# Propagation of Pecans and Japanese Persimmons by Grafting and/or Budding©

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## INTRODUCTION

Compared to the propagation and sale of pecan trees (*Carya illinoinensis*), which goes back to Simpson Nurseries' inception in 1902, Japanese persimmon (*Diospyros kaki*) propagation is fairly new, going back only approximately 30 or 40 years. Another difference is that we only graft pecans, while we both bud and graft persimmons. In 2006 (Covan), I presented a paper which described field grafting of pecans and persimmons, and so, will address only bench grafting of pecans for containers, as well as bench grafting and chip budding of Japanese persimmons for containers.

## BENCH GRAFTING PECANS

**Understock Preparation.** Starting with the understock, we plant seed of the pecan cultivars 'Elliott' and/or 'Candy' in 1.2-m (4-ft) raised field beds. The seed are planted end to end in rows of three, 38 cm (15 in.) apart. They are grown in the beds for 1, sometimes 2, years. In December or January, which is when they go dormant in Monticello, Florida, we dig them with a Fobro 1500 HD bed digger. The digger is set to undercut them leaving a tap root 25.4 cm (10 in.) to 30.5 cm (12 in.) long. The seedlings are then stored in our drive-through-cooler until we are ready to graft.

**Graft Storage Bed Preparation.** During early winter we prepare 2-m-wide (6.6-ft-wide) coarse sawdust beds where we will store the grafts for 30 days. The bed is prepared by putting 5 cm (2 in.) to 6.5 cm (3 in.) of sawdust down. We then run two sets of heating cables side by side for the length of the 30.5-m-long (100-ft-long) bed. The double set of cables is 127 cm (50 in.) apart and 35 cm (14 in.) from the sides of the bed. One of the heating cables is the primary cable and the other is a backup in case of malfunction of the primary cable.

**Scion Wood Preparation.** The scion wood is cut from our stock trees or purchased and shipped in to the nursery. Once the wood is cut into 20-cm-long (8-in.-long) pins and tied in bundles, it is stored in our drive-through cooler until bench grafting begins. In Monticello, Florida, we begin bench grafting in February.

**Whip Grafting.** We trim the tops off of the understock approximately 5 cm (2 in.) above the original soil line. The bench grafter selects scion wood to match the diameter of the understock as closely as possible so the cambium layer can be lined up on both sides. Ideally one smooth sloping cut should be made ranging in length from 3 to 4 cm (1 to 1.5 in.). The surface on the understock and scion should be flat and, preferably, the same length. A second cut, the tongue, is made on both pieces starting about one-third of the way down from the tip on both pieces so the tongues will interlock tightly and as smoothly as possible. If the diameter and the cuts on both the scion and the understock are exactly the same the cambium layer

will line up perfectly on both sides. If that is not possible the cambium layer should be matched on at least one side. The graft is then passed to the "wrapper," who will wrap the graft union with "Buddy Tape," a very stretchy, translucent tape. At the end of the day the grafts are placed in the sawdust beds with the graft union placed on top of the heating cables. Sawdust is sprinkled around and on top of the grafts to cover them. The bed is then watered and covered with black plastic, and the heating cables are plugged into the thermostat with the temperature set at 25.6 °C (78 °F). The grafts will remain there for approximately 30 days, with the graft union being checked occasionally as the heat dries the union out. After 30 days the graft should be knit together nicely. At that time the root can be trimmed to fit whatever container is being used. For our 5-gal pot 30.5 cm (12 in.) of root is fine, but if we pot the grafts in 10.2 × 10.2 × 25.4 cm (4 × 4 × 10 in.) deep tree bands the understock will have to be trimmed to fit. They are now ready to grow.

## PROPAGATING CONTAINER JAPANESE PERSIMMONS

**Understock Preparation.** The understock is grown from common persimmon (*D. virginiana*) seed. We collect our own fruit and clean the seed, as well as purchase clean seed. After moist stratification of the seed we plant some in Whitcomb #18 trays, some in 10.2 × 10.2 × 25.4 cm (4 × 4 × 10 in.) tree bands and the balance in 1.2-m (4-ft) raised field beds. We also purchase bare root seedlings as needed. By the time we are ready to graft or bud the seedlings we want them established in the 25.4-cm-deep (10-in.-deep) tree bands. The ideal diameter for the seedlings is pencil width and larger.

**Whip Grafting.** I will not discuss the details of whip grafting persimmons as many of the procedures are the same as those used for pecans. The differences are that we graft persimmons later, in March and April, and we use 3-mil opaque plastic tape to wrap the grafts. After 30 days the graft union should be knitted together.

**Preparation for Budding.** Collecting bud wood begins during dormancy, January in Monticello, Florida. The bud sticks are cut from our stock trees or purchased, bundled and stored moist in our walk-in cooler at 2.2 °C (36 °F). Chip budding does not start until the understock in the containers begins to break dormancy. We look for the first sign of bud swelling as well as some color. When we observe approximately 40% of the seedlings beginning to show some slight green in the swelling buds we are ready to start. Some prefer to determine start time with what is called "slipping bark" on the understock, while others look for what is called "pipping."

**Chip Budding.** Remember that we are putting a dormant chip into an understock that is coming out of dormancy. A chip of bark is removed approximately 7.6 to 10.2 cm (3 to 4 in.) from the soil line of the understock and replaced by a chip from the bud stick containing the desired cultivar. The closer the two chips are to the exact same size the greater the "live" percentage is. Both chips are cut using the exact same technique. The first cut is made just below the bud and barely down into the wood at a 30 to 40° angle. The second cut starts approximately 2.5 cm (1 in.) above the bud. The cut is made inward and downward behind the bud until it meets or intersects the first cut. The chip is left in the understock until the chip

is cut from the bud stick and we are ready to replace it. It is important that the budder be careful not to cut any deeper than necessary. Just as is done in grafting, it is important to match the cambium layer of the chip with that of the understock. When the budder is able to make similar cuts in similar sized scion and understock, the cambium layer on both sides of the chip will line up with the cambium layer of the understock and, if that occurs, you have a perfect bud. If the fit is not exact, then one side should be lined up. The "wrapper" should follow closely behind, as the next step is to wrap the bud. It is very important that the chip bud be wrapped to seal the cut edges as well as to hold the chip tightly in place. We use a translucent 1-mil tape that completely covers from below the chip all the way up above the chip. After 2 to 3 weeks, depending on the weather, we cut the stem of the understock off just above the chip bud to force the dormant bud to grow. At this point we remove suckers and stake the central leader.

## LITERATURE CITED

**Covan, D.** 2006. Multiple propagation techniques of Simpson Nurseries. Comb. Proc. Intl. Plant Prop. Soc. 56:580–583.