

MAT-SU MASTER GARDENER'S NEWSLETTER

SPECIAL EDITION

July 2012
Special Edition

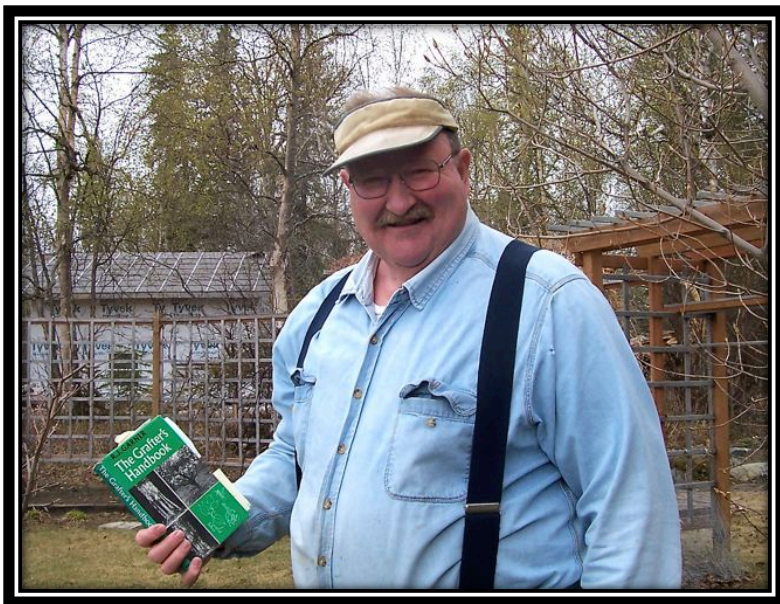


Salvaging Girdled Fruit Trees

By Curt Mueller, Master Gardener

Damage by voles to fruit trees, lawns, and other plant material was widespread during the winter of 2011/2012, due largely to the heavy snow cover which allowed those rodents to operate underneath its warmth with no interference from their predators. Dan Elliott's orchard suffered considerable damage. In order to educate other people whose trees had been partially or completely girdled, Dan asked me to take a series of photos of the grafting process used in an effort to save his trees. As he said, "A picture is worth a thousand words."

Along with some descriptions of the bridge grafting process, this would then be disseminated to interested growers. In the following pages will be found the documentation of this effort. It shows some things that can be done to salvage damaged trees. At the end of the photo list is a bulletin from the University of Minnesota that provides further information on the subject.



**Dan Elliott, Master Gardener
and Master Orchardist**



Photo 1

Apple tree completely girdled by voles. Tree will not survive without help



Photo 2

Trimming off layer of rough outer bark to pliable inner bark.



Photo 3

Cutting vertical slit in inner bark.



Photo 4

Separating inner bark from cambium. Cambium remains on tree trunk.



Photo 5

Preparing top graft area same as on tree bottom. Graft areas must be in line.



Photo 6

Scion cut to length and prepared for grafting. Scion is cut from live wood from same tree or compatible tree.



Photo 7

Inserting scion into top opening. Note the wood chip under Dan's right thumb. This is to help spring the scion to aid insertion.



Photo 8

A small nail is used to hold scion firmly in place against the cambium on trunk. Helping hands belong to Wayne Bowman.



Photo 9

Graft is sealed to keep out moisture or insects and prevent entry of rot-causing organisms.



Photo 10

Sealant used by Dan for working with trees.



Photo 11

Grafts are taped to hold cover sealant and to help hold scion in place. Note two other grafts have been made on this tree. All are wrapped at one time.



Photo 11a

This follow-up photo, taken in early September, shows two apparently successful bridge grafts which are helping to keep the top of this tree alive. To the right of the trunk is a sucker from the rootstock, a common occurrence when a tree is under stress. This could possibly be grafted into the top at a future time to aid in the tree's recovery.



