

A painting depicting a rural scene. On the left, a woman in a pink top and brown apron holds a baby. On the right, a man in a green shirt, red vest, and dark pants is working on a tree trunk with a tool. In the background, there is a white house with a thatched roof and bare trees. The overall tone is autumnal and domestic.

Grafting

And Budding

# Agenda



- Introduction, Purpose & Timing
- Grafting Terms
- How a graft works
- Tools used
- Type of Grafts & Techniques
- Types of Budding & Techniques
- Fun with Grafting

# What Is a Graft?



Grafting and budding are methods of asexual plant propagation that join parts from two different plants so they will grow as one plant.

# Why do we Graft?



- Propagate where other methods will not work
- Obtain benefits of the stock material

M-9	40%	10ft
EMLA-7	60%	15ft
EMLA-111	80%	20ft

- Change cultivar on established plant
- Repair damage tree parts
- Faster production of new fruit 2/3 vs 5/7 years
- Novelties – more than one cultivar on one tree

# Grafting Terms



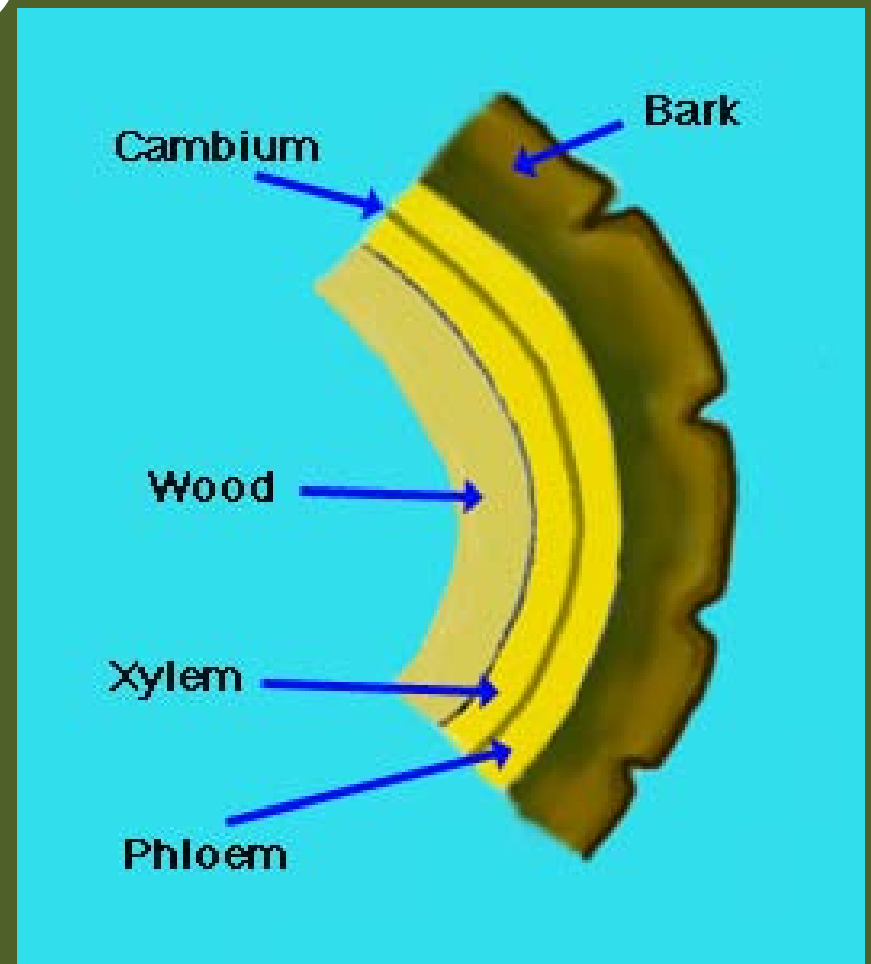
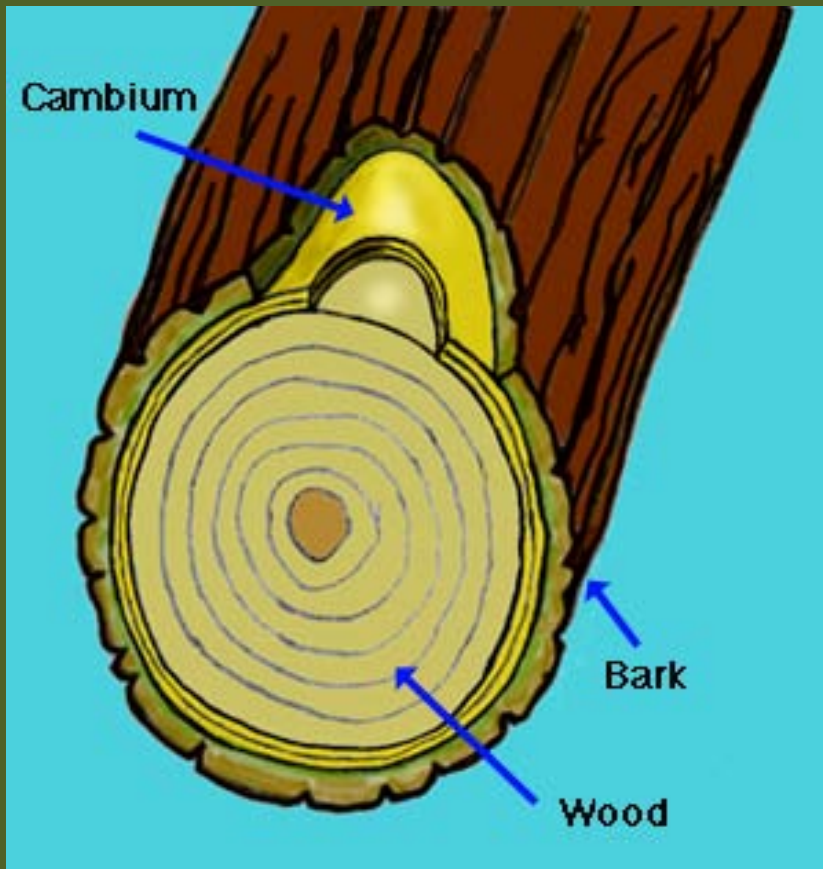
- **Grafting:** Joining two plant pieces to make one plant
- **Scion:** Detached shoot from last year's growth with dormant buds, upper graft part.
- **Stock:** Basal part of the graft (understock or rootstock)
- **Interstock:** Stem pieces added between stock & scion
- **Cambium:** This is a single layer of cells between the wood and bark. It must be lined up for a good graft union.

