



WALNUT NOTES

Grafting

Black walnut is a difficult species to propagate vegetatively. The most successful propagation methods involve grafting—either grafting indoors with containerized rootstock (bench grafting) or grafting on established seedlings or trees (topworking).

Materials Required

- A very sharp knife made of high-quality steel that will hold a sharp edge. Grafting success depends on the grower's ability to make long, smooth cuts with a single stroke of the knife.
- Grafting rubber or budding strips for binding the graft union.
- Some semipermeable material such as grafting wax, paraffin, or Parafilm[®]1 to cover the graft and keep the scion from drying out.

Bench Grafting

Two types of bench grafting—side and cleft grafting—use dormant scionwood (1-year-old branch tips from the desired cultivars) and actively growing seedling rootstocks. The grafting method you choose depends on your ability to match the cambiums (single layers of cells between the bark and the wood) of the scion and rootstock. For both methods:

1. Collect dormant scionwood in late winter (January to March) when the tissue is not frozen.
2. Bundle together scionwood from the same tree, label it, and then store it dry in labeled plastic bags in a refrigerator until rootstocks are ready for grafting.
3. Select large 1-O seedlings for the rootstocks and plant them in ½- to 1-gallon containers using a well-drained potting medium (see Note 1.03: Growing Containerized Walnut).
4. Graft rootstocks when the buds along the stem begin to elongate or a few small leaflets are present.

Cleft (wedge) grafting.—This graft is best used on scionwood and rootstocks of the same diameter (fig. 1).

Side grafting.—With side grafting, you can adjust the depth of cut on the rootstock to fit a variety of smaller scionwood diameters (fig. 2).

Budding

Budding is a form of grafting where a bud and the surrounding bark are slipped from the scionwood and grafted to the rootstock. Budding can be done from the time rootstocks begin to leaf out until new shoots are 12 inches long.

1. Prepare the rootstock by making two parallel cuts about one-half inch apart through the cambium but not into the wood about 4 inches above the ground. The cuts should be about 1½ inches long.

1Mention of trade names does not constitute endorsement by the USDA Forest Service.

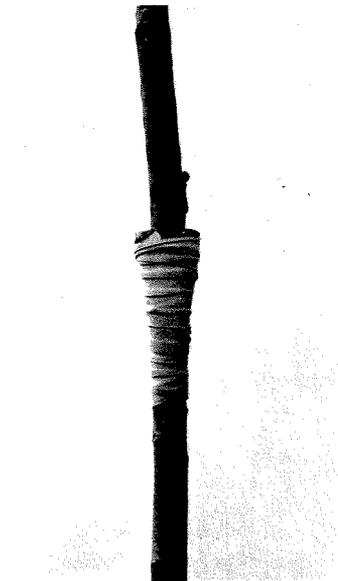
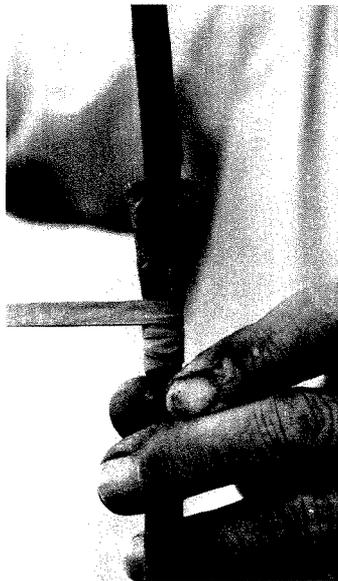
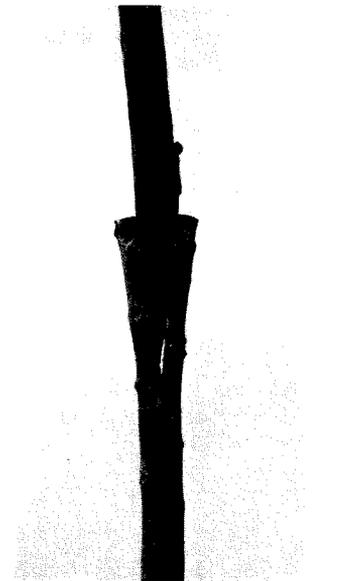


Figure 1.-Cleft (wedge) grafting.

1. Prepare the basal end of the scionwood by cutting it evenly on both sides to form a long, uniformly tapered wedge about 2 inches long.
2. Cut off the stem of the rootstock where its diameter is equal to the diameter of the scionwood (upper left).
3. Make a vertical cut down the middle of the stem about 2 inches deep.
4. Insert the scionwood wedge into the cut until the cambiums match on both sides (upper right).
5. Tie the graft with a budding strip around the base of the graft union and wrap overlapping each turn to prevent the tissues from separating as the area calluses over (lower left).
6. Tie budding band off by inserting end through last wrap, then paint entire graft with grafting wax or softened paraffin to prevent the scion from drying out (lower right).
7. Complete the graft by clipping off the scion, leaving two dormant buds.

