Cleft Grafting
Avocados

The Garden Academy
Propagation Series
Grafting Unit
Why grow avocados?

• Attractive tree
• Productive
  - Average 165# - 220# per tree
  - 150 – 500 fruits, depending on the average fruit size of the cultivar
• Delicious fruits
• High nutrient density
  - 20 vitamins, minerals, and phytonutrients
  - Healthy fats
Why not just grow from seed?

- Avocados are easy to grow from seed
- May take many years to produce fruit
  - Maturity is highly variable
  - May take 8 – 20 years or more
- Many cultivars do not come true from seed
  - Probability is high that fruits will be inferior quality to the seed parent
Why do we graft avocados?

- Grafting joins mature (producing) budstick to vigorous juvenile rootstock
- May produce as soon as one year from grafting
Terms you should know

• Cultivar - *cultivated variety*
  
  o Differentiates a developed variety from the species (the botanical or natural variety) and from other developed varieties
Terms you should know

- Scion (or budwood) - a piece of mature detached stem that will become **the fruit bearing portion** of the grafted plant
  - The scion usually contains two or three buds, although it may contain more
Terms you should know

• Rootstock (also called stock or understock) - the seed grown plant that provides the root system of the grafted plant
  o Rootstocks generally contribute desirable characteristics – vigor, hardiness, disease resistance, salt tolerance
  o ‘Lula’ is the preferred rootstock for avocados
    • DNA tests show it is a Guatemalan-Mexican cross
    • Noted as being cold hardy in comparison to other cultivars
Lula Rootstock

- ‘Lula’ is a large avocado with a very glossy, light green, relatively smooth skin
- The pit in a ‘Lula’ is larger than most avocados
- ‘Lula’ is found in large markets that have a good selection of avocados such as Fiesta
- You can grow your own rootstock from any avocado fruit if ‘Lula’ cannot be found
Terms you should know

- Cambium - a layer of undifferentiated embryonic cells found between the wood and the bark
  - Produces new cells
Terms you should know

• Callus – cells that develop in response to wounding
• Callus cells function in plants as stem cells do in animals
• Callus cells allow the two grafted plants to become one
Terms you should know

• Cleft graft – a type of grafting where the rootstock is cleaved open and a tapered scion is wedged into the cleaved wound

• Scion may be smaller than rootstock, or may be of similar size

• Widely used for propagation of avocados
  o Strong connection
  o Good cambium contact
Cleft Graft
What happens during grafting

- Scion and rootstock will form callus
- Callus will intermingle
- New cambium forms
- New xylem and phloem form to connect stock and scion
- Scion and rootstock become one plant
Keys to success

• Best time of year to graft avocados is late winter through February
  o Possible in other seasons, but success rates decline as temperatures rise
• Keep everything squeaky clean
• Supply the proper after-graft environment
  o Temperature, humidity
• Practice
  o Proficiency comes with repetition and observation of results
Tools & Materials

• Pruners
• Grafting knife
• Grafting tape
• Label
• Marker or pencil
• Bamboo skewers
• Plastic bag
Plant material

- Avocado rootstock
- Budwood - close to the same caliper as rootstock
Cut the scion ¼” to ½” below a bud. The scion should be 3” – 4” long and have 3 – 4 buds.
Taper the scion into a bevel. Work one side, then work 180 degrees on the opposite side.
Decide location of cut

Use your finger to locate a point about 1 or 2 knuckles up from the seed

Tip: Leave a bud below the cut to serve as “nurse” and/or to graft again if your first graft fails
Make the cut

Use clean, sharp pruners
Clean up the cut

Use your grafting knife to clean up any rough edges
Form the “cleft”

Gently tap the grafting knife into the center of the stem

Make the cut no deeper than the tapered wedge of the scion
Insert the tapered scion into the cleft. Use the knife tip to help open and start it if necessary.

Remove the knife and finish inserting the scion.
Line up cambium layers

Make sure the cambiums are lined up, even if the scion is offset to one side
Tape the graft

Start wrapping the tape, leaving a “tail” for tying later
Tape all parts of the graft

Continue taping upward in an overlapping spiral until all parts of the graft are secured tightly.

Wrap back down to meet the “tail”
Tie off securely
Prepare the label

Label the cultivar & date

Label the rootstock
Set tent supports

Insert bamboo skewers or other support around perimeter
Water and add humidity tent

A plastic tent will help provide warmth and humidity until new growth starts.
Aftercare

- Graft should heal in 4 – 6 weeks
- Remove the tape carefully and inspect the graft
- If it is healing well and new growth is evident, set the project in a warm but protected location
- Keep the media moist, but never soggy
- Begin fertilizing with half strength fish emulsion for the first season
- The tree can be transplanted into a larger container the following spring, and into the garden once it has formed true bark (woody, not green)
Contact Us

• Website:
  www.thegardenacademy.com

• Email:
  achandler@thegardenacademy.com

• Facebook:
  www.facebook.com/thegardenacademy