# Steps in Healing



- Tissues involved are the Xylem, Phloem and Cambium
- Callus from stock & scion fill the space and interlock to form “callusbridge”
- Callus cells in line between stock & scion cambium change into cambium cells
- New cambium produce Xylem & Phloem in wound to establish a vascular connection.

# Tissues involved in graft union



# Steps in Healing



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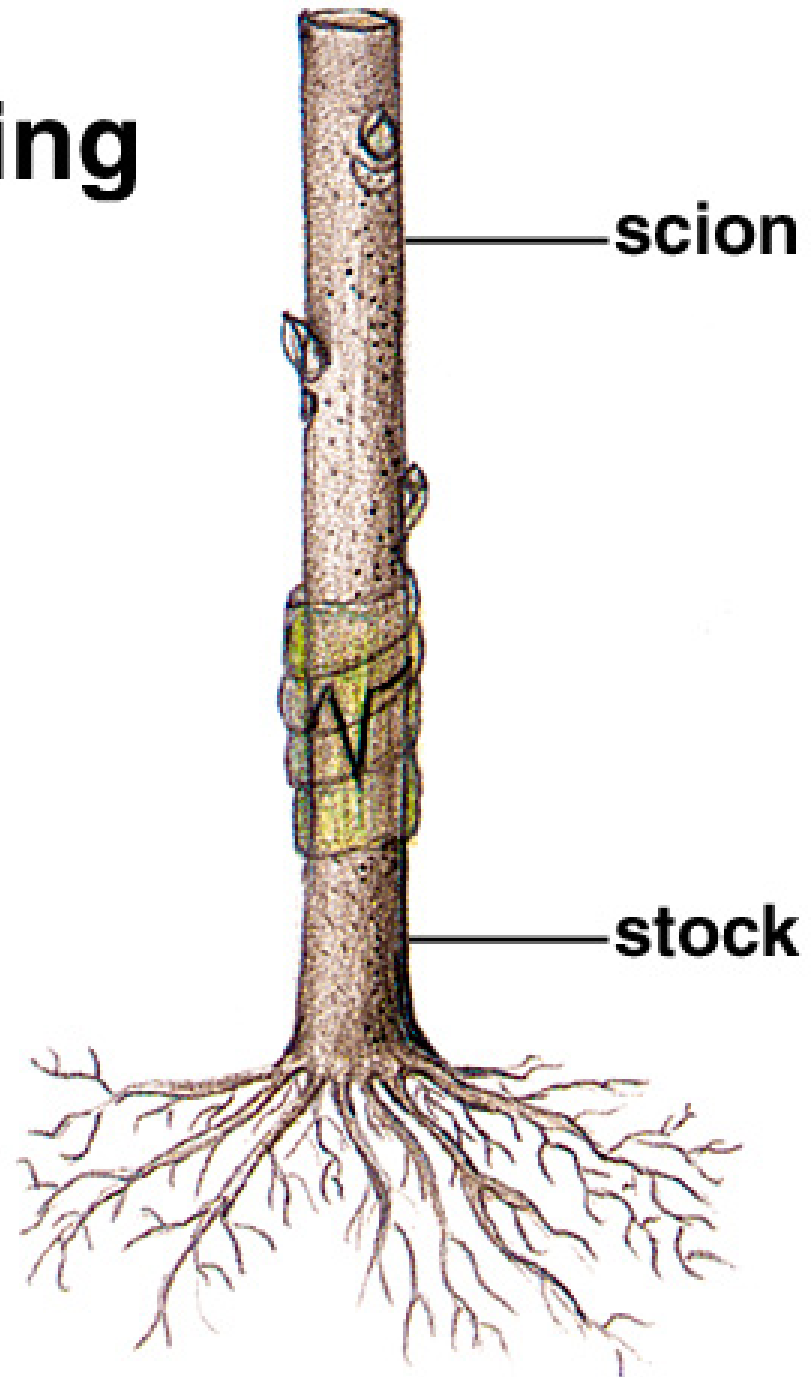


