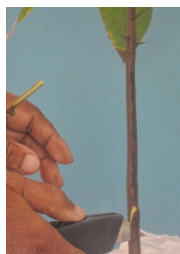
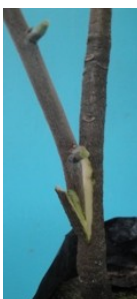


Side Graft (Lifting Bark)

- Make horizontal cut below cotyledons, about the width of scion material.
- Make 2 vertical downwards cuts about 1" long at either side of horizontal cut.
- Prepare scion wedge with one side cut longer (this longer cut side should be placed in contact with rootstock).
- Lift or peel back bark and slip scion in.
- Wrap with tape.
- Cover scion with sleeve
- Remove tip of rootstock.



Side Graft (Slanted Cut)

- Select and prepare scion (inner side is cut longer)
- Cut rootstock slanting downwards.
- Insert scion placing longer cut side on the inside.
- Wrap plastic tape firmly around union.
- Put sleeve over scion or enclose with tape.
- Remove tip of rootstock.

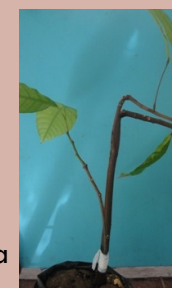
Micro-Graft

- Select rootstock 3–4 weeks old.
- Remove parts of cotyledons that obstruct access to hypocotyl.
- Cut epicotyl 1 cm above cotyledons.
- Split the hypocotyl into 2 equal parts starting just below cotyledon's attachment.
- Select scion of equal girth to hypocotyl.
- Cut off leaves of scion close to the stem, except for 2 leaves at the apex which are trimmed to about 2 cm.
- Leave 4–6 buds.
- Shape the base of the scion into a wedge of ≈ 2 cm long by 2 slanting cuts while retaining a bud at the middle of scion wedge.
- Pull stubs of the epicotyl apart to deepen the grafting slit on the hypocotyl.
- Insert scion wedge into split on hypocotyl ensuring that top of the wedge is below the cotyledon attachment.
- Tie graft with plastic tape (≈ 5 –7 mm width) to cover graft union.
- Cover grafted plant with a transparent plastic bag and tie the lower end of bag over plant container.
- Place grafted plant with its container in a tray with ≈ 5 cm of water.



Grafting and Budding: After Care

- Place plants or trays of plants in a shaded area to avoid exposing grafted plants to direct sunlight.
- Ensure that there is always water in trays or irrigate basally.
- After 14 days, untie and carefully remove the bag or sleeve.
- If it is a budded plant remove tape after 2-3 weeks and remove a slice of bark above bud union to initiate bud break. The tip of the plant can be nipped either at this point or when grafting was done.
- When bud break is observed on budded plants or side grafts, bend over top of plants.
- When shoots develop, move plant to an area with less shade to encourage quick growth and hardening.
- If grafted plant was in a small container, transfer plant to a larger container or polythene bag.
- Allow plant to grow for 5–6 months before planting in field.
- Make sure graft union is below soil level.



Grafting and Budding Techniques



For all grafting and budding:
Sanitize tools, rootstock and scion before starting and label plant when completed.

For techniques done in hypocotyl region (under cotyledons) a covering over the soil is recommended.

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Patch Budding

- Score rectangular patch which includes axillary bud on scion.
- Gently remove rectangular patch of bark with the axillary bud (rocking movement).
- Below cotyledon scar cut 3 sides of a rectangular patch the same size as that removed from scion, leaving the bottom attached.
- Attach bud patch to rootstock.
- Trim excess bark (optional) and petiole.
- Secure with tape and remove tip of rootstock.



Chip Budding

- Cut rectangular chip which includes bud, bark and some cortex and place on top of area it was removed from, to maintain moisture.
- Cut 3 sides of a rectangular patch below cotyledon scar, leaving the bottom attached and peel bark downwards.
- Cut a piece of the bark from the top and bottom of scion patch to expose more cambial tissue.
- Place bud on rootstock ensuring the top aligns.
- Remove petiole, secure with tape and remove tip of rootstock.



T and L Budding

- Cut chip of bud, start at about 1 cm above bud and stop at 1 cm below bud.
- Make a T or inverted T by scouring bark on rootstock.
- Open T or inverted T by peeling bark from scored area.
- Remove cortex from chip of bud.
- Slip bud into T or inverted T.
- Cut off petiole.
- Secure tape around union and label.
- Remove tip of rootstock.

Top/Wedge Graft

- Select graftwood similar in size to rootstock.
- Cut graftwood leaving 6-7 buds.
- Cut rootstock (≈ 30 cm) or where graftwood and rootstock are the same size.
- Shape base of scion into a wedge leaving an axillary bud on wedge.
- Split rootstock to a depth of ≈ 2.5 cm.
- Insert scion into rootstock wedge.
- Bind with rubber band.
- Cover with plastic tape.
- Cover scion and union with clear sleeve of plastic. Attach securely with tape or rubber band.
- Nip base of plastic sleeve to allow extra moisture to drain out.



Basal Wedge Graft

- Make horizontal cut ≈ 1 " (2.5 cm) above soil on rootstock.
- Vertically slice using rocking motion. Start close to cotyledon scar and end at horizontal cut. Slice deeper to mid point (pith).
- Cut scion material (about 4"). If there is a bend, allow to bend outwards when securing to rootstock for a more snug union.
- Prepare scion wedge leaving a bud at wedge position and ensuring the cut on the scion side in contact with rootstock is longer to promote greater cambial contact.
- Cut corresponding cleft in rootstock by pith
- Insert scion into cleft on rootstock and secure tightly with a rubber band
- Wrap plastic tape around union starting at base.
- Either tape scion to rootstock, especially if scion is straight or a sleeve can be used.

