

The four-flap is a simple grafting procedure that does not require sophisticated materials. Nursery managers, commercial growers, and homeowners can use this grafting method efficiently. Because necessary cuts and “fits” of the four-flap graft are not as precise as most other pecan propagation methods, it is a good method for beginners. In the arid West, the four-flap graft seems to be a more sure propagation method than patch budding, especially if an attempt is made to force the buds into growth the first year.

The four-flap graft is successful because more cambium contact is made between the scion and the stock than with any other grafting procedure. The cambium is a green thin layer of cells located between the bark and wood, and is capable of dividing and forming new cells. The cambium contact between scion and stock is necessary for callus formation and a successful graft union.

The biggest advantage of using the four-flap is the ability to graft small seedlings. Although the graft works best if the graftwood (scion) and stock are the same size, the graft can be made with scions 25% larger or smaller than the stock. Optimum stock (rootstock) and variety size for grafting is 3/8–1 in. diameter.

Collecting and Storing Scion Wood

Grafting is often unsuccessful because graftwood is not collected and stored properly. Desired varieties should be collected while the wood is dormant, in January or February in New Mexico.

- Young trees produce vigorous growth and are generally excellent sources of scion wood. Do not collect scion wood that is 2–3 years old;

for best results, collect wood from the previous season’s growth.

- Collect scion wood from disease-free trees.
- Select one-year-old wood of 1/2–1 in. diameter (or the thickness needed).
- Cut the scion wood into 6- to 8-in. sticks.
- Wax both ends, using either paraffin or wax to prevent drying out.
- Tie the sticks in bundles of about 25 each.
- Identify each variety with a tag or by some other method.
- Wrap scions in a wet newspaper or paper towels, then put into a plastic bag and seal. Store in the hydrocooler of a refrigerator until it is time to graft. Do not store graftwood in a freezer.

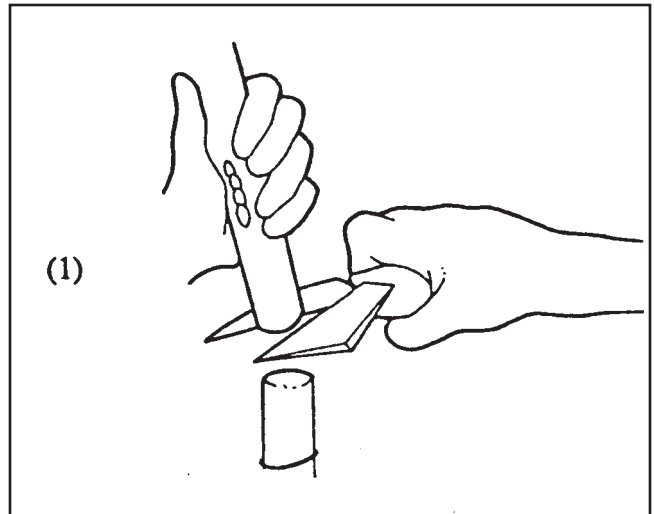
Time to Graft

Grafting may be started when buds begin breaking and the bark slips freely (usually April in New Mexico). Grafting may be continued for several weeks. The stock of grafts that fail may be cut back again after about a month, and a new graft put into place.

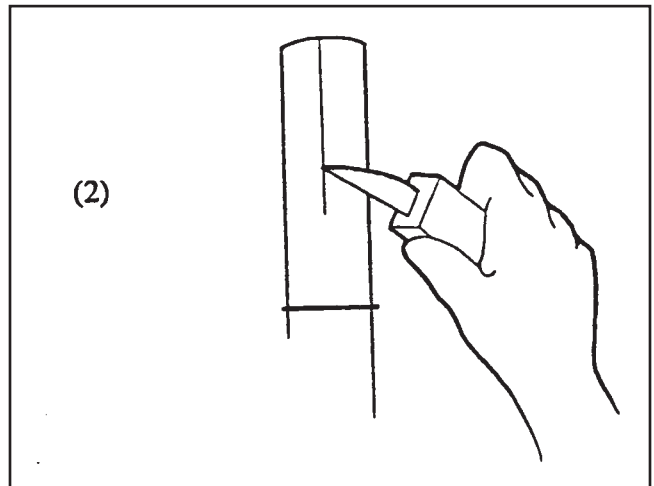
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Procedure

