

# JOB ROLE – GARDENER

Sector – Agriculture

(Qualification Pack Code: AGR/Q0801)

PPT's for Class XI



PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462 013, Madhya Pradesh, India

---

[www.psscive.ac.in](http://www.psscive.ac.in)

# **UNIT 3: PLANT PROPAGATION**

## **Session 4: Plant Propagation by Budding**

# Content

Title	Slide No.
Session Objectives	04
Introduction	05
Budding and Its Types	06-11
Tissue Culture	12
Plant Propagation by Specialised Organs	13-16
Summary	17

# Session Objectives

The student will be able to :

- Demonstrate plant propagation by budding

# Introduction

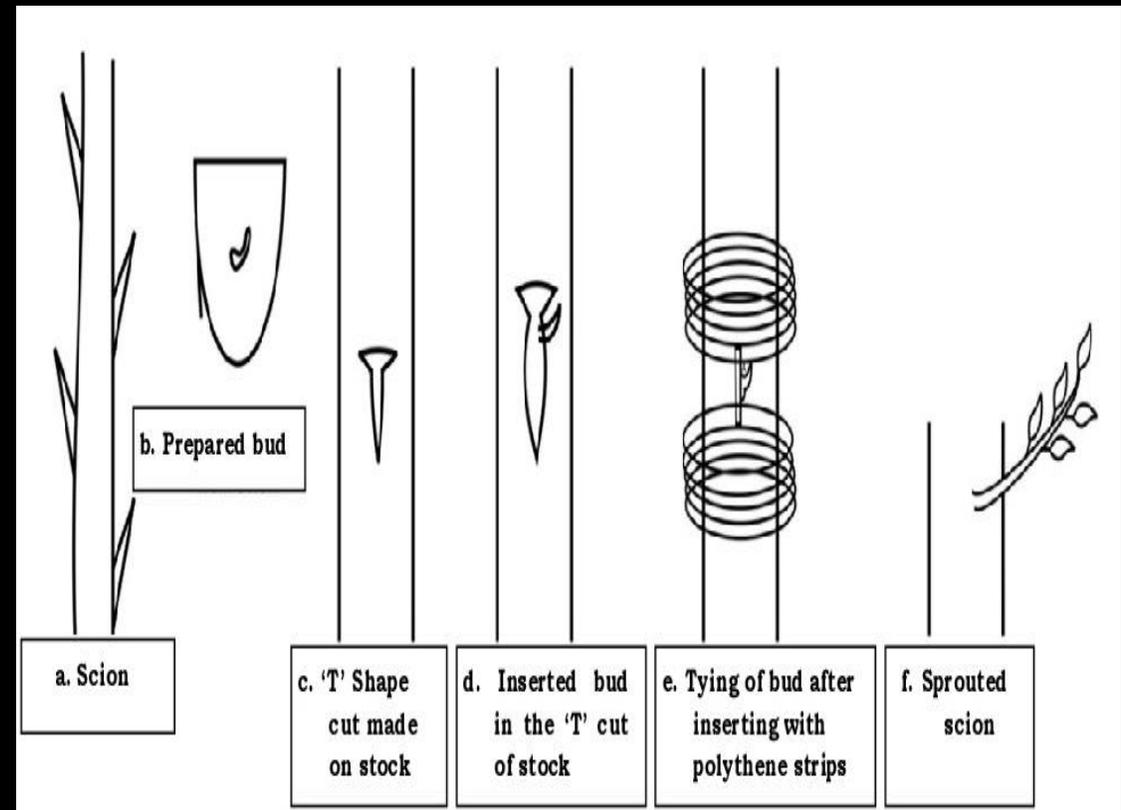
Budding is the process of inserting a single mature scion bud into the stem (rootstock) in a way that results into a union and continues to grow as a new plant.

The new plant that grows from the scion or bud will be exactly like the plant it came from. These methods of plant reproduction are usually chosen because cuttings from the desired plant root poorly (or not at all). Also, these methods give the plant a certain characteristic of the rootstock - for example, hardiness, drought tolerance, or disease resistance.

