

# Black walnut bench-grafting procedure reduces stock suckering

by

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Early attempts to graft scions from superior black walnut ortets onto seedling rootstocks resulted in graft unions that were troublesome during greenhouse propagation and among grafted trees in a seed and clone orchard near Milford, Kans. Graft unions made above or at the root collar resulted in shoots developing on the stocks to the detriment of the scion. Suckers regularly removed recurred on some stocks for three growing seasons. Failure to remove shoots resulted in loss of the scion.

During attempts to propagate black walnuts from root cuttings in 1968, I observed that cuttings derived from roots more than 1/2 inch below the root collar of 1-year seedlings would not produce adventitious shoots. Some of the decapitated roots were alive even after 1 year of separation from the stem, but with no sign of new shoot development. These observations indicated that removing the seedling top to 1/2-inch below the root collar and grafting the scion into the remaining root might lead to a graft union free of adventitious shoots originating from the stock. Grafts made on black walnut rootstock have fulfilled expectations. Not one of many hundreds grafted and planted in the field has developed a sucker on the stock. The oldest grafts (4 years) in the seed orchard appear healthy and vigorous.

## Procedure

This grafting technique requires a

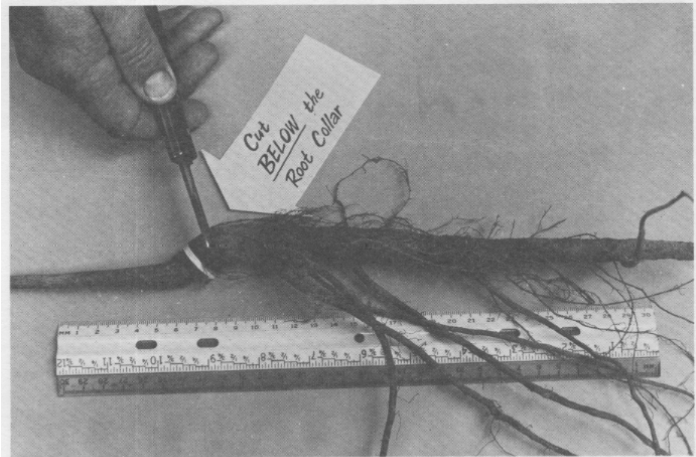


Figure 1.—Separate stem from the seedling by 1/2 to 3/4 inch below the root collar.

misting system that operates during daylight hours (2 seconds of mist per 5 minutes) in a greenhouse where daytime temperatures can be maintained at 75° to 90°F. and nighttime temperatures no lower than 60°F. A cleft grafting technique was most satisfactory. The technique and subsequent care of grafting plants follow.

### Preparing the Stock

Separate the stem from the seedling by cutting 1/2 to 3/4 inch below the root collar (fig. 1). Use the root portion as the grafting stock. If the stem section is planted in good soil and supplied with sufficient moisture,

it will grow and may be used the next season as planting or grafting stock.

### Preparing the Scion

Scions to be used should have three buds. Prepare the cut surfaces as shown in figure 2. If the scion diameter is less than the diameter of the cambial ring on the rootstock, bevel the cut so one side of the wedge is wider than the other. That assures

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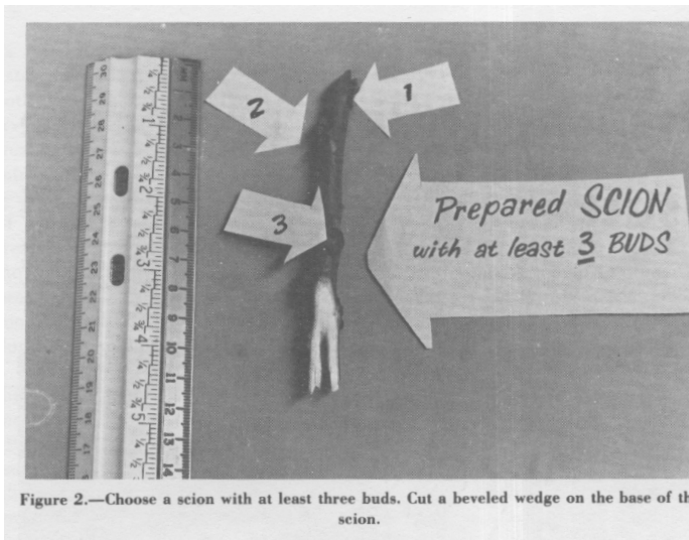