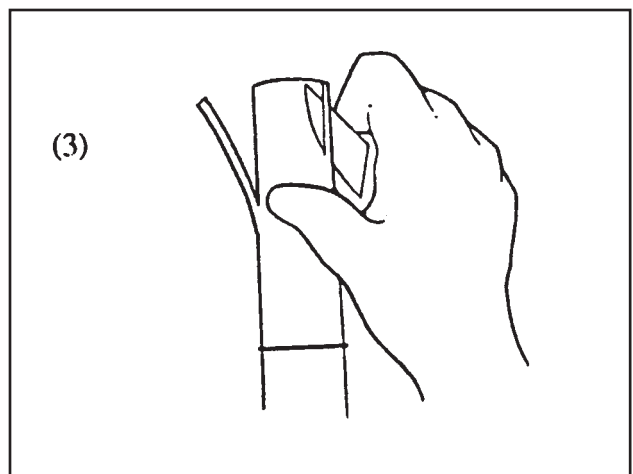
1. At a point where the stock seedling is straight and is about the size of the graftwood, cut the stock straight across with sharp pruning shears at the point where you want to make the graft. The stock should be about the same size as the graftwood. Place a small rubber band on the stock to be used later (1).



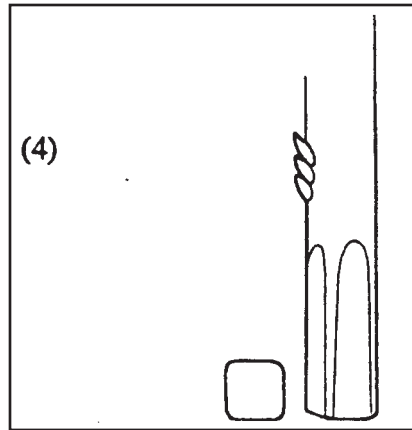
2. Make four vertical cuts 2–3 in. long and equally spaced (quartered) around the circumference of the stock. Make the cuts through the bark only (2).



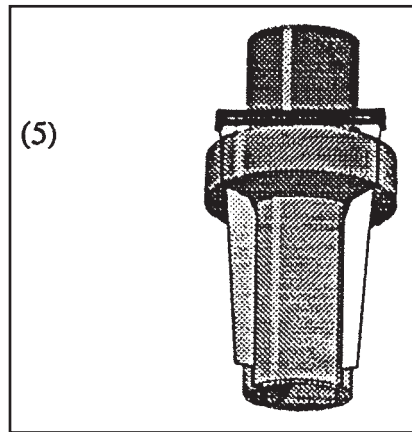
3. Choose a smooth, straight scion variety stick with the proper diameter. Cut to about 6 in. in length with two or three buds remaining above the graft point. With a sharp knife, cut the scion on four sides, starting the cut about 2 in. from the bottom end (3). Make the cut through the bark only.



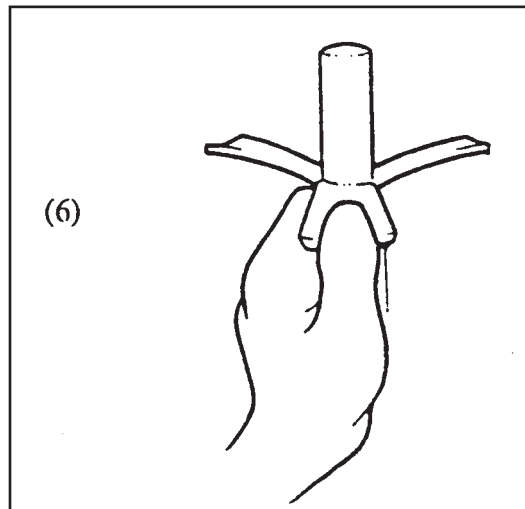
The end view will be square (4). NOTE: Many times only three cuts can be made due to the size of the graftwood. This is acceptable, but it is best to have four cuts if possible.



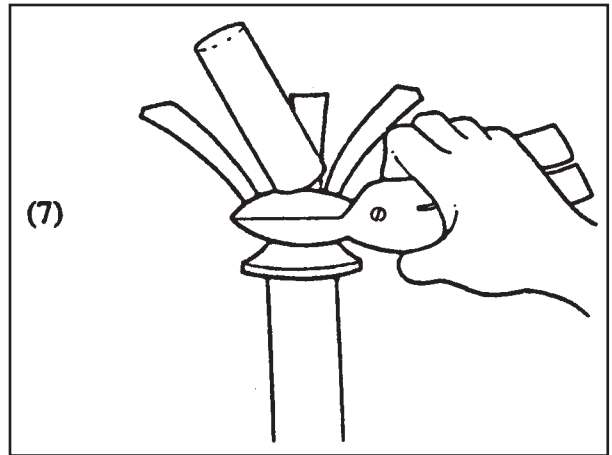
When grafting a considerable amount of seedlings, it is better to use a device available in the market that can make the four cuts (or three if preferred) mechanically. This gadget will make the cuts simultaneously at the right depth and the right length (5).



