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G79-431 The Four-Flap Graft: An Easy Grafting Technique for Nut or Hardwood Trees

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The Four-Flap Graft: An Easy Grafting Technique for Nut or Hardwood Trees

This NebGuide provides directions for a relatively simple method of grafting.

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Grafting is the technique of propagation whereby a stem or bud of one plant is joined to a branch or root of another closely related or compatible plant so that a union forms and growth continues. The four-flap graft technique is one of the most successful propagation procedures used by homeowners and amateur tree growers. This technique of grafting does not require a great deal of grafting experience. It is ideal to use with small caliper trees or branches up to one inch in diameter.

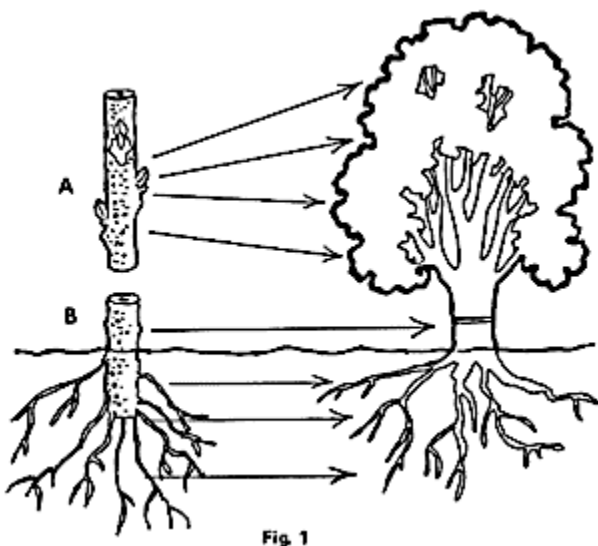


Fig. 1

A. Scion -- The twig or bud which will become the upper portion of the plant. **B. Stock** -- The root or rooted part of the plant upon which the scion is grafted. A stock may be a young seedling or a

large tree.

The four-flap graft is most successful when the scion (*Figure 1-A*) and stock (*Figure 1-B*) are the same size in diameter. It can also be done when the stock is slightly larger or smaller than the scion.

Collecting and Storing Propagation Wood

Scion wood from the desirable tree should be collected in late winter (February) while it is dormant and stored until spring propagation time. Optimum scion wood diameter is 3/8 to 3/4 inch; 1 inch diameter is a maximum. Select healthy one-year-old wood with prominent and well developed buds. Label all propagation woods with its cultivar name and place it in a container provided with a moist material such as sphagnum moss, damp paper, etc. Polyethylene bags make excellent storage containers. Store the wood in a refrigerator within a temperature range of 30° to 38°F until ready for use.

Grafting Technique

The best time to make grafts is when the bark slips freely on the stock for grafting. This may be as early as May 1st in southeastern Nebraska (2 1/2 weeks later in northwestern Nebraska). When the stock plant begins to break dormancy in the spring, and the leaves are the size of a squirrel's ear (1/2 to 3/4 inch) take the scion wood directly from cold storage and use it immediately while the bark is tight and the scion wood is still dormant.

The following is a flow chart of the procedures involved in the four-flap grafting method.

1. Use a stock plant with a primary stem or lateral limb of 1/2 to 1 inch diameter. It would be ideal for the stock and scion to have the same diameter (*Figure 2*). Cut straight across the trunk or limb with sharp pruning shears at the point you wish to graft. Remove or cut back all lateral branch growth to approximately 6 inches. If possible, leave one or two side branches below the cut. This helps to keep the tree vigorous, to protect it from sunscald, and to keep the scion from becoming too tall and whiplike, to prevent it from breaking off. Make the cut 7 or 8 feet above the ground if cattle or horses are grazing in the tree grove.

