



# Four-Flap Grafting of Pecans

Dean McCraw

Extension Horticulturist, Pecans and Tree Fruits

The first extensive use of the four-flap graft on pecans in Oklahoma was during 1975. Also called the "banana" graft, this technique is suited to propagation of small seedling pecan trees and branches of larger trees.

Optimum stock (trunk or limb) size for grafting is 3/8" to 1" diameter. Nurserymen commonly produce seedling trees of this size from planted nuts in two or three years.

Although the graft works best if the graftwood (scion) and stock are the same size, the graft can be made with scions 25 percent larger or smaller than the stock.

## Acquiring the Graftwood

Collect and store graftwood according to instructions given in OSU Extension Fact Sheet No. 6217. During February or early March, collect dormant, healthy, mature, 1/2" to 1" diameter, one- or two-year old wood of the desired variety. Cut into 6-, 12-, or 18-inch length, tie in bundles by size, place in an airtight plastic container and store at 30-35 °F until grafting season. A refrigerator crisper will do fine. Do not freeze the wood! The same kind of graftwood used for bark grafting is suitable for the four-flap technique.

## Time to Graft

You may begin grafting when the bark slips freely. Normally, this is late April in southern Oklahoma and early May in the more northern parts of the state. Four-flap grafts can be installed during the same period of time as the common bark graft.

## Procedure

- Step 1. Cut the stock straight across with sharp pruning shears at the point you desire to make the graft (Figure 1). The stock should be approximately the same size as the graftwood. Next place a small, lightweight rubber band around the stock and leave it 3 or 4 inches from the top cut (Figure 2). The rubber band will be useful later in the grafting procedure. It should fit snugly with moderate pressure on the stock. Remove or cut back to approximately six inches all lateral growth on the stock.
- Step 2. Make four vertical cuts 1 1/2" to 2" long and equally spaced (quartered) around the circumference of the stock (Figure 3). Make the cuts through the bark only.
- Step 3. Choose a smooth, straight scion. Cut to about six inches in length with two or three buds remaining.

Oklahoma Cooperative Extension Fact Sheets are also available on our website at:  
<http://www.osuextra.com>

With a sharp knife, cut the scion on four sides, starting the cut about 1 to 2" from the bottom end. The cut should be made through the bark. The end view will be square (Figure 4 and 5).

- Step 4. Pull the four flaps of bark down. This will expose 1 1/2 to 2" of the stock (Figure 6).
- Step 5. With sharp pruning shears, cut and remove the exposed stock (plug) (Figure 7). Be careful to not cut or damage the four flaps.
- Step 6. Insert the scion upright on the stock. Pull the four flaps in place to cover the four cut surfaces on the scion (Figure 8 and 9). Move the rubber band up around the flaps to secure them in place. Locate the band near the end of the flaps (Figure 10). This band will serve as a useful extra hand while you adjust the flaps to fit directly over the cut surfaces and prepare for the next step.
- Step 7. Wrap the cut areas with 3/4" masking tape. Overlap each wrap only enough to provide a complete seal (Figure 11).
- Step 8. Cover the tape with a piece of regular household aluminum foil (Figure 12). Clip the corner of a polyethylene bag (pint or quart size is fine) and carefully slip it down over the stock with the scion protruding through the bag (Figure 13). Tie the bag to the scion immediately above the foil and to the stock approximately one inch below the foil (Figure 13). Rubber bands, budding strips, string, masking tape or other tapes may be used to secure the polyethylene bag in place. The aluminum foil reduces heat build up. The plastic bag helps prevent moisture loss. Some grafters paint the scion with orange shellac to aid in prevention of moisture loss.

## After Care

Keep growth on the stock in check throughout the first summer by removing the growing tips. It should be done several times during the growing season. This will cause a trashy or bushy trunk to develop resulting in increased tree diameter and overall vigor. The growth on the stock can be used as a "throttle" to regulate the growth rate of the graft. If the graft is growing slowly, remove more of the lateral growth on the stock. Should the graft make excessive growth that is

vulnerable to breakage, allow the stock growth to remain for an extended period. Normally, all the growth on the stock below the desired height of the bottom limb will be removed in two or three years.

The bag and foil will have served their most important purposes by August and September and may be removed at that time.

However, it may be more convenient to allow the bag and foil to remain in place for the remainder of the growing season and remove them along with the tape during the first season.

If multiple wraps of the masking tape were made or if more durable tapes such as electrical, polyethylene or adhesive are used, the tape should be cut soon after vigorous scion growth begins. This will prevent girdling of the stock and scion.

The rubber band serves only as an aid (extra hand) during application of the graft. A lightweight rubber band will normally deteriorate during the summer, causing no unnecessary constriction or girdling. If a heavy, thick rubber band is used it may be necessary to cut the band after vigorous growth begins in order to prevent girdling.