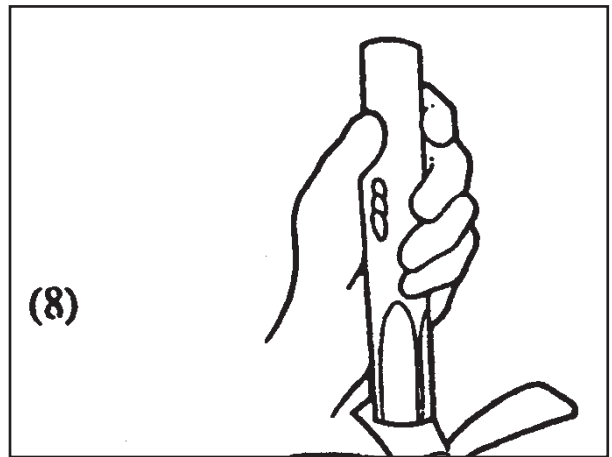
4. Pull the four flaps of bark down on the stock like a banana, exposing 2–3 in. of white wood. Try not to touch the inner surfaces of these flaps (6).



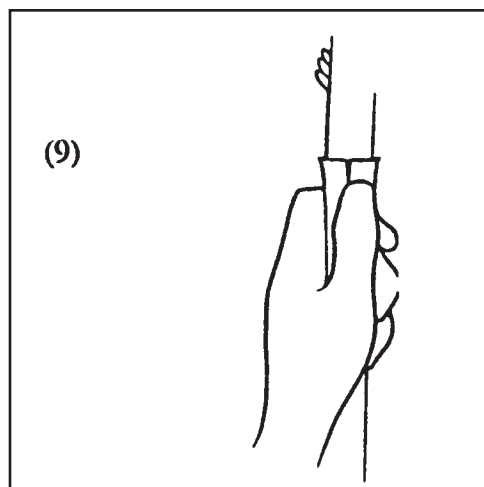
5. With sharp pruning shears, cut and remove the exposed wood (plug). Be careful not to cut or damage the four flaps (7).



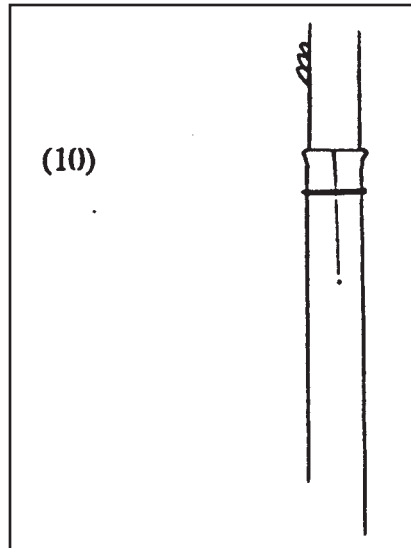
6. Insert the prepared end of the scion squarely against the stock (8).



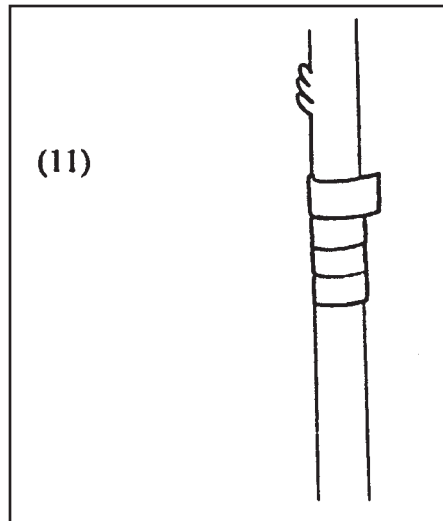
Holding it upright, pull the four flaps in place to cover the four cut surfaces on the scion (9).



