

# Propagation

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Deciduous fruits such as peach must be propagated asexually because they do not come true from seed. Budding and grafting are the most common asexual propagation techniques for tree fruits. The interests of most growers are best served by thoroughly examining the strengths and weaknesses of each potential rootstock-scion combination before obtaining trees from a well-regarded fruit-tree nursery. Always insist on varietal trueness-to-type and freedom from viruses and nematodes. A discussion of asexual propagation of peach trees follows.

Young peach trees are commercially propagated by T-budding, a summer propagation method. T-budding propagates a bud from a desired scion variety onto the rootstock of choice. The saw-kerf grafting technique is commonly used by orchardists when a variety change for existing peach trees is desired.

## T-Budding

**Rootstock.** Peaches are propagated on seedling rootstocks. Guardian is the rootstock of choice, primarily because it has given better growth and survival on peach tree short life (PTSL) sites. Lovell has been a recommended rootstock for many years and continues to be a good choice in many areas. However, Lovell seed are increasingly difficult to get. Halford rootstocks have shown themselves to be as good as Lovell, thus they are recommended for planting wherever Lovell is used. Nemaguard may be used in warmer southeastern production areas on sites where root-knot nematodes are prevalent.

**Seed Germination for Rootstocks.** Mature peachseed will not germinate immediately, but first require conditioning by exposure to a period of cool, moist conditions with temperatures slightly above freezing. This "after-ripening" process called *stratification* is necessary to satisfy the rest requirement of the seed embryos and to soften the stony layer surrounding the seed. Stratification may be achieved prior to planting or in the field.

**Stratification Prior to Planting.** To stratify peach seed, first soak them in water for 24 hours. Prepare a stratification mix of one-third peat moss and two-thirds sand (by volume). Following soaking, layer the seed in the mix by placing an inch of mix, a layer of seed, an inch of mix, a layer of seed and so on in the container. To prevent seed decay, the mix should be moist, *not wet*. Squeeze excess moisture out by hand.

Polyethylene bags are convenient containers for small lots of seed. The plastic prevents loss of moisture, and the beginning of germination can be observed without opening the bag. Two or three small holes should be cut into the top of the bag to allow for air exchange. The mix should be checked periodically to ensure that drying out does not occur. It is also possible to stratify seeds in a polyethylene bag and substitute a moist paper towel for the mix. In this case, do not cut holes in the bag.

Maintain peach seed at temperatures between 33° and 40°F for a period of about 90 days. As soon as sprouting begins, the seed should be planted or stored at a lower temperature (32° to 33°F) until planting is possible. Germinating seed must be planted carefully, as the young sprouts are brittle and easily broken. It is not necessary to separate the mix from the seed when planting. The sprouting seed should be planted at a rate of eight to 10 seed per foot of row in rows four feet apart. Peaches should be seeded about one and one-half inches deep. If survival is good, thin the seedlings to four or five per foot of row.