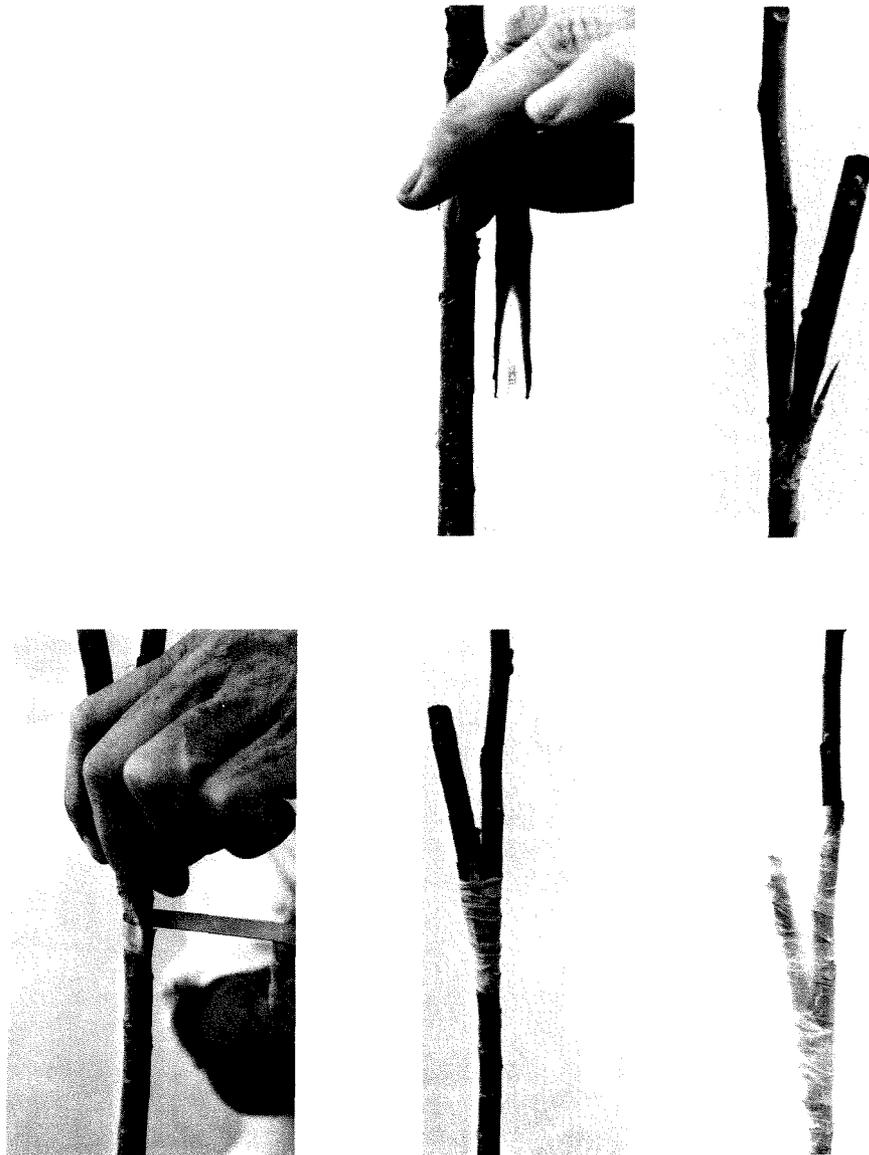


Figure 2. -Side grafting

1. Cut a piece of scionwood off 2 inches below an intact bud.
2. Insert the knife into the bark just below the bud and make a long, smooth diagonal cut through the center of the base.
3. Make a similar cut on the opposite side.
4. Prepare the rootstock by making a single diagonal cut about 1 1/2 inches long near the base of the stem so that the width of the cut tissue matches the diameter of the scionwood (upper center).
5. Insert the scionwood into the cut with the bud on the side away from the rootstock (upper right).
6. Tie the graft union with a grafting rubber or budding strip (lower left and lower center) and then cover it with soft paraffin, grafting wax, or Parafilm to prevent the scionwood from drying out (lower right).
7. About 7 to 10 days after grafting, remove the rootstock stem above the scion.

2. Make two perpendicular cuts to remove the entire piece of bark or remove the upper two-thirds of it to create a flap.
3. To prepare the bud, take the dormant scionwood and start a cut about one-half inch above a bud, cutting through the cambium and along the wood until about one-half to three-fourths inch below the bud. The bud chip should be a near duplicate of the cut on the rootstock.
4. Slip the bud chip into the cut on the rootstock or under the flap if it was not removed and align cambiums.
5. Starting below the bottom of the chip, spirally wrap masking tape around the graft, just missing the bud.
6. Repeat the operation starting from above the graft in the opposite direction.
7. Using waxed string, spirally wrap the graft three times below the bud, cross over behind the bud, and spirally wrap three more times to the top of the graft.
8. Repeat the procedure in the opposite direction.
9. If excess bleeding occurs around the graft, drill one or two small holes through the base of the rootstock.
10. In 2 to 3 weeks, cut off the original stem 12 inches above the graft.
11. Periodically rub off all buds on the stub except the grafted bud.
12. When the new growth is 2 to 3 inches long, make a vertical cut through the string and masking tape on the stub opposite the bud.
13. When the new growth is 6 to 8 inches long, tie it to the stub to support it and induce vertical growth.

Bench grafting aftercare.-Keep greenhouse temperatures between 65° F and 90° F to promote rapid callusing and new shoot growth. Twice weekly, all buds sprouting along the rootstock stem must be removed to prevent competition with scion growth. Keep humidity as high as possible without directly misting or sprinkling the graft union. Grafts should be held in the greenhouse until the union calluses over and leaves begin to expand. Outplant grafted seedlings as containerized seedlings after all danger of frost has passed; or move them to a shadehouse and hold them over until the following spring.

Topworking established rootstocks-Topworking refers to grafting onto rootstocks already established in a plantation or nursery bed. Topworking does not require use of a greenhouse. All three methods of grafting can be used to topwork established walnut seedlings and saplings; however, budding usually gives the best results.

Whichever grafting method you use, keep these basic principles in mind:

1. Black walnut cuttings should be grafted to black walnut rootstocks.
2. Long, smooth cuts with a very sharp knife are the secret to successful grafting.
3. The cambiums of the scionwood and of the rootstock must be aligned as closely as possible.
4. Optimum temperatures to promote callusing of the graft union are between 80° and 85° F.
5. The scionwood and graft union must not be allowed to dry out.