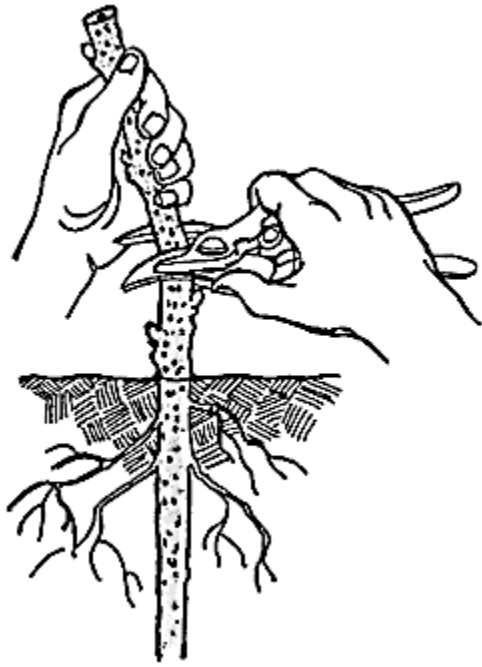


Fig. 2

2. On the stock plant where the horizontal cut was made, make four vertical equally spaced cuts 1 1/2 inches long. Make sure that the cuts penetrate through the bark and down the wood or cambium area only (*Figure 3*).

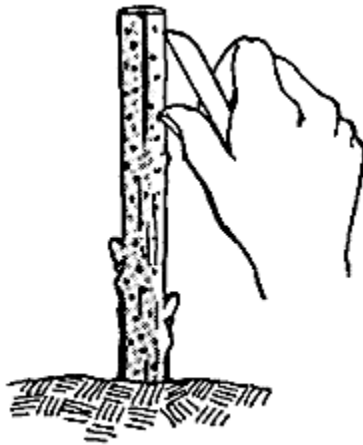
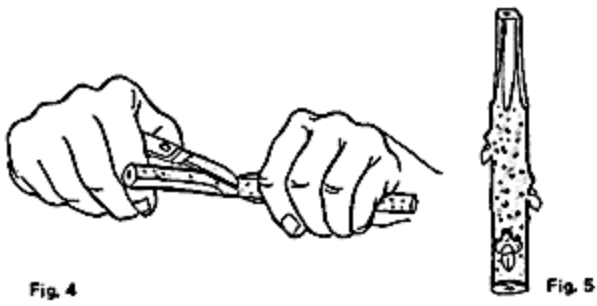


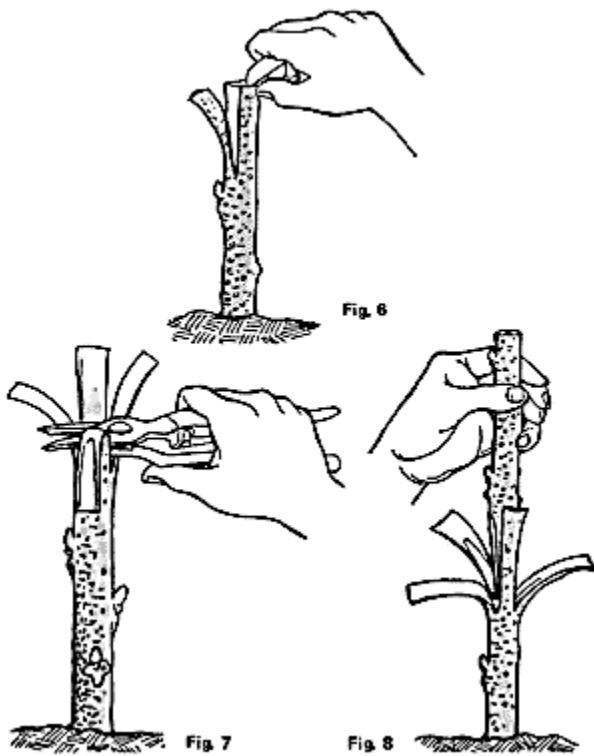
Fig. 3

3. Choose a smooth, straight piece of scion wood which is approximately the same size in diameter as the stock and about 6 inches in length, with 2 or 3 plump buds (one at each node). With a sharp knife, cut the scion on four sides, starting the cut about 1 1/2 inches from the bottom end and moving the knife toward the bottom end (*Figure 4*). These cuts should be made through the bark down to the wood (cambium area). The end view will be square as shown in *Figure 5*.