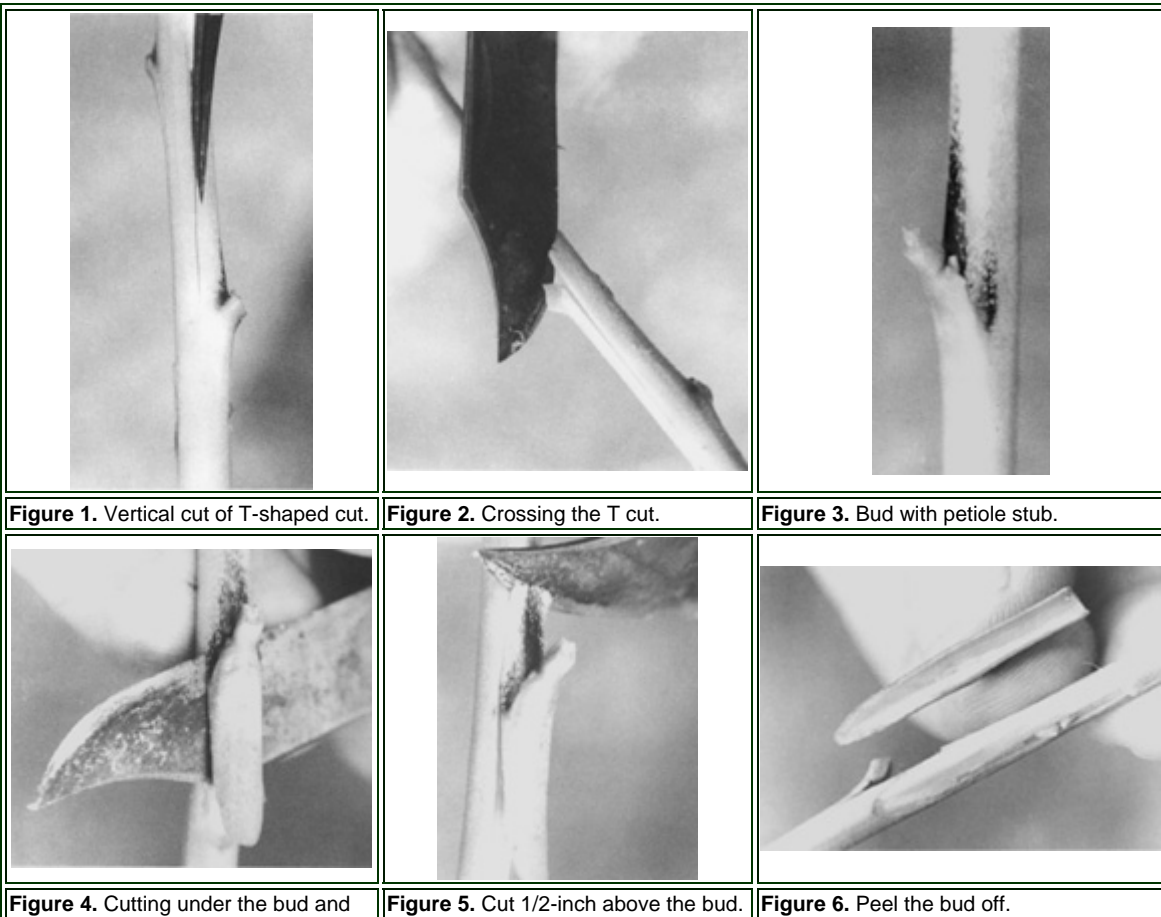
**Stratification Using Fall Seeding.** If after-ripening of the seed is to be done in the field, plant the seed in mid-October. A shallow, narrow furrow should be made so the seed will be planted one and one-half inches deep. In heavy soils with a tendency to crust, line the furrow with a small quantity of peat moss. After seeding, lightly cover the seed with peat moss and fill the furrow with soil. Avoid excessive mounding (more than one inch) of the furrow. The rate for direct fall seeding should be 10 to 12 seed per foot of row in rows four feet apart. If germination is good, the seedlings should be thinned to about four or five per foot of row. Well-grown seedling rootstocks should be large enough to bud by late May to early June following seeding.




**Collecting Budwood.** Budwood should be taken from healthy, vigorous current season shoots. Recent cooperative industry efforts are providing true-to-type, virus-tested budwood for southeastern nurseries. Clip the leaves off of budsticks with a sharp knife, leaving about 1/4 inch of the petiole. When cutting off the leaves, do not cut into the budstick with the knife. Keep the budwood moist at all times, both before and after clipping off the leaves. Where a two- or three-day supply of buds is cut at one time, wrap the budsticks in damp paper and store in a plastic bag in a cool place. Properly prepared budsticks should remain in good condition for at least three days.

**Budding.** T-budding, the predominant propagation technique for southeastern peaches, is done beginning in early summer (June budding). June budding is done as soon as the seedling rootstocks are large enough to bud (late May to early June), and continues through mid- to late June. Two weeks after budding, the rootstocks are cut off about 1/2 inch above the bud, and all suckers are removed from the stock. This process forces the bud of the desired variety to grow.

Buds for dormant budding may be taken in mid- to late summer. Dormant budding can be practiced from mid-July to early September, as long as the bark on the rootstock separates cleanly from the woody tissue beneath it, and the bud shield separates cleanly from the budstick. Buds are not forced until the following spring. In March following dormant budding, cut the rootstocks off about two inches above the bud, forcing the bud to grow.