# Types of Budding

## 1. T – budding

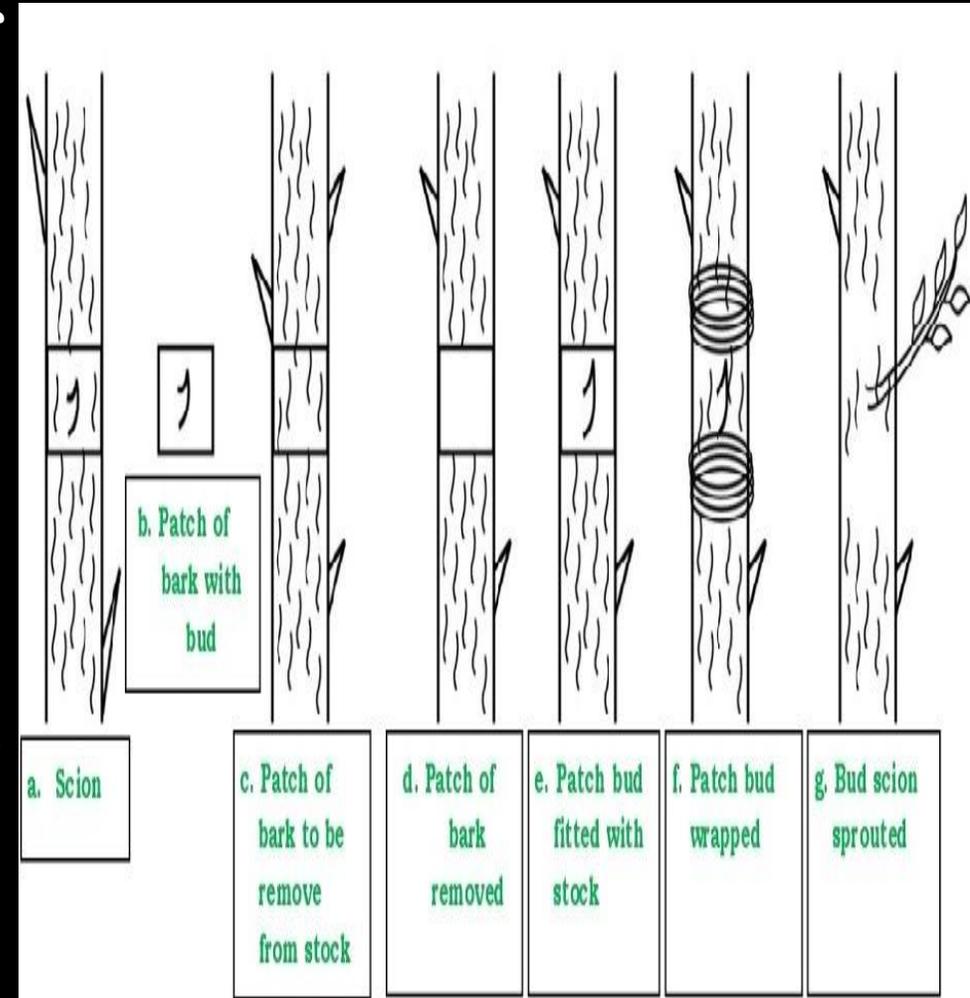
Since a ‘T’-shaped incision is made for bud insertion on the rootstock, it is called T – budding. T – budding is also called ‘shield budding’ as the bud used for insertion is in the shape of a ‘shield’. It is widely used for propagating fruit trees and ornamental plants.



# Types of Budding

## 2. Patch budding

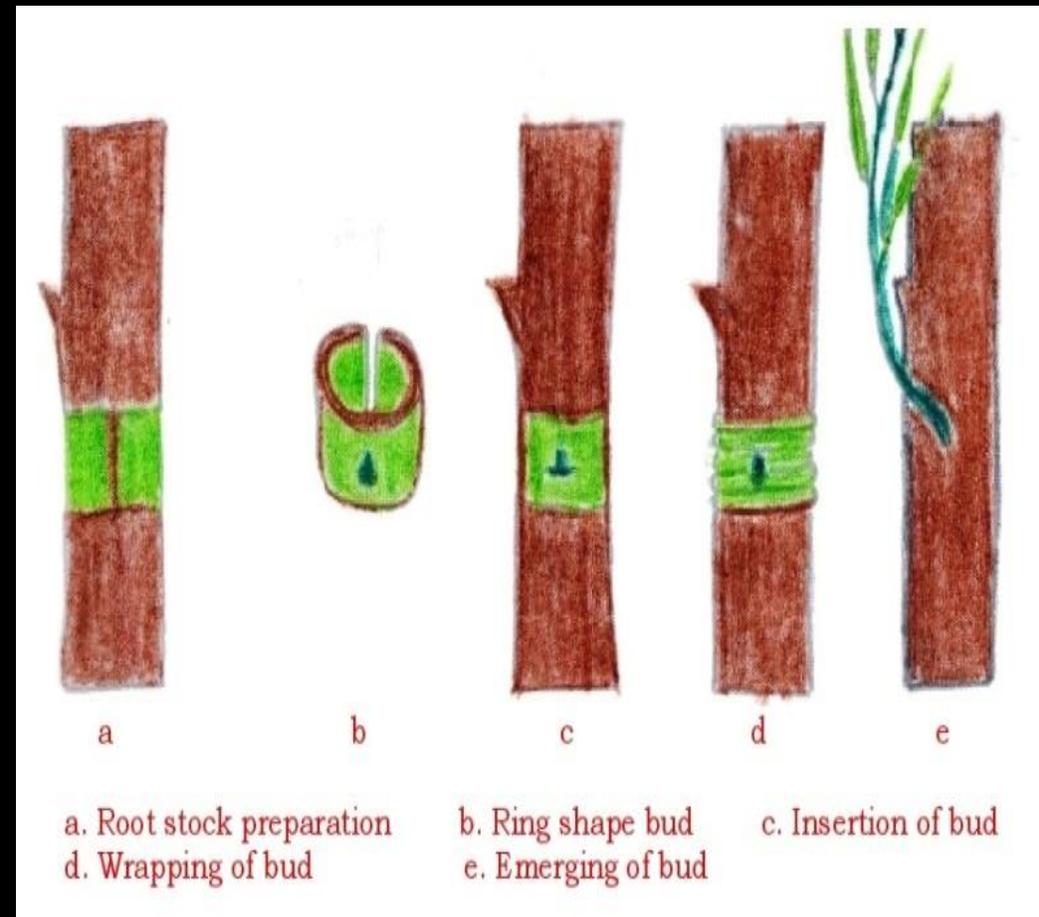
A rectangular patch of bark of 2.4x1.5 cm (length and width) from the internodes is completely removed from the stock plant. A similar patch of bark with a healthy bud is removed from the scion bud stick. This patch is placed on the cut portion of the stock and wrapped with a polyethylene strip, keeping the bud exposed. Examples are *aonla*, mango, *jamun*, rubber, etc.