## Suitability

The whip (splice and tongue) and four-flap techniques are suitable methods for propagating pecan stocks of similar size (3/8 to 1" diameter).

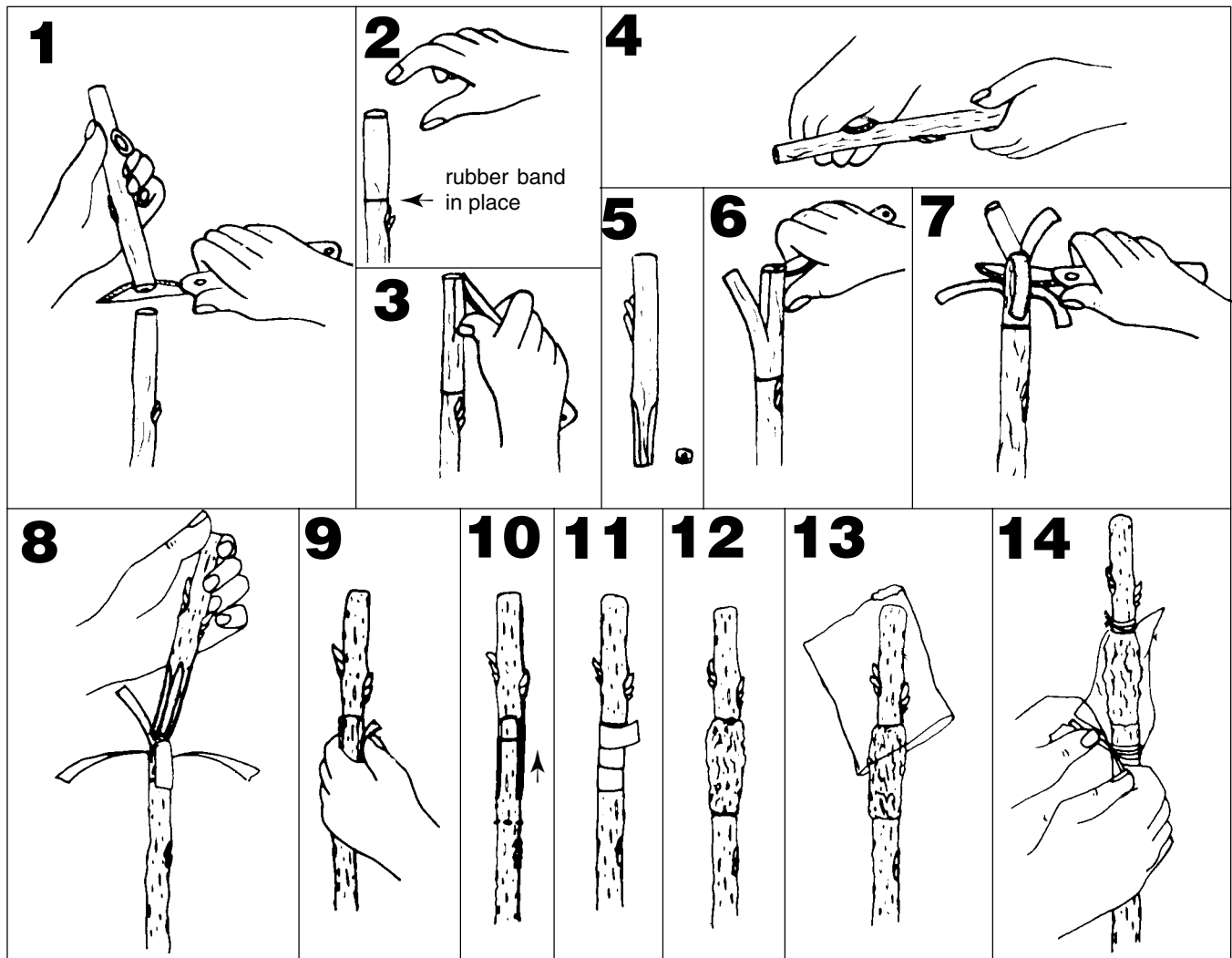
Whip grafting is performed in late winter and until the early stages of spring growth. The four-flap technique extends the grafting season as it begins at the close of whip grafting and continues into summer.

The four-flap graft allows much cambium contact between the scion and the stock. This cambium contact is necessary for callus formation and subsequent successful graft union. The cambium is a thin layer of cells located between the bark and wood, capable of dividing and forming new cells.

The necessary cuts and "fits" of the four-flap graft are not as precise as for most other pecan propagation methods, therefore, it is a good method for beginners.

## Reference

Vanerwegen, Jerry. 1975. A New Grafting Procedure. Pecan South, Vol.2, No. 2.



Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, disability, or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Samuel E. Curl, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 1202