



Pecan Production

Grafting Pecan Trees

The main reason for grafting a pecan tree is to install a better variety on an old stock. A better variety may bear nuts earlier, may produce more nuts, may have nuts of better quality, and may have a natural resistance against insects and diseases.

Definitions

Grafting – the process of making a part of one plant unite with and grow upon the part(s) of another plant.

Scion – the part of the plant, usually a stem, that is inserted in the stock.

Rootstock – any part of the plant in or on which a scion is inserted.

Cambium layer – that portion of plant tissue that we are most concerned with in the grafting methods of propagation. It is a very thin layer of tissue, only a few cells in thickness, located between the bark and the wood, which gives rise to new bark (phloem) and wood (xylem) (Figure A).

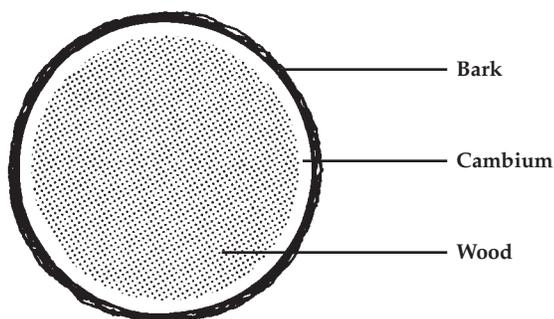


Figure A

For graftage to be successful, the cambium of the understock must be in contact with the cambium of the graftwood and the two held securely until they knit or heal.

Equipment

To graft nut trees correctly, it is necessary to have the proper equipment for the job. Such tools include:

- hand-pruning shears
- sharp knife
- sharpening stone
- tying materials, twine
- grafting wax
- aluminum foil
- polyethylene bags
- magazine
- 3/8 inch nails, gauge No. 18

Collecting and Storing Scion Wood

One of the more common causes for failure in grafting is improperly collected and stored graftwood.

Collect the desired variety while the wood is dormant (February or early March in this region).

- Collect scion wood from trees that are free of diseases.
- Young trees produce vigorous growth and are generally excellent sources of scion wood.
- Cut the scion wood into 6-inch sticks.
- Tie the sticks into bundles of 25.
- Wax both ends (wax or paraffin is suitable) to prevent dehydration.
- Store in wet peat moss or moist newspaper in the refrigerator until time for use. The scion wood and wet peat moss or sphagnum moss may be placed in plastic bags.
- Identify each group with a tag or some other method. Do not mix varieties in the same bag.

You can take graftwood directly from cold storage and use it while it is dormant.

Size of Tree to Top-Work

Trees from 3 to 12 inches in diameter at breast height (4½ feet above the ground) are top-worked. Trees 3 to 5 inches in diameter are usually cut off about 5 to 6 feet above the ground line. Only two or three grafts may be made. Where possible, leave one limb below the graft (pointing southward) to produce food and to shade the trunk. In working the larger trees, cut 60 to 70 percent of the limbs about 1 foot from the trunk. Select these limbs in such a manner that a well-balanced crown develops. Saw these limbs from the underside of the limb until the saw begins to bind (*Figure B*). Then make the final cut from the top side. This prevents splitting (*Figure C*). In case the cut is not smooth, saw it off again a few inches below the first cut (*Figure D*).



A – Initial cut (to prevent splitting)
 B – Second cut
 C – Final cut

Figure B

Figure C

Figure D

Preparation of Grafting Compounds

You may find it somewhat tedious to apply grafting wax to the stock and cut areas of the scion. It is, therefore, recommended that you prepare a compound you can apply with a brush. This formula is satisfactory:

- Rosin – 4 pounds
- Beeswax – 1 pound
- Boiled linseed oil – ½ pint

Mix these three ingredients over heat and pour into a useable container for future use.

Stock Preparation

Cut and graft the main leader, or top, since it is the most important single graft. Leave the remaining 30 to 40 percent of the limbs uncut for one or two years, and then remove as close to the trunk as possible. Prune all suckers or new growth from any place except the grafts, thus forcing all new growth from the graftwood or scion.