# Types of Budding

## 3. Ring budding

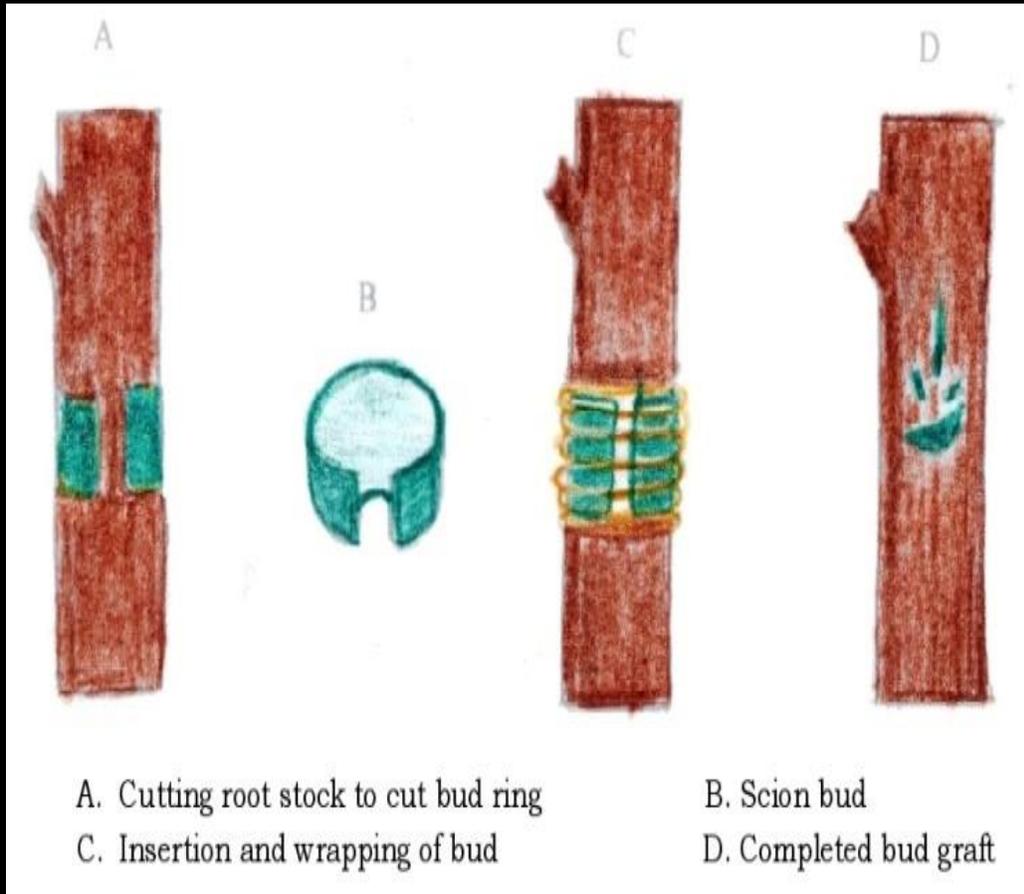
In this method, a bark of approximately 3-6 cm wide in ring form is removed from the stock. The same dimension of bark with a healthy bud is removed from the scion bud stick and placed on the stalk. After placing the ring in position, tie it with a polythene strip, keeping the bud exposed, e.g., *ber* and *cherry*.



# Types of Budding

## 4. Flute budding