Photo 11b

The third graft was good at the base of the tree but unsuccessful at the upper graft. It has produced leaves, but the orange fungus affecting the lenticels indicates the death of that part of the scion. Lenticels seen on the healthy bridge graft to the right are a light beige color. The isolated portion of bark on the trunk is also dead.



Photo 11c

This view of the same tree indicates that it has responded to the two healthy grafts. It has borne some fruit, although of a smaller size than normal. It will take several years for the tree to fully recover, but it appears to be making progress.



Photo 12

Same type of bridge graft made several years ago in Dan's orchard. Grayish white area is the original girdled trunk, and is dead wood which could be removed. In time the three bridges will merge and become a single trunk.



Photo 13

Partially girdled tree with a fourth of bark remaining. Tree might survive without grafting, but two bridges will enhance survival.



Photo 14

Grafting process is similar to that on first tree.



Photo 15

Scion is prepared. In this case a much shorter scion is needed.



Photo 16

Scion is applied to tree. This scion is too short to bend for insertion so two slits have been made in top graft and flap of inner bark is raised to allow application.



Photo 17

Completed graft.



Photo 18

Second graft has been made and both sealed and wrapped.

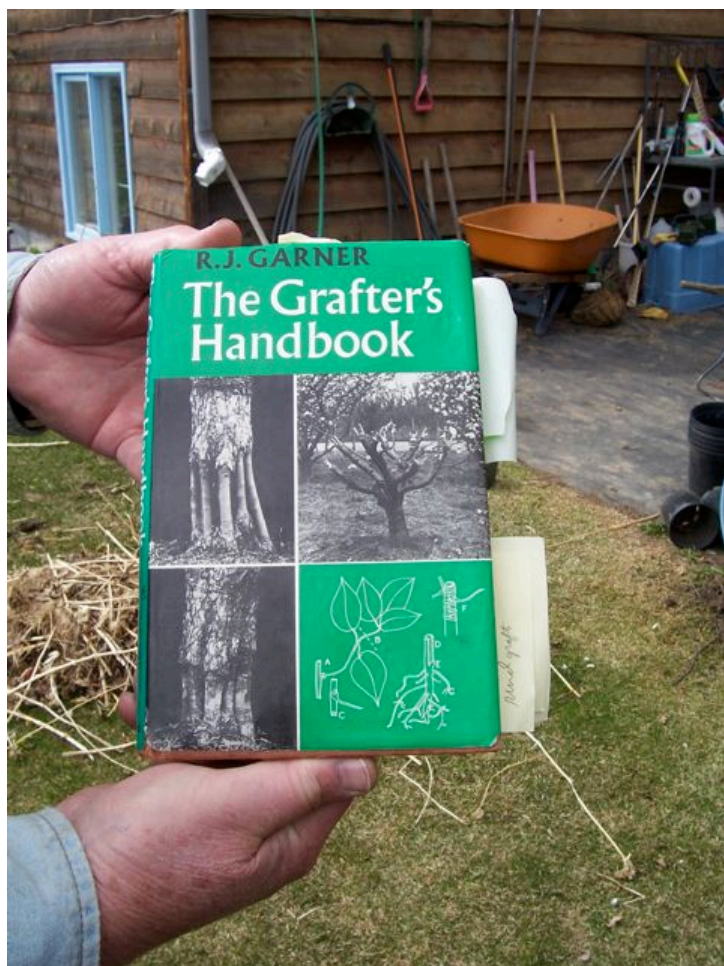


Photo 19

Handbook used by Dan in working trees. Book is in print and available in hardcover or paperback.