Making the Graft

The most common graft used in top-working pecan trees is the **inlay bark graft**.

You can prepare the scion in one of two ways. One method is to cut one side of the basal end to a long straight bevel (*Figure E*) and a second cut on the bark side, exposing additional cambium (*Figure F*).

Another method is to prepare the scion as in *Figure G*. Perhaps more cambium may be exposed by using this technique.

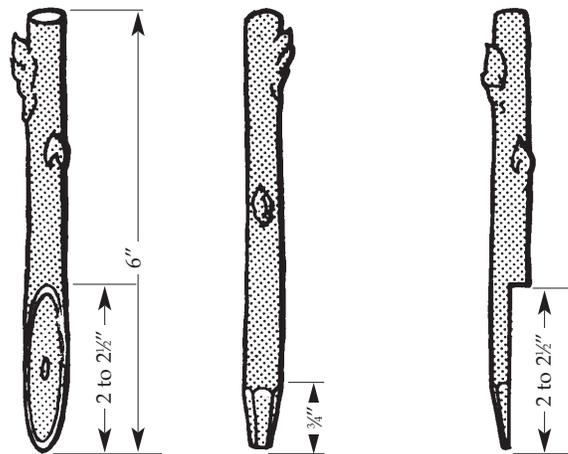


Figure E

Figure F

Figure G

Prepare the crown of the limb to be grafted by removing the coarse outer bark (*Figure H*). Do not completely cut the bark, but remove only the rough outer portion.

Hold the prepared scion to the crown in the location in which it is to be fastened. With a knife blade, trace lines to indicate the width and length of the scion. Then make cuts through the bark (*Figure I*). The width of the slot formed when the bark is lifted should just accommodate the scion at the upper end but should be slightly wider at the lower end (*Figure J*).

Lift the bark made free by the two incisions and insert the scion underneath (*Figure K*).

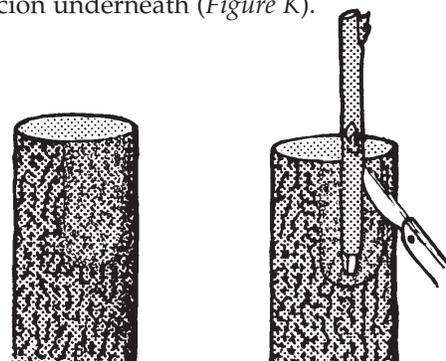


Figure H

Figure I

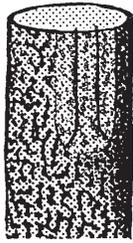


Figure J

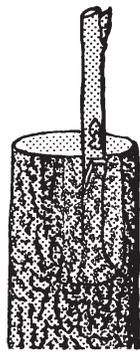


Figure K

Remember: Do not touch the exposed cambium area, and do not leave the cambium areas exposed longer than is necessary.

Fasten the scion by nailing (*Figure L*) or wrapping with string (*Figure M*). Choose a string or twine of nonrotting material, such as wax-impregnated cotton or use grafting tape. Don't use nylon string since it will not deteriorate and will girdle the scion.

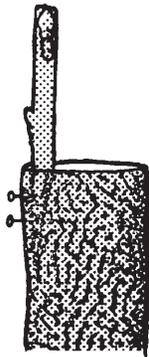


Figure L



Figure M

Another method of inlay bark grafting is described in *Figures N* through *U*. The only material you might not find in the home is a grafting wax that becomes pliable with body temperature and does not require heat.

Using your knife, make only one slit about 2½ inches long for each graft to be applied (*Figure N*). Insert the scion into the stock as is shown in *Figure O*. Use a wax that becomes pliable with body temperature to cover all exposed cuts on the stock and scion. Tie the scion securely in place with heavy string or twine, such as baling twine (*Figures P* and *Q*). Don't use nylon string since it will not deteriorate and will girdle the scion.

To protect the graft further, you can use magazine pages as sun reflectors. This addition has proved effective. Fold a magazine page and tear slits as shown in *Figure R* and apply as in *Figure S*. Tie the magazine pages securely around the stock. Use a second page to encircle the first page if it was not wide enough to cover the stock (*Figures T* and *U*).