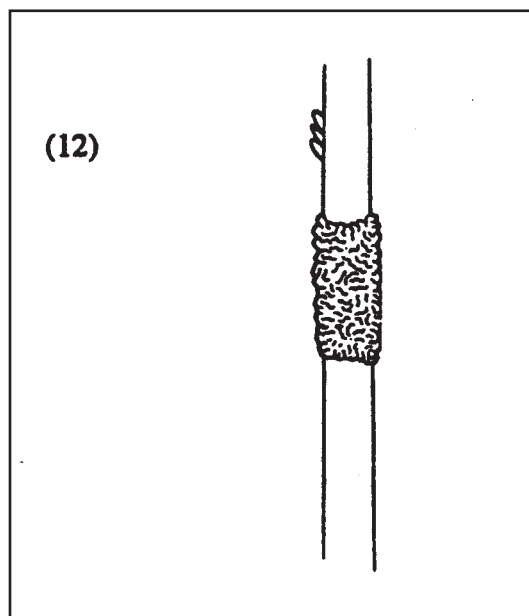
Pull the rubber band up to secure the four flaps to aid in wrapping (10).



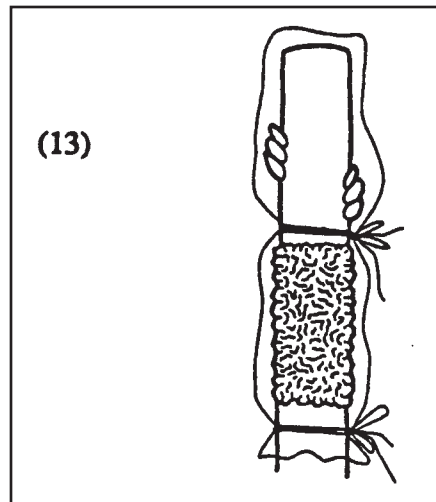
7. Wrap the cut areas with grafting tape. Overlap each wrap only enough to provide a complete seal. As you wrap, move the rubber band up the scion and remove it (11).



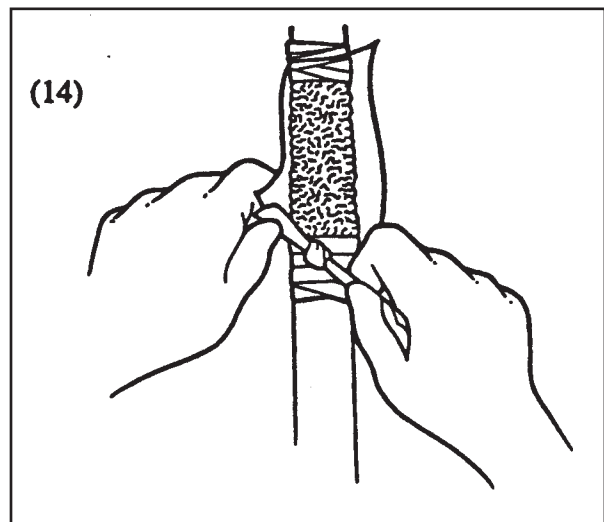
8. Cover the tape with a piece of regular household aluminum foil, shiny side out (12). Seal the top of the scion with a drop of white wood glue or shellac.



9. Slip a pint- or quart-size polyethylene bag down over the stock and tie with soft string or plain vinyl tape just below the foil on the stock (13). Covering the entire scion at this time may improve the chances for grafting survival. You can use rubber bands, budding strips, string, masking tape, or other tapes to secure the polyethylene bag in place.



10. When the buds on the scion begin to grow, cut the corner from the plastic bag and slip it down and tie the scion approximately 1 in. above the foil and to the stock 1 or 2 in. below the foil (14).



Aftercare

Keep growth on the stock in check throughout the first summer by removing the growing tips. This will cause a bushy trunk to develop, resulting in increased tree diameter and overall vigor. Stock growth can be used to regulate the graft growth rate. If the graft is growing slowly, remove most of the lateral growth on the stock. Should the graft make excessive growth that may cause the graftwood to break, allow the stock growth to remain longer. Normally, all growth on the stock below the desired height of the bottom limb is removed in two or three years.

After the graft has made about a foot of growth, cut down the side of the bag and remove it. Unwrap the foil and either remove the masking tape or cut it carefully in several places so the tape can expand without girdling the graft. Wrap the plastic around the graft union again, wrap the foil over the outside of the plastic, and tie loosely. This will continue to protect the growing graft, yet allow it to expand. Remove the foil and bag the following winter.

It is a good practice to tie a stick to the stock in two places below the graft to act as a stake for the growing graft. Tying the graft to this stake during the first season will make the graft main shoot grow straight and also keep the wind from blowing it off (15).

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