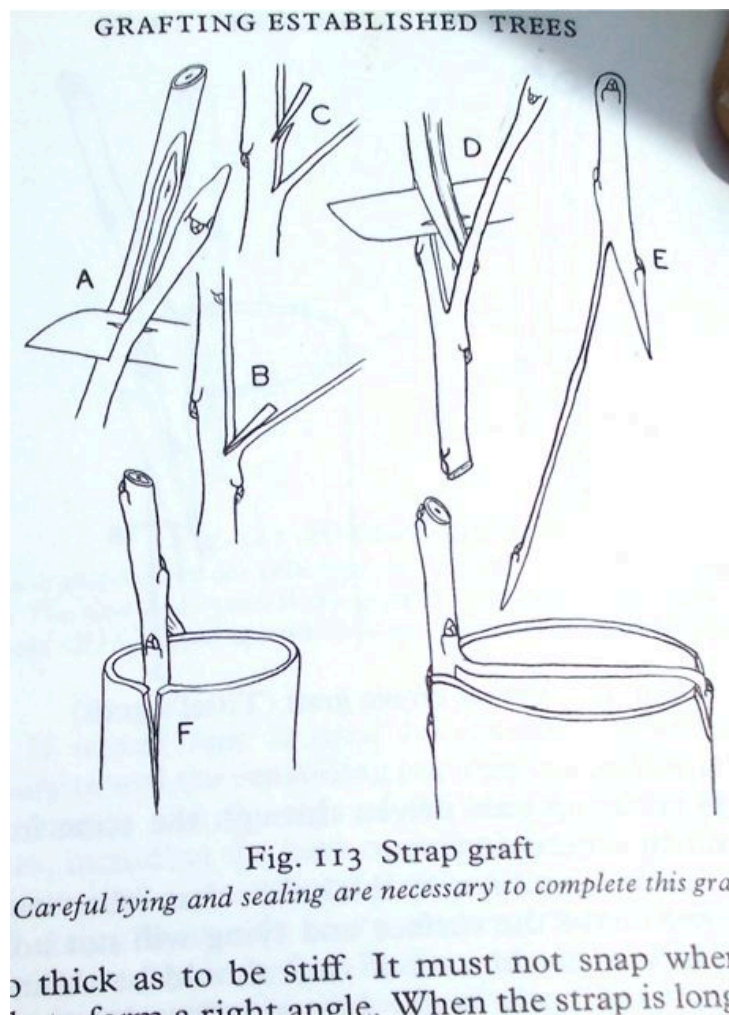


Photo 20

Detail from handbook showing steps in strapgraft. Lower right figure shows completed graft attached to both sides of tree.



Photo 21

Established strapgraft.



Photo 22

Classic pyramidal shape of well-maintained tree.



Photo 22a

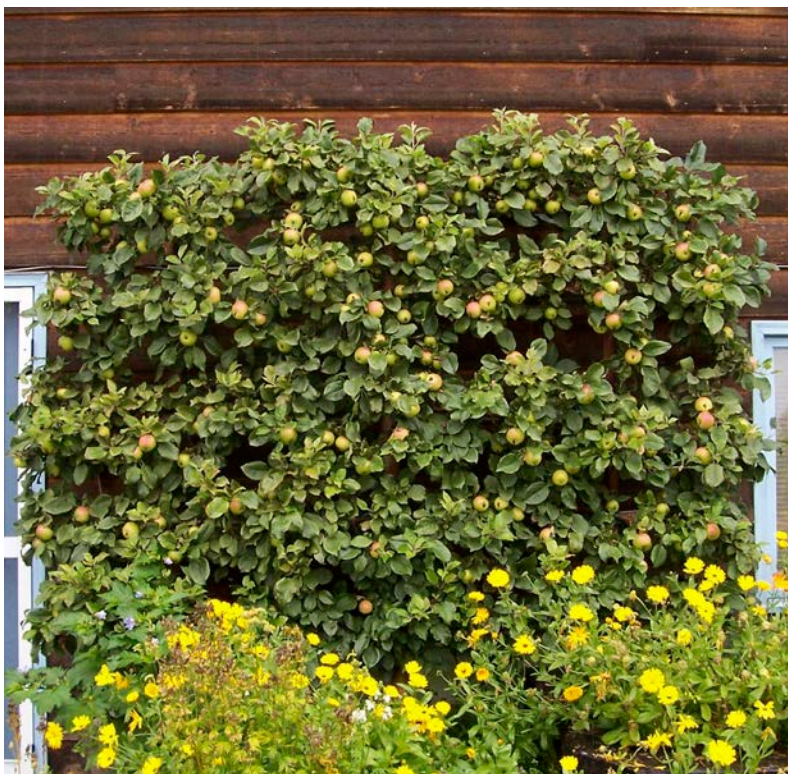
Follow up view of tree in fruit;
early September.



