THE ACT OF PROPAGATING SHEA
(Vitellaria paradoxa)

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PROPAGATION BY SEED

• Shea is naturally propagated by seed as it ripens and drops on moist ground.
• The seed is recalcitrant; viability falls rapidly a week after removal from the fruit and is lost completely within 3-6 weeks.
• Germination is cryptogeal; that is, the shoots arise from below ground even though the seed germinate on the surface.
Seed Selection and Planting

• Seeds for germination were selected from matured trees with desired characteristics and traits
• Fresh seeds were extracted from fully ripened shea fruits. This was achieved by removing the pulp covering the seed and washing the de-pulped seed with water before planting
• Pre-germination lasted for 10 days to select seedlings with radicals for planting
• Some seeds were planted in situ (Directly into the field) and others planted in poly bags of varying sizes
Shea seeds showing germinated radicles
Cryptogeal Germination of shea seedlings

80 days  60 days  30 days  28 days  21 days
Air-layering is an ancient method used to propagate a number of tropical and subtropical trees and shrubs including shea. It is a process of removing a large branch or section of the trunk of a tree to create another tree. Before the branch is removed, it is girdled, wrapped with peat moss or other media, and then sealed with plastic. The girdled section is allowed to root. After rooting, the branch is removed from the tree.
Tools needed

- Materials needed to perform air layering include a sharp instrument, fresh sphagnum or peat moss, root hormone, clear plastic, wire for tying the plastic (garbage bag ties), gloves etc.
THE PROCESS of AIR LAYERING

• The area to be air layered is selected preferably young branches

• Using a sharp blade the area must be cut (ringed) continuously around the limb or bark and then repeated approximately (1) one inch above or below the original cut

• Sprinkle the rooting hormone on the cut part especially when in powder form

• Moist the growth media and wrap around the cut portion with plastic material
THE PROCESS of AIR LAYERING  (Cont’d)

• The top and bottom of the plastic must be tied securely with the bag-ties or wire to help hold in place and retain moisture

• The wrapped portion could be covered with foil or paper sheet to prevent heat from the sun

• Check for roots by removing the foil, roots should normally start to show in 6-8 weeks

• Once the roots have developed enough the rooted air-layer can be separated from main shea tree. Caution is once again required, cut the branch or trunk long if you are not sure about hurting roots
The stem is girdled to induce root formation above the cut.

The girdled stem is covered with damp moss.

Aluminium foil or plastic sheeting is wrapped around the moss and tied at both ends. This cover is removed 2-3 months after tying or when the roots can be seen.
Findings and Recommendation on Air Layering of Shea

• Air layering on Shea is possible though the practice is not simple
• It is best recommended in areas when there is less regeneration of saplings or when there is difficulty in establishing nurseries
• Success rate on air layering of shea is up to 65%
• Rooting hormone is most recommended to enhance the formation of Callus or roots
• Grafting of shea saplings consists of joining together a live branch from a mature tree (scion) to the rootstock of a sapling so that they may grow together as a single plant.

• The practice of grafting on shea can help reduce the long gestation (maturity) period of the tree.

• In Ghana, high success rate (up to 80%) in grafting of shea trees have been achieved.
Before The Start Of Your Grafting

• Identify and select desirable trees for use as scion source

• Condition scion stock branches as follows:
  - Select branches with thickness from 1.5 to 2.5 cm
  - remove all leaves from selected scion stock 10 days before grafting is due.

The main grafting techniques on shea are:

• Top Grafting and Side Grafting
SELECTING THE SCION

Normal shoot

Epicormic shoots
Selecting and Preparing the Scion for Grafting

- Select and cut desirable shea scions for your grafting
- Remove all leaves of the selected shea scion
- Shape the scion for the desired type of grafting
- Ensure that the scion is straight and well-shaped
TOP GRAFTING

- Cut off the crown of scion to about 5-15cm from ground level to form a short smooth edge
- With a sharp knife, make a vertical incision across and into the top of the remaining rootstock
- Shaped scion is fitted into the incision and driven into the rootstock
• The fitted area is bound with binding tape to make the fitting waterproof
• Ensure that the scion and the rootstock is well bound and firm

The leaves on the scion should be removed to reduce water loss through transpiration. The union is complete after about two weeks when the scion begins to form new leaves.
SIDE GRAFTING

- Make a slanting cut into the root stock at about $\frac{1}{3}$ the height from ground level
- Ensure that cut portion would fit with the scion
- Covered tightly the place of contact with binding tape to make it waterproof.
- Cover the bonded area with polythene sheet.

Successful union develops within two weeks. The crown of the rootstock is then removed to allow the scion to develop.
Timing of grafting:
• April to June – best time to graft (During the wet season)
• Early morning and late afternoon – best time of day

Maintenance of the Grafted Sapling
• Prune off all side shoots from rootstock regularly
• Protect from bush fire
• Control weed growth

Materials Needed for Grafting:
Secateurs, pruning or grafting knives and grafting tape