

Bridge Grafting – Saving Tree Life Despite the Odds

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Winter months transform landscapes and orchards into all-you-can-eat hot spots for rodents, such as voles, field mice and rabbits. As you are pruning your landscapes and orchards, look down at the base of the trees to check for possible rodent damage. Young trees, with their tender bark, are particularly vulnerable. It is good practice to put mouse guards around the trunks of young trees; however, it is not a guarantee that there will be no damage.

For some reason, voles prefer apples over other fruit trees, being particularly partial to Golden delicious, Galas and Honey Crisp. If there is mulch around the tree base, it becomes the scenario for a perfect storm – the mulch provides shelter for the winter with plenty of food readily available.

Damage could be very significant extending beyond the base of the trunk above the soil line, often going below the soil surface and, if there is a snow coverage, above the snow line affecting the lower scaffolds. With the cambium layer compromised, there is good chance of losing the tree.

How to save the tree

Preparation and planning ahead can help save trees from rodent damage. As pruning is done from February until early spring, collect scionwood to be used for bridge grafting.

The best scionwood is one-year-old wood that is at least the thickness of a pencil, about $\frac{3}{8}$ inch in diameter and 15 to 20 inches long. Watersprouts (Figure 1) from disease-resistant trees work well.

The next step is to make sure the scionwood stays dormant until full pink to early bloom, which is when the grafting will take place. The scionwood must be kept moist in a cool, dark place.

Wood should be wrapped in moist, but not soggy, paper towels and/or burlap (Figure 2), placed in perforated plastic bag to avoid molding and rotting, and then placed in a cooler or refrigerator with temperatures above freezing. The cooler or refrigerator should be one that is not used for food in order to avoid any exposure to ethylene, which will induce bud break and compromise the success of the graft.



Figure 1. Tree with strong vertical shoot growth (watersprouts) that will work well for scionwood (Photo credit: M. Danilovich).

Bridge grafting

Very young trees (1 to 2 years old) with severe trunk damage (100 percent girdled trunk) are better-suited for a more drastic approach, like cutting the trunk below the injured area but above the graft union, essentially restarting the tree. This will induce the regrowth and the newly developing shoot will be trained as a replacement tree.

The older trees respond well to bridge grafting; however, if the trees are girdled, they will die. Bridge grafting is a process to re-establish the interrupted sap flow.

The injured section needs to be cleaned and rough edges evened out. Sometimes the injury goes below the soil line. If that is the case, a few days before the grafting procedure, remove soil from around the base of the tree to allow for that part of the tree to warm up and speed up the sap flow to ensure better graft union.

Scionwood is placed every 3 to 4 inches around the trunk. Slits 2 inches or so in length are cut into the bark, and the flaps are pulled away to accommodate scionwood placement (Figure 3 on page 3).

Once the scionwood is inserted, the flaps are pulled over, fastened with tack nails and covered with the grafting compound or wax to prevent excessive drying (Figure 4).

In a few weeks, the graft will heal re-establishing the normal sap flow. In time, these bridges will grow and close the gap between them.



One-year-old wood/watersprouts work well as scionwood.



Scionwood prepared for storage and/or shipping.



Figure 2. Scionwood prepared for storage until grafting takes place (Photo credit: M. Danilovich).



Figure 4. Finished bridge graft (Photo credit: M. Danilovich).

Step-by-step bridge grafting

1. Clean the wound and trim the bark to an even cut (Figure 3-A).
2. Prepare scionwood by cutting it 3 inches longer than the length of the wound (Figure 3-A).
3. Make a wedge cut on both ends of the scionwood (Figure 3-A).
4. Make an inlay cut into the bark from the edges of the wound, approximately 2 inches long and as wide as the scionwood (Figure 3-B).
5. Remove the bark so the healthy wood is exposed (Figure 3-C).
6. Place the wedged scionwood into the slit and affix it with the small tacking nails.
7. Do the same with the other end.
8. Make sure the scionwood is at a slight bow to ensure flexibility and better cambial contact.
9. For older trees, scionwood should be placed every 3 to 4 inches all the way around.
10. Upon completion, cover graft unions with the grafting compound or wax to preserve moisture and prevent drying out.

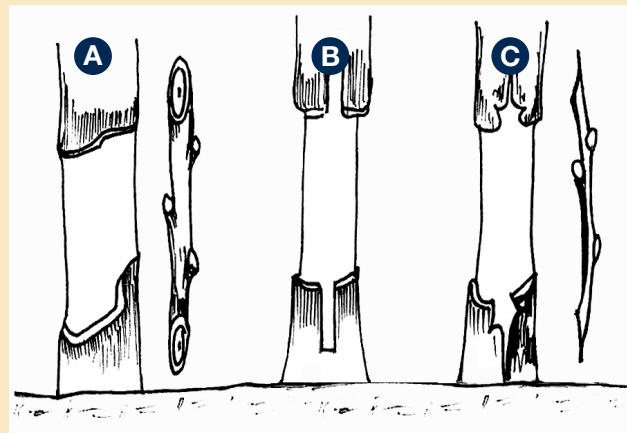


Figure 3. Trunk and scionwood preparation for bridge grafting (Photo credit: M. Danilovich).

For more information

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