Figure 2.—Choose a scion with at least three buds. Cut a beveled wedge on the base of the scion.

cambial contact on the wider side and more rapid callusing on the opposite side

**Making the Graft Union**

Make a split in the root stock as deep as the length of the wedge on the

scion. Insert the scion into the split stock

aligning the cambiums of stock and scion on one side as shown in figure 3 (in most instances, the bark of the stock will be thicker than on the scion so the contact side of the

union is depressed). Tie the union with 3/8-by 8-inch rubber budding strip and coat the

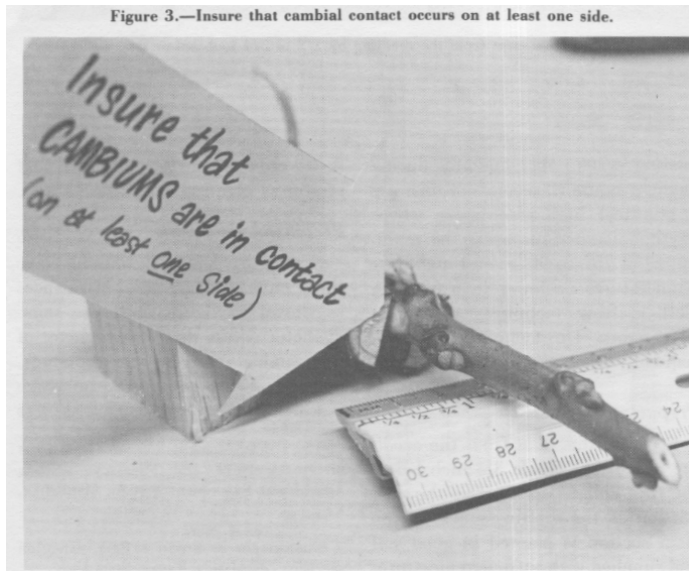


Figure 3.—Insure that cambial contact occurs on at least one side.

union and tip of scion, if cut, with melted grafting wax (figs. 4 and 5). Be sure that the wax is not hot enough to injure tissue.

**Greenhouse Culture**

Place grafted trees in deep containers. One quart or 1/2 gallon milk cartons open at both ends work well. Place in trays with sufficient holes for good drainage and fill cartons with a 1:1 peat-perlite mixture to 1 or 2 inches above the graft union, then set the tray in the mist bed. Spray containerized grafts with 4-4-8 Bordeaux mixture and wait until dry before turning on mist. One or two fertilizer pellets (slow dissolving-5 gram, 20-10-5) should be added to each carton within the first 2 weeks.

Maintain mist until 5 or 6 inches of shoot growth have developed. After removing mist, maintain adequate moisture until planted outdoors. If greenhouse is of fiberglass or polyethylene, grafted trees may be planted in the field 1 week later. If the greenhouse is of glass construction, grafted trees must be conditioned to ultraviolet light in a lath house a week or so before being planted outdoors.

**Planting Containerized Grafts in the Field**

Use a soil auger or post hole digger to make a hole 2 or 3 inches deeper than the length of the milk carton container, and, after placing the containerized tree in the hole, fill in the sides with loose earth. With a series of quick jerks, pull up the container, leaving the roots and soil ball in the hole, until only 1/3 of the container is under ground. The above-ground portion serves as a wind and light barrier for the developing shoot. Add a few more inches of earth around the container (fig. 6).



Figure 4.—After tying the union with rubber budding strip, coat the union and tip of scion (if cut) with grafting wax.



Figure 5.—Completed graft ready for planting in deep container.



#### Care of Planted Trees

Clean, cultivate, or mulch a 2-foot radius around the tree. Wood chips, hay, or ground walnut bark is good mulching material. A small amount of nitrogen fertilizer may be required to compensate for nitrogen taken from soil by decaying organic materials added as mulch. Water during periods of prolonged drought.

If rabbits are present, protect planted trees with wire screens. During the second growing season (amid-June to mid-July) uncover the graft union, sever, and remove the rubber tie (failure to remove the rubber tie can kill the tree). Replace soil around graft union.



Figure 6.—Planted containerized graft with container pulled up to serve as a wind and light barrier.