

CASE

*Curriculum for Agricultural
Science Education*

Principles of Agricultural Science – Plant

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Grafting

Unit 7 – Plant Reproduction
Lesson 7.4 Plant Multiplication

What *is* grafting?

- An ancient technique uniting two plants to grow as one.
- The **scion** is the top, or new shoot, of the plant.
- The **rootstock** is the bottom of the plant and provides roots for the new plant.
- **Topwork**: several scion varieties on one rootstock.
- **Physical union**: the new part will produce whatever variety it was taken from.

Why graft?

- Rapidly produce many desirable plants.
- Make a disease-prone plant more disease-resistant.
- Graft desirable parts of a plant (like ones that produce fruit) onto less expensive rootstock.
- Graft several different varieties to one rootstock to save space.

Requirements for Grafting

- The plants must be closely related: orange grafted to orange, apple to apple, etc. However, peach rootstock is related closely enough to graft to almonds, pears, and even plums.
- Wood should be > 1 year old and disease-free.
- Winter is best, when trees are dormant.
- Cambium layers of scion and rootstock must be matched, held tightly and waterproofed.

Types of Grafts



There are three types of grafts normally used, in addition to something called *budding*, which will be discussed later.

- Whip graft
- Side veneer graft
- Cleft graft

Grafting Cactus



To illustrate a simple way to graft, cactus will be used.

- Cactus can be grafted at any time.
- Cactus do not require waterproofing, but they do require a tight bond of their cambium layers and inner structures (xylem and phloem) to be successful.

Equipment Needed:

- Alcohol or bleach for sterilizing grafting knife
- Large rubber bands
- Two different varieties of cactus, similar in size
- Nitrile or leather palmed gloves
- Sharp knife (SAFETY FIRST!)
- Safety goggles



Step One: Sterilize Tools

Sterilize knife to prevent the spread of disease between each graft.



Step Two: Incision

-  Lay cactus on side and decide how much of the top of the cactus to remove (recommended about one-third of the top)
-  Make a single cut all the way through the cactus with a very sharp knife

Illustration of Step 2



Step Three: Joining Scion and Rootstock

- Trim the scion to match the diameter of the rootstock if necessary
- Place the scion on top of the rootstock joining cut edges

Step Four: Securing the Scion to Rootstock

Use a large rubber band to secure the cactus



Ta-Da!

The finished product:



Care of Grafted Cacti



- DO NOT water for at least a week.
- Keep bands on grafted cactus for at least a month to insure the rootstock and scion join together permanently.
- Water sparingly after one week and do not get the area that was cut wet.

Specialty Equipment



For grafting and budding trees the right equipment helps-

- The students in this PowerPoint[®] used a special knife, called a “budding” knife, to graft cactus. On the next slide, notice the odd shaped tip, which is used to lift tree bark up for certain types of grafting or budding methods.

Budding Knife

Odd shaped tip for lifting tree bark



References



Reiley, H. E., & Shry, C. L. (2007).
Introduction to horticulture (7th ed.). Clifton
Park, NY: Delmar.