To bud peaches yourself, select a point on the rootstock three to five inches above the groundline. Wipe the stock clean of soil and leaves that may interfere with budding. Make a T-shaped cut, first by making the vertical cut (Figure 1) then crossing the T (Figure 2). Do not cut into the wood. Select a good bud with the petiole stub intact (Figure 3). To cut the bud, begin the cut about 3/4 inch below the bud, cutting under the bud and up the bud stick (Figure 4). Cut across the top of the budstick about 1/2 inch above the bud (Figure 5), then peel the bud off (Figure 6). No wood should adhere to the bud; the bud should peel cleanly at the cambium. Gently insert the bud into the T, using the petiole stub to help protect the bud (Figure 7). Figure 8 shows a bud properly seated before tying. Figure 9 shows a tied bud. In tying, do not crush the bud or the petiole stub with the rubber band. As previously mentioned, June buds should be forced two weeks following the budding process, whereas dormant buds are not forced until the following spring.



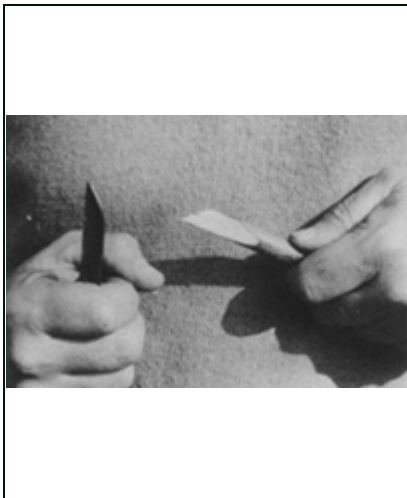
up the bud stick.		
		
<p><b>Figure 7.</b> Using the petiole stub to help protect the bud.</p>	<p><b>Figure 8.</b> A bud properly seated before tying.</p>	<p><b>Figure 9.</b> Tied buds.</p>

## Saw Kerf or Notch Grafting

Saw-kerf grafting is used to topwork established off-type or undesirable variety trees. Saw-kerf grafting can be done over a long period, usually February and March. This grafting method requires considerable skill, but it is the accepted method of topworking knotty peach stock that very seldom splits properly for other grafting methods such as cleft grafting. Saw-kerf grafts limit the risk of infection inherent in reworking mature trees.

Scionwood used for saw-kerf grafting should be fully dormant, thus it is essential to cut all needed scion material during dormancy. Select shoots of the previous season's growth that are 3/8 to 2 inches in diameter and free of insects and diseases. Bundle the scionwood and store in green, pine sawdust in a bulk bin in cold storage. Scionwood should be held at 34° to 36°F until it is to be used. Label the scionwood with durable tags marked with a nursery marking pen. Carefully avoid mixing varieties; do not store scionwood of different varieties in the same bin.

When grafting begins, remove only as much scionwood as will be needed for that day, and do not allow the wood to dry out. Scions should be cut into a wedge shape, with the outer edge slightly thicker than the inner (Figure 10). After cutting the wedge on the bottom of the scion, cut the scion off, leaving two or three buds. The lower bud of the scion should be on the outside near the top of the wedge cut. Cut the stock with a fine-tooth saw, using approximately a 45-degree angle with the flat surface of the stock (Figure 11). The saw cut should go into the stock so that it extends four to five inches from the surface along the outside. Notch the stock to fit the scion previously cut. The notch is easiest to make using a knife with a half circle blade of the type used by leather workers (Figure 12). Insert the scion into the notch, lining up the cambium of the stock and scion (Figure 13). Because of the difficulty in getting a perfect match of the two cambiums, slant the scion slightly to make sure the cambiums touch in at least one place. Firmly, but carefully, drive the scion into the stock. Cover all exposed surfaces with tree wound dressing, including the top of the scion (Figure 14). Three or four scaffolds on each tree should be grafted with two scions per scaffold.



**Figure 10.** Scion cut wedge-shaped.



**Figure 11.** Cut stock with a fine-tooth saw.



**Figure 12.** Knife with a half circle blade.



**Figure 13.** Insert scion into notch.



**Figure 14.** Cover exposed surfaces with tree wound dressing.

Always leave a nurse limb to grow and support the tree until the grafts have grown 18 inches or more long. Then, remove the nurse limb and paint over the wound. If both grafts on a scaffold grew, select one to be the new scaffold and remove the other. Remove sprouts arising from the older part of the tree as they are not the new, desired variety. Wind or birds landing on the new growth may cause it to break at the graft union. Support vigorously growing grafts with a 2-inch x 2-inch slat tacked to the stock.