Espalier:

Dan and espaliered apple tree. On the south side of the Elliotts' house it receives additional warmth and some wind protection. It produces well, Dan says.

Dan is very generous in sharing his knowledge and skill with others.
Thank you, Mr. Elliott.



Espalier a

September view of espalier.
Indeed it is producing well.

Extract from University of Michigan Extension publication, Grafting and Budding Fruit Trees, Reviewed 2009, by Leonard B. Hertz, Former Extension Horticulturist (DG0532 or WW-00532)

The Bridge Graft

When the bark of a tree is removed (girdled) completely around the trunk, that part of the tree above the damaged area will die. Even though completely girdled, some trees may leaf out and remain alive for one season, but both the top and root will die the second year unless shoots have been produced below the girdled areas.

Girdling can be caused by rodents, which damage many fruit trees each year. Occasionally a tree may only appear to be girdled if the gnawing has not gone through the bark to the wood. Sometimes the girdled area extends less than halfway around the trunk, and such injuries are protected from drying out, new bark will grow from the cambium. As soon as you discover an injury, cover it with an asphalt grafting compound.

Rabbit damage is usually some distance above the ground or snow line. These animals cut off twigs and pull off bark in shreds. Mice work near the ground out of sight under grass or snow. They usually begin at one spot and enlarge it. Pocket gophers gnaw off roots below the ground. Trees hurt in this way often tip over and cannot be repaired.

The following supplies are necessary to repair girdled trees:

1. A sharp knife, such as a good jackknife
2. Small nails for tacking scions to the tree
3. A light hammer
4. A nail set
5. A saw for trimming old thick bark
6. A shovel or trowel if damage is below the ground
7. A heavy scrub brush for cleaning excavated bark
8. Dormant or fresh cut scions for bridges
9. Asphalt grafting compound or asphalt wound dressing

Scion—Scions for apple trees may be taken from any hardy cultivar of apple or crab apple. Pear scions must be used for pear, plum for plums, and so on. Old trees rarely produce good scion wood unless they were pruned well the previous year. If 1-year old-wood is not available, 2-year wood may be used. If you can anticipate the need, you should cut the scions before any growth begins. Keep them in moist and cool storage. You may cut the scions, fresh as needed, if you bridge promptly before shoot growth begins.

Small Tree—Apple and pear trees under 2 inches in diameter are too small to bridge. The swaying of such small trunks by strong winds will dislodge the scions. If the tree is under 1 inch, it is best to saw it off just below the girdle, then cover the cut with asphalt wound dressing or grafting compound. Shoots of the same cultivar probably will grow out from above the place the tree originally had been grafted. Trees between 1 and 2 inches can best be treated by cutting or sawing them off below the injury in the spring and placing scions in the stubs by cleft grafting. Cherry and plum trees usually are not bridge grafted successfully. If they are only 2 or 3 years

old, cut off below the injury and a new shoot will grow out from above the place where the tree originally had been grafted.

How To Bridge Graft—Bridge grafting is done in the spring after growth has started when the bark of the tree to be repaired will lift readily (slip) from the wood—usually between April 15 and May 15.

The first step is to trim the bark of the girdled trees both above and below the girdle. Cut back damaged or frayed bark an inch or so to sound bark. The edges should be clean and smooth. Scrape down old rough bark to live bark.