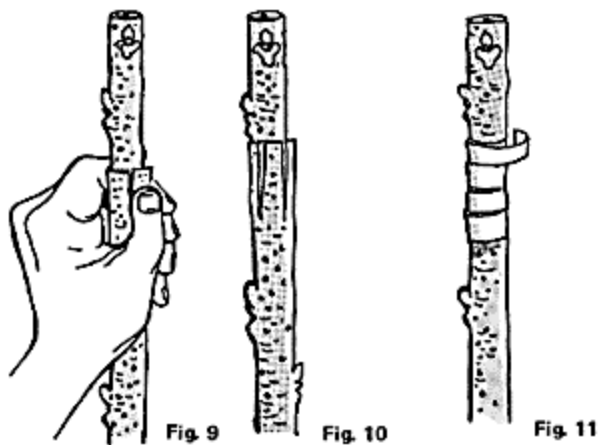
(Practicing with samples to develop skill in basic techniques will help insure success.)

4. On the stock, pull the four flaps of bark down 1 1/2 inches as shown in *Figure 6*, and cut the inner stock wood smooth (*Figure 7*). Be careful not to damage the four flaps on the stock.

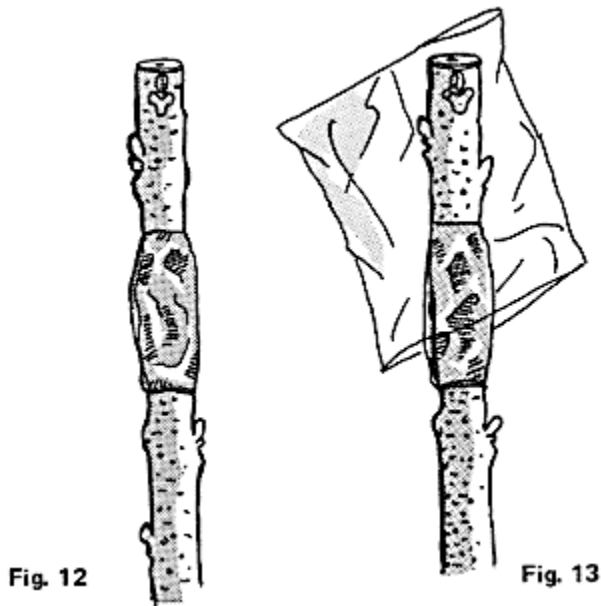


5. Insert the scion piece upright on the stock (*Figure 8*).

Pull the four flaps on the stock up into place to cover the four cut surfaces on the scion (*Figures 9 and 10*).



6. Wrap the cut flap areas with masking tape, budding tape or with a material that has some stretch to allow expansion of the graft union as it begins to unite and grow (*Figure 11*).
7. Cover all of the taped area with a piece of household aluminum foil (*Figure 12*).



Cut off the corner of a pint or quart size polyethylene bag (freezer type) and carefully slip it down over the graft union and stock with the scion protruding through the hole in the bag (*Figure 13*).

Tie the polyethylene bag at the cut corner to the scion just above the aluminum foil wrap, but below the first bud on the scion. Then tie the lower end of the bag approximately 1 inch below the aluminum foil on the stock. These ties may be made with any material that will stretch and not deteriorate, such as masking tape, 3/4 inch rubber budding strips or polyethylene tape (*Figure 14*).

8. Coat the cut surface of the tip end of the scion with a protectant such as white glue, orange shellac or tree healing paint (*Figure 15*) to prevent it from drying out.



Fig. 14



Fig. 15

9. Remove all ties, foil, and polyethylene bag after 4 to 6 weeks.

Aftercare

After the graft is made, keep vegetative growth on the stock plant in check. Many new branches will begin to appear on the stock following the grafting operation. Some of these branches need to be maintained in order to keep the tree healthy; however, care must be taken to ensure the survival of the scion. Do not let the new branches become dominant or exceed the height of the scion. Remove the growing tips of the stock several times during the growing season. Removing the tips will cause the stock to have a trashy or bushy appearance, but it will help the tree develop and increase its diameter and overall vigor. After 2 to 3 years, when the scion is strong, remove all "trashy" branches below the scion.

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