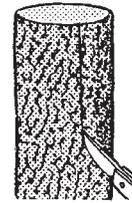


Figure N

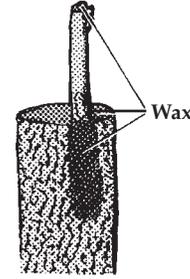


Figure O



Figure P



Figure Q

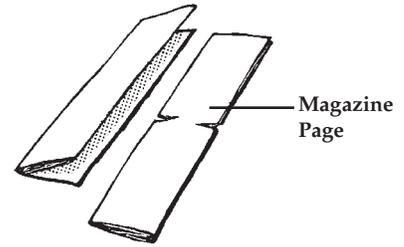


Figure R

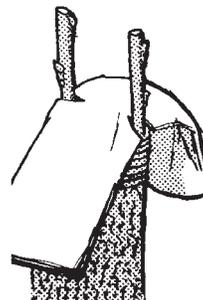


Figure S

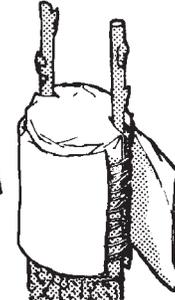


Figure T

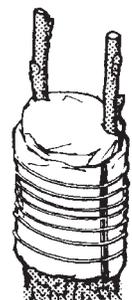


Figure U

Sealing

You may seal in two ways. Perhaps you will want to try some of both to determine the most satisfactory method for you.

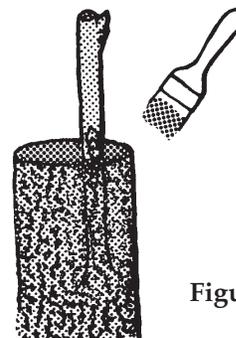


Figure V

One method, and probably the most common, is to seal the exposed areas by applying prepared grafting wax to the exposed areas by brush (Figure V).

In the other method, you use aluminum foil and plastic bags. From a 6 inch roll of aluminum foil, remove a piece long enough to extend around the stock. With the bright side outward, crimp the foil loosely around the stock. It should extend far enough beyond the end of the stock to cover the bevel cut on the scion (Figure W).

After the aluminum foil is in place, pull a polyethylene bag down over the scion and stock. Bring one corner of the bag over the end of the scion. At the point of contact, make a slit with the knife blade just large enough to let the scion through. Then pull the polyethylene bag into position (Figure X). The polyethylene is somewhat elastic and can be stretched over the buds on the way down. If you made the hole in the bag too large, close the hole by wrapping it with a rubber band. Pint-sized bags are large enough when small sticks are grafted, but quart-size bags may be used at little cost.

To close the back, tie it against the stock, starting below the graft wound. Extend the twine wrap a sufficient distance to insure that the inside of the bag will remain 100 percent humid. You will find ordinary wrapping twine satisfactory for the purpose.

While only one graft on a single stick is shown, it is always a good idea to install 2, 3, or 4, depending on stock size, to increase your chances for a take. As the grafts begin to grow, select the more vigorous graft and remove the others. Do not let more than one remain since this will result in a weak crotch, and splitting will most likely occur in later years.

Many successful takes are lost by wind and animals. This can be prevented, to some extent, by bracing the growing graft. A piece of lathe nailed to the stock is often used as a brace. The newly formed branches can be tied to the lathe, and this will prevent breakage from wind and birds (Figure Y).



Figure Y

Pecan Varieties You Might Want to Graft

Owens	good quality nut early bearing a favorite in the Delta appears to have good resistance to fungus diseases
Desirable	excellent quality nut fairly early bearing fairly resistant to disease
Jackson	large nut – 32 per pound shows good resistance to disease produces early in grafted trees
Cape Fear	good quality nut early bearing very heavy bearing fairly resistant to disease

There are many other good pecan varieties, but these varieties seem to do well in Mississippi.

You may also graft apple and pear trees by following the steps in this publication.