Two methods of setting scions are used: (1) the L-cut, best for trees with thin bark, and (2) inlay, for trees with thick bark.

To make the L-cut, start at the edge of live bark and cut a slit about 2 inches long in the bark below the girdle (left side in Figure 8). Lift the edges with a dull smooth tool. Such a tool can readily be shaped from hardwood or a piece of plastic. The rat tail of a comb is good for this purpose. *Do not use the scion to lift the bark.*

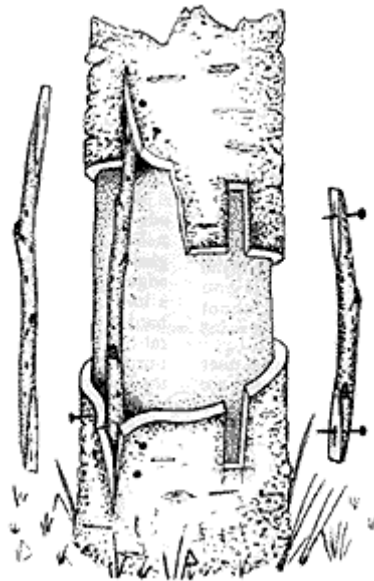


Figure 8. Two methods of bridge grafting (L-cut on the left and inlay on the right) are shown. The scion on the left is inserted under the bark at each end; the scion on the right is laid in a groove at each end.

Prepare a second slit at the upper side of the girdle directly above the first.

Shape the scion on the lower end and measure against the girdle to determine the length of the scion. Shape the upper end of the scion to a definite taper with a longer flat surface next to the tree. Slip the ends under the bark, nail them in position and nail down the flaps of bark.

In nailing either scion or bark, use care to avoid crushing the bark. A nail set will help to avoid injury to the bark.

The **inlay** method (right side of Figure 8) is the best bridge grafting technique. In fact, it is a necessity for a short span. Select a curved scion to make an inlay bridge. Measure the distance to be spanned and make the scion long enough to extend 1½ to 2 inches beyond the girdle at each end. Cut a straight, smooth face on each end.

Place a nail in each end. Tack this lightly to the tree bark to mark the place. Mark around each end on the bark to get the exact size of the scion. Remove the scion, cut to the wood on the marks, and lift out the piece of bark. Then fit the scion in the channels in the bark and nail carefully. One nail is usually enough.

In either grafting method, place a scion every 1½ to 2 inches around the tree.

There is a third method to insert scions in bridge grafting, as shown in Figure 9. Little or no trimming is done to the bark that borders the damaged area. This is a little less tidy and it requires somewhat longer scions, but it is quicker and equally effective.

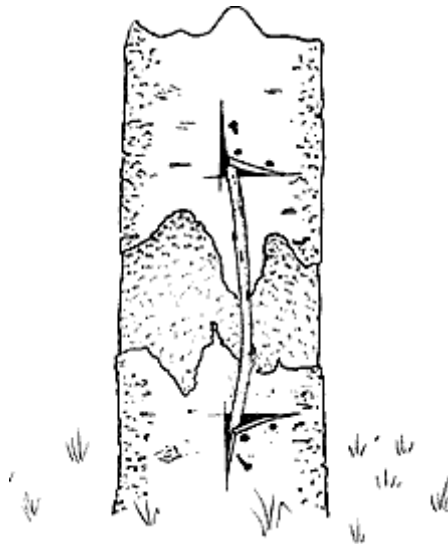


Figure 9. A quick way to bridge girdled trees.
Scions are cut and inserted essentially the same as in Figure 8.

Covering and care—When all the scions are in place, the graft unions should be covered with grafting compound. Note that the entire girdled surface should be covered and more than one coat may be necessary.

In bridge grafting, after the scions begin to grow, it is important that all shoots or leafy growth be cut or rubbed off the scions.