturers of these products are horticulturally untrue.

Woody plants have developed their own processes for mitigating damage and preventing the entry and spread of rot causing fungi and bacteria. Coniferous trees produce resin (pitch) which seals surface wounds. Most trees also deposit rot resistant phenols, tannins and other compounds into the heartwood to increase rot resistance internally. Each year, trees form hundreds of tiny abscission layers as leaves senesce and fall. Wounds left from branch breakage are callused over and compartmentalized within the trunk to prevent the spread of rot causing organisms. All of these processes occur without human intervention.

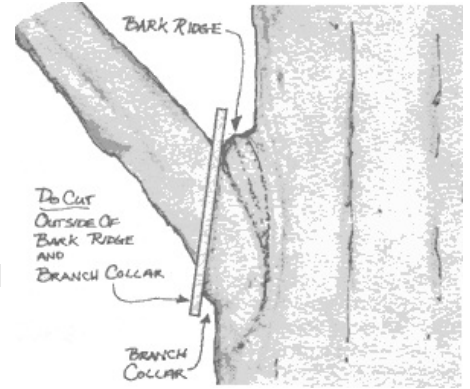
Trees do not heal. Instead, they naturally isolate damage through formation of suberized, lignified wood that physically and chemically repels invasion. Suberin is produced in cell walls to make cells less permeable to water (like cork) and lignin is a complex chemical that hardens cell walls. Callus tissue develops at the edges of a wound and gradually expands towards the center. This wound wood remains for the life of the tree (although it may be covered by subsequent growth); bark does not regenerate itself the same way our skin does.

Wound dressings/tree sealants initially trap moisture and create an ideal environment for decay. Over time, they inhibit compartmentalization, prevent wound wood (callous) from forming, and eventually crack, again exposing the tree to pathogens. Some of the “natural” products that use non-petroleum based formulations can also serve as a food source for pathogens.

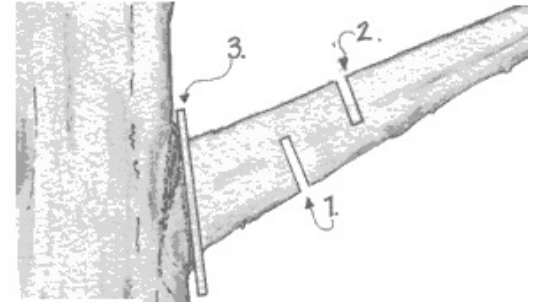
Many arborists claim there may be some benefit in applying sealants to tree wounds in species particularly susceptible to certain diseases, such as oak wilt and Dutch elm disease. Many regions in the country specify that oaks pruned in areas where oak wilt is a problem should be treated to prevent infection. While research supporting this advice is questionable, it may be justifiable to use a fungicide or insecticide during spring or summer pruning. If pruning is done during the dormant season, chances of infection are greatly reduced and wound treatment should be avoided. However, oak wilt and Dutch elm disease are not known to exist in Arizona.

The one exception where pruning sealers are recommended is on freshly pruned rose canes. Rose canes have very soft, relatively large diameter pith (soft tissue in the center of the cane). This tissue is very attractive to carpenter bees, solitary wasps, and sawflies. These insects bore into the pith of the cane creating physical damage, potential entry points for disease, and sometimes plant mortality. The simplest solution is to cover the freshly cut rose cane ends with wood glue. This usually prevents entry of these boring insects and their subsequent damage.

Well placed pruning cuts are made to maximize the tree's natural ability to close its wound and defend itself from infection. Sharp, clean pruning tools will also help alleviate pruning-related disease problems. When pruning, make clean, smooth cuts. Do not leave branch stubs. Leave a small collar of wood at the base of the branch. The branch collar is a slightly swollen area where the branch attaches to the trunk. Cutting the limb flush with the trunk will leave a larger area to callus over and a greater chance of decay organisms entering the wound.



Use the “three-cut” method to remove larger branches. Start by making a slight undercut well above the location of the final cut. The second cut should be on the top of the branch above the undercut. This cut removes the weight of the branch and prevents bark stripping. The final cut should be made outside the branch collar. If pruning is done during the dormant season, the chance of infection is greatly reduced and wound treatment should be avoided. It is recommended that you sanitize pruning tools prior to cutting. Sanitizing can be accomplished by soaking in 70% isopropyl alcohol for 1-2 minutes. A 10% bleach solution is recommended by some, but be aware that bleach is highly corrosive and can also ruin your clothing.



Use preventative techniques to manage disease through practices such as proper irrigation, disposal of contaminated material, and use of disease-free compost and mulch.

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