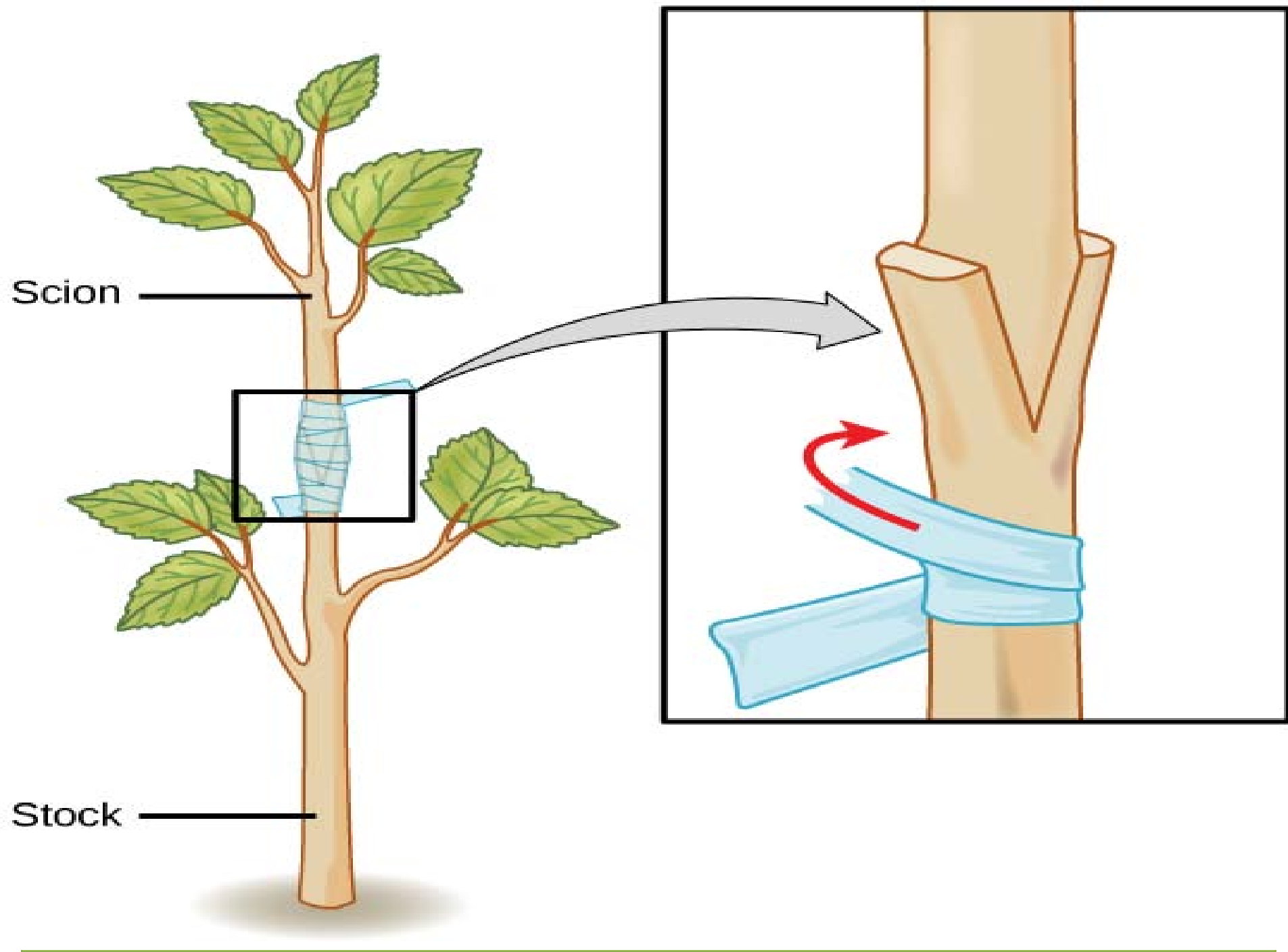
# Tools Used



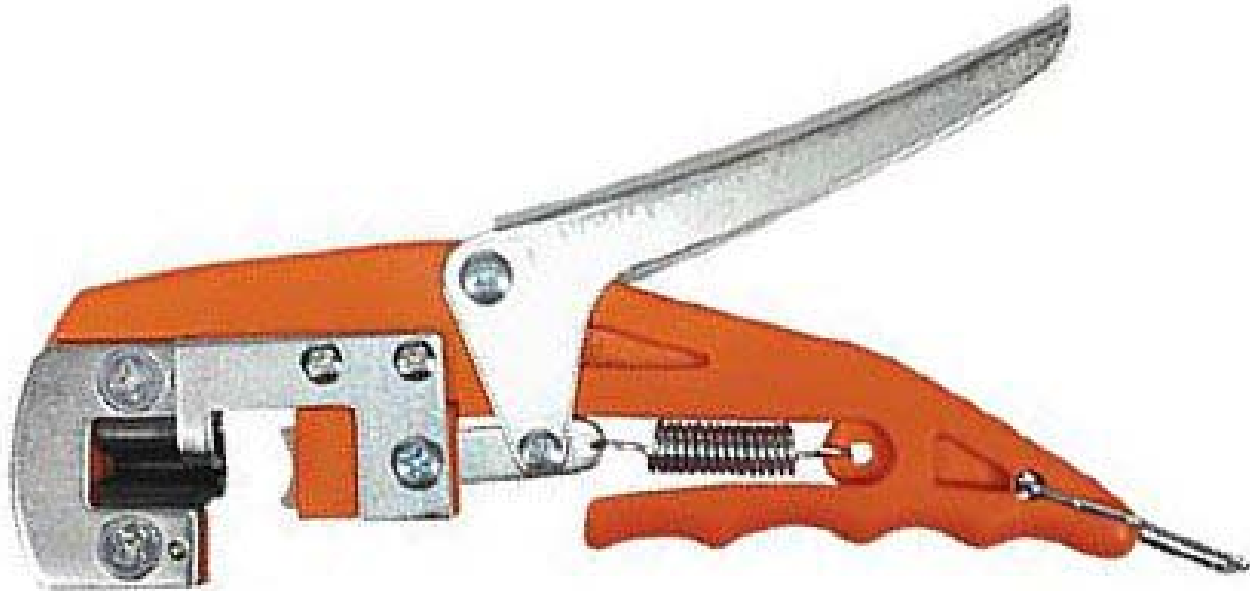
- Budding Knife / Grafting Knife
- Fine tooth saw
- Pruning shears
- Tying Materials : tape, rubber strips
- Wax
- A cleft-grafting chisel or small hatchet/heavy knife

# Simple Grafting

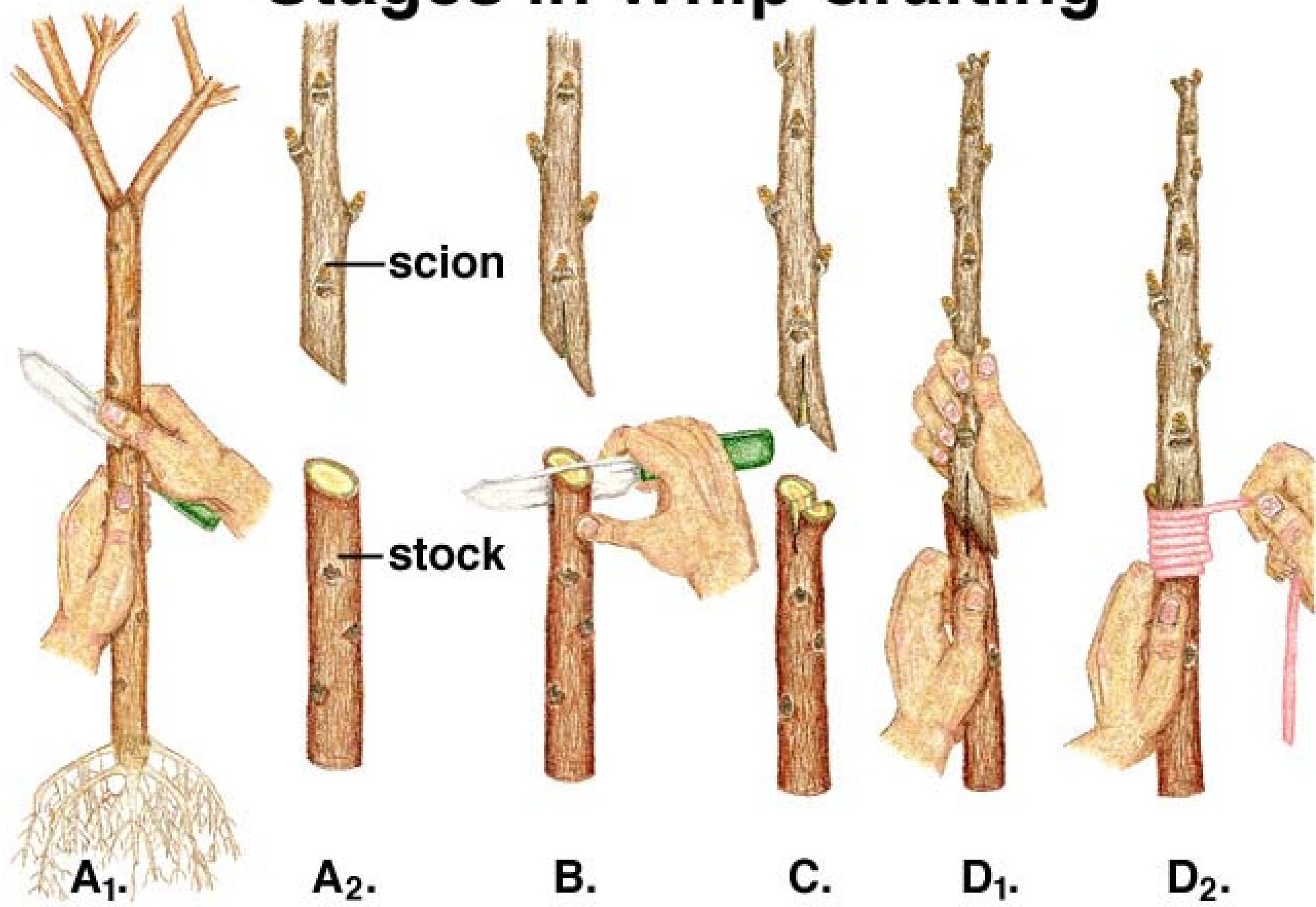




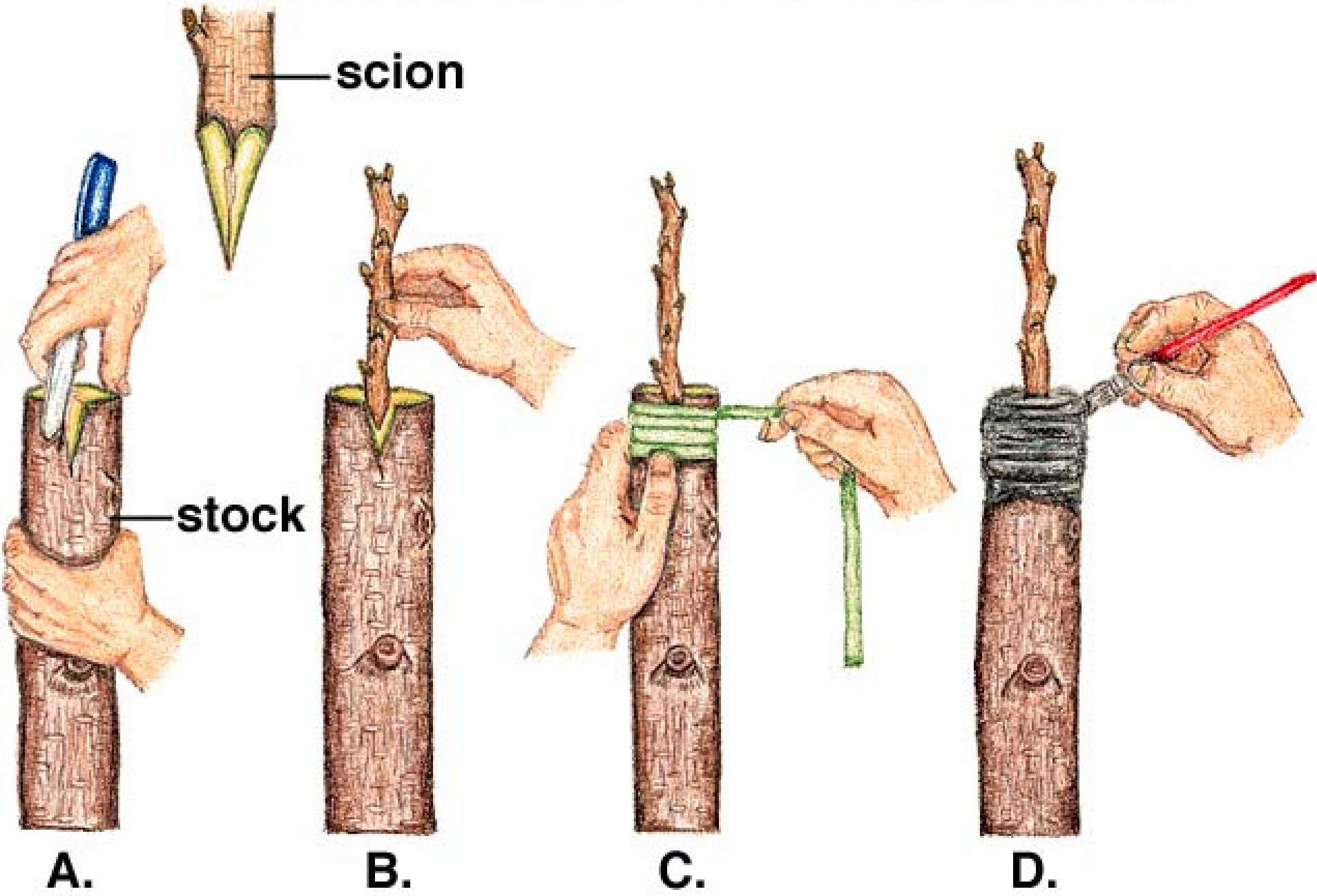
# Grafting Machine



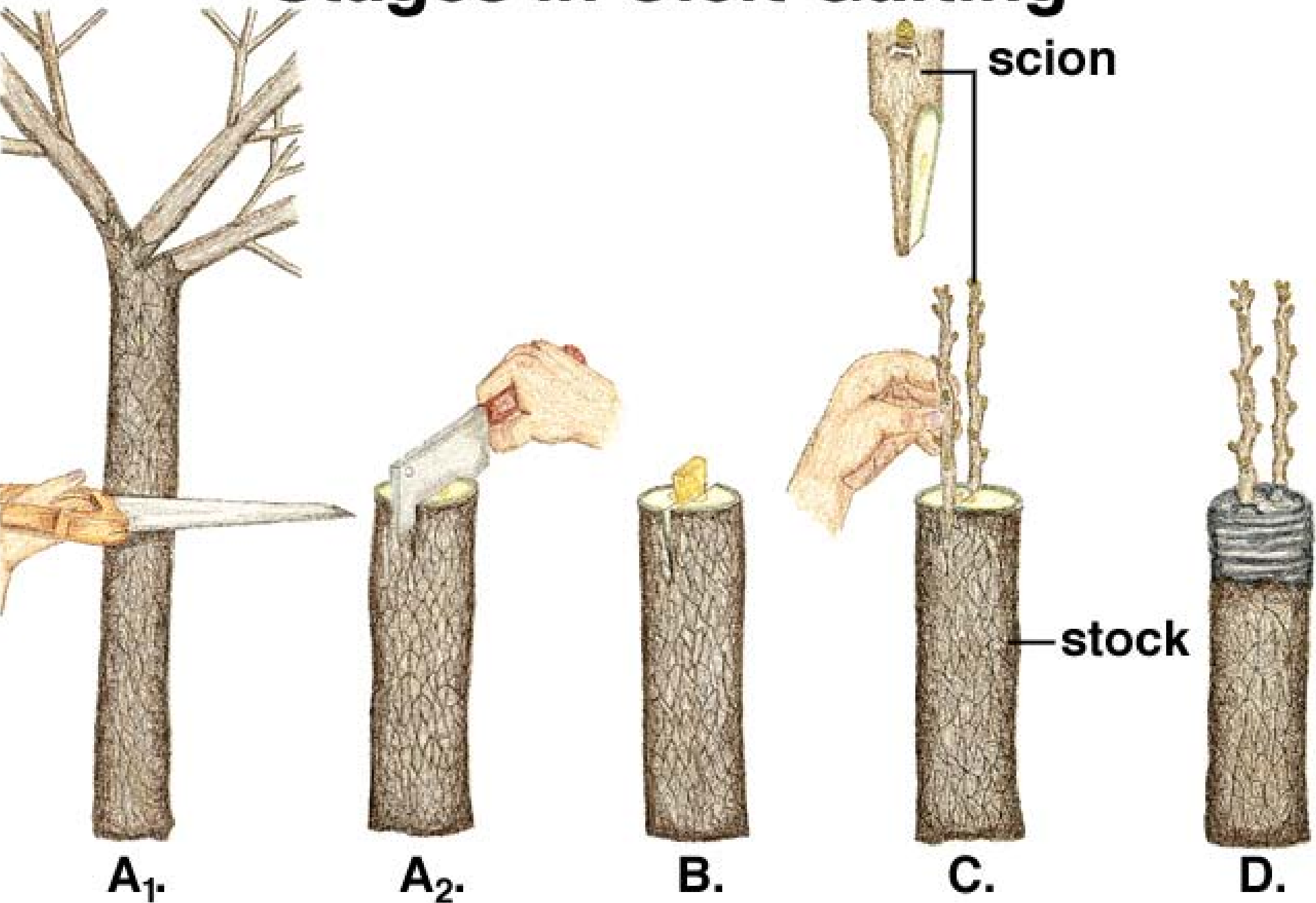
# Stages in Whip Grafting



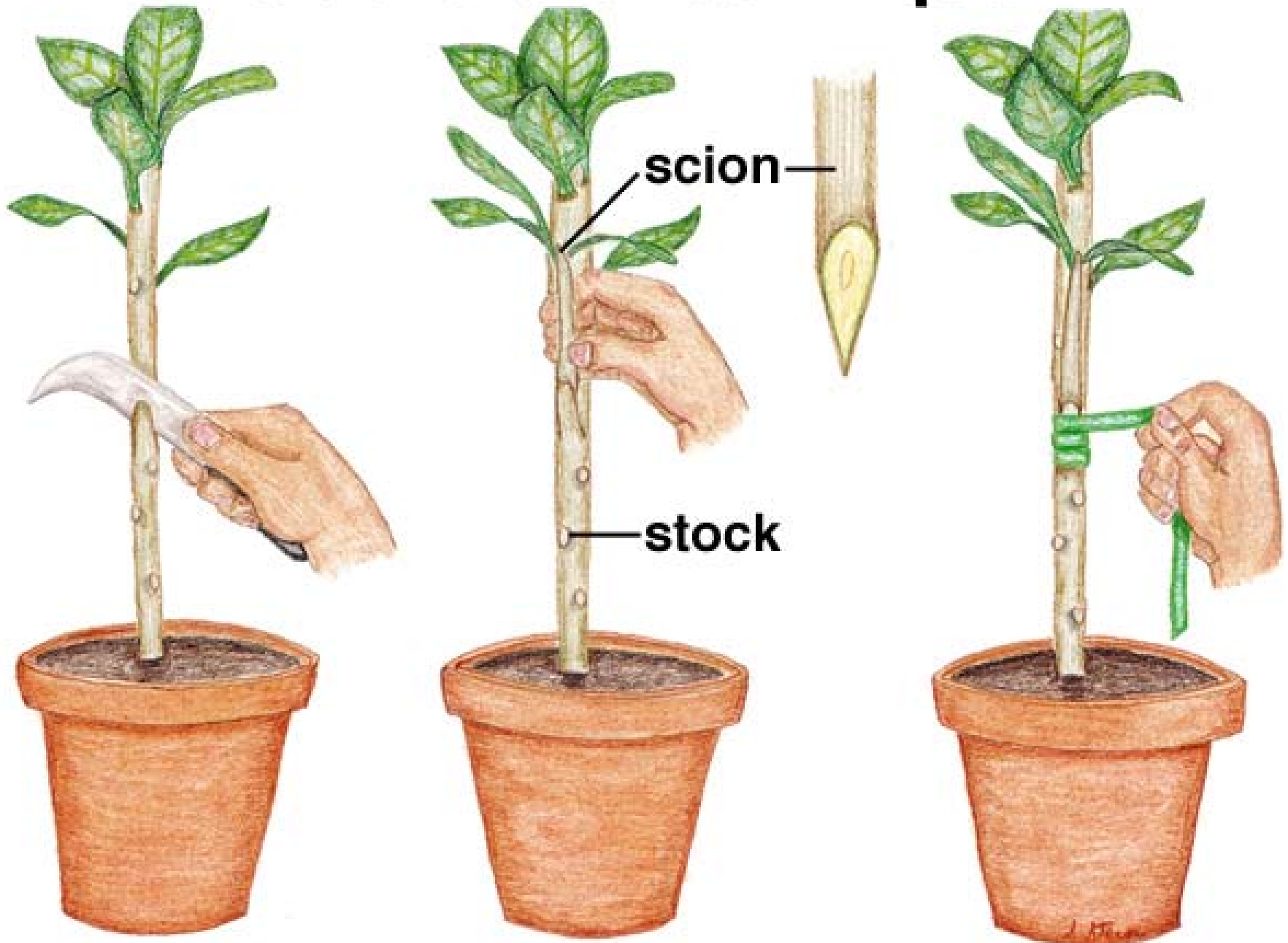
# Grafts of Different Diameters



# Stages in Cleft Grafting



# Side Graft Technique





# Approach Graft



**A.**

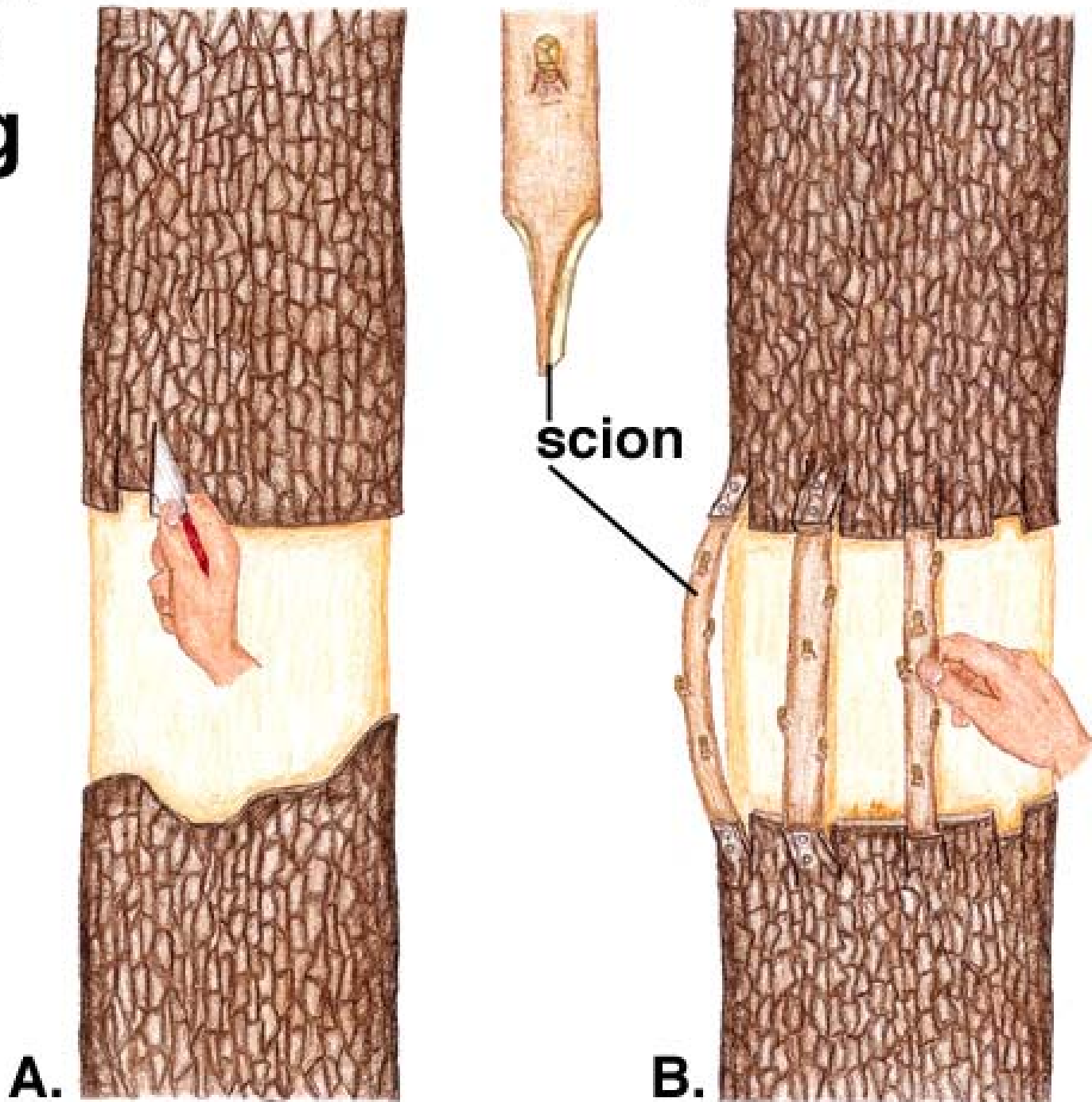


**B.**

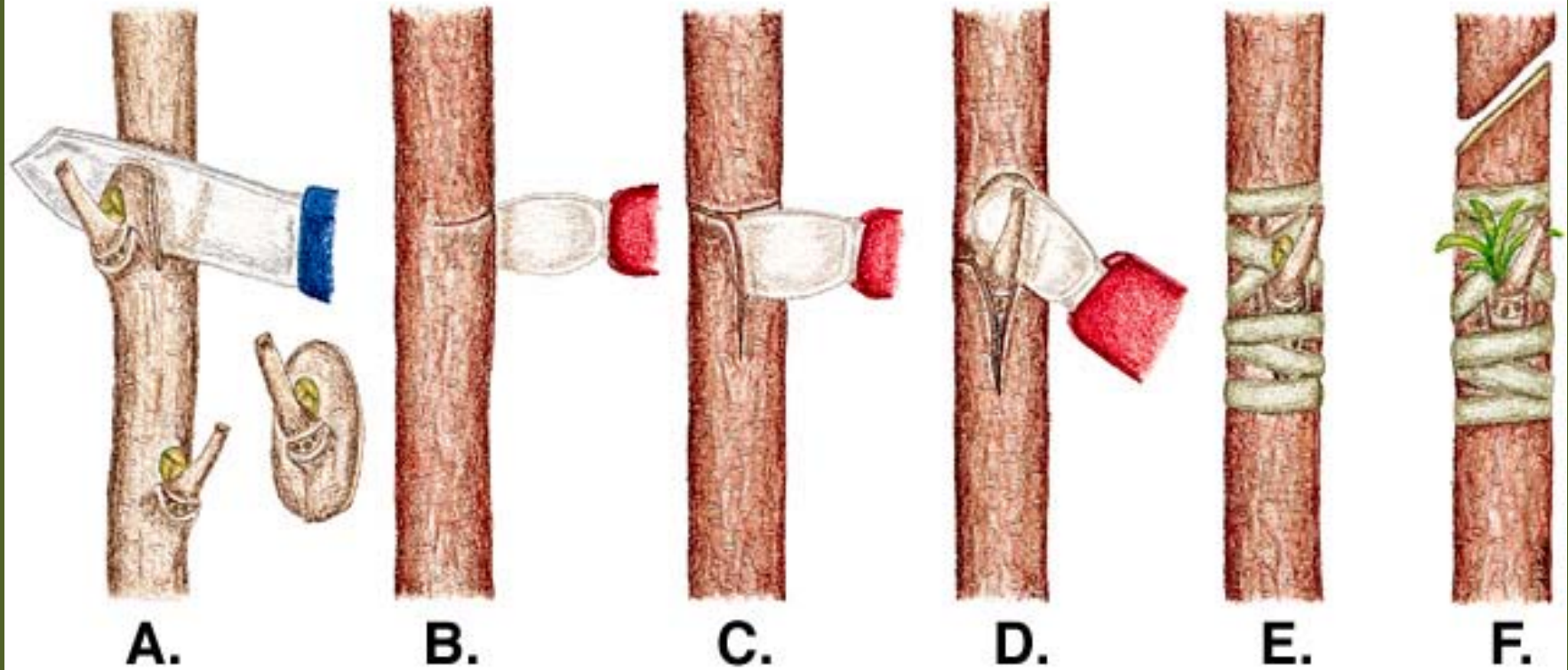


**C.**

# Bridge Grafting



# Bud Grafting



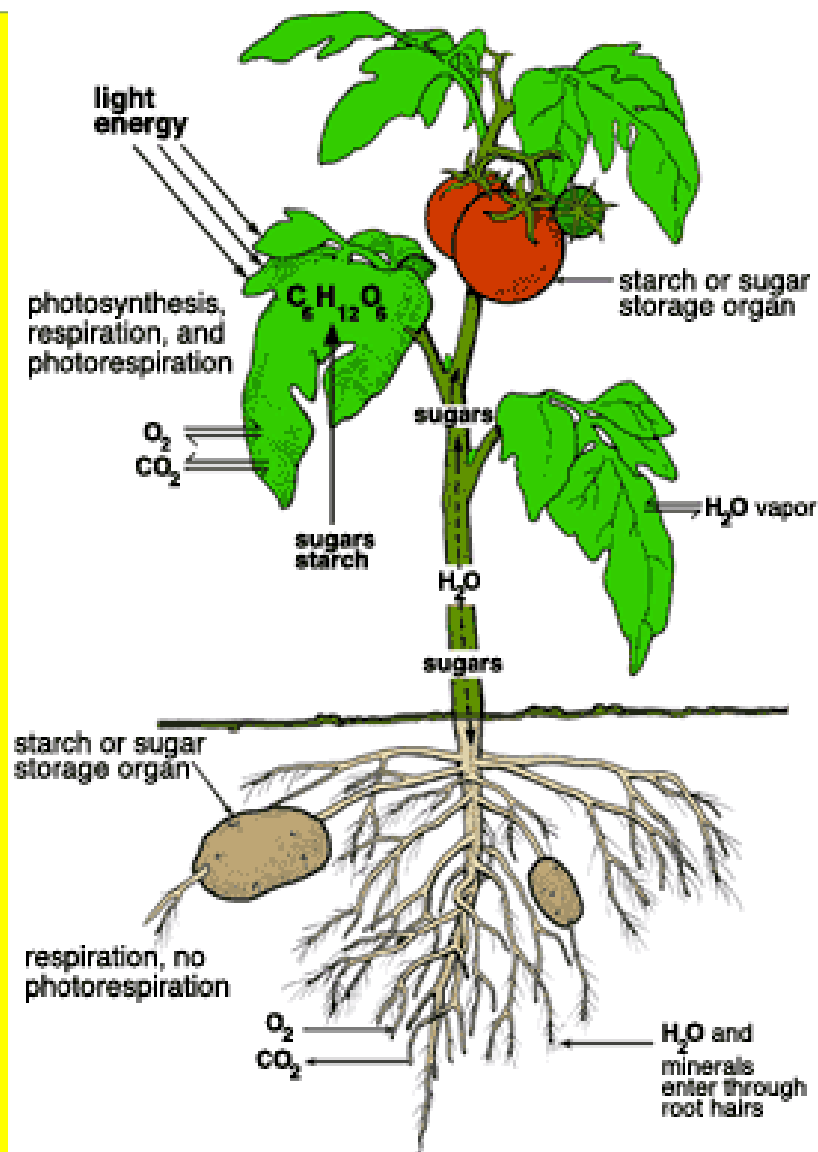
# Chip Budding



# Grafting and Budding Notes



- Cambial layers of stock and scion must meet
- Parts must be held securely
- Keep air out!
- Union heals by callus production
- Adequate temperature for cell division
- There are limitations!



**Figure 24.** Photosynthesis, respiration, leaf water exchange, and translocation of sugar (photosynthate) in a plant.



# Questions ?



**Virginia  
Master Gardener**



Tree



**Bill Blair**

MG Coordinator

Master Gardener

Tree Steward

Master Naturalist

757/ 871- 8022

804/ 694-8178

[varanger@cox.net](mailto:varanger@cox.net)

Steward

**Gloucester County Office**

7400 Carriage Court

PO Box 156

Gloucester, VA, 23061

Phone: 804/693-2602

Fax: 804/693-1383

<http://office.ext.vt.edu/gloucester>

**Virginia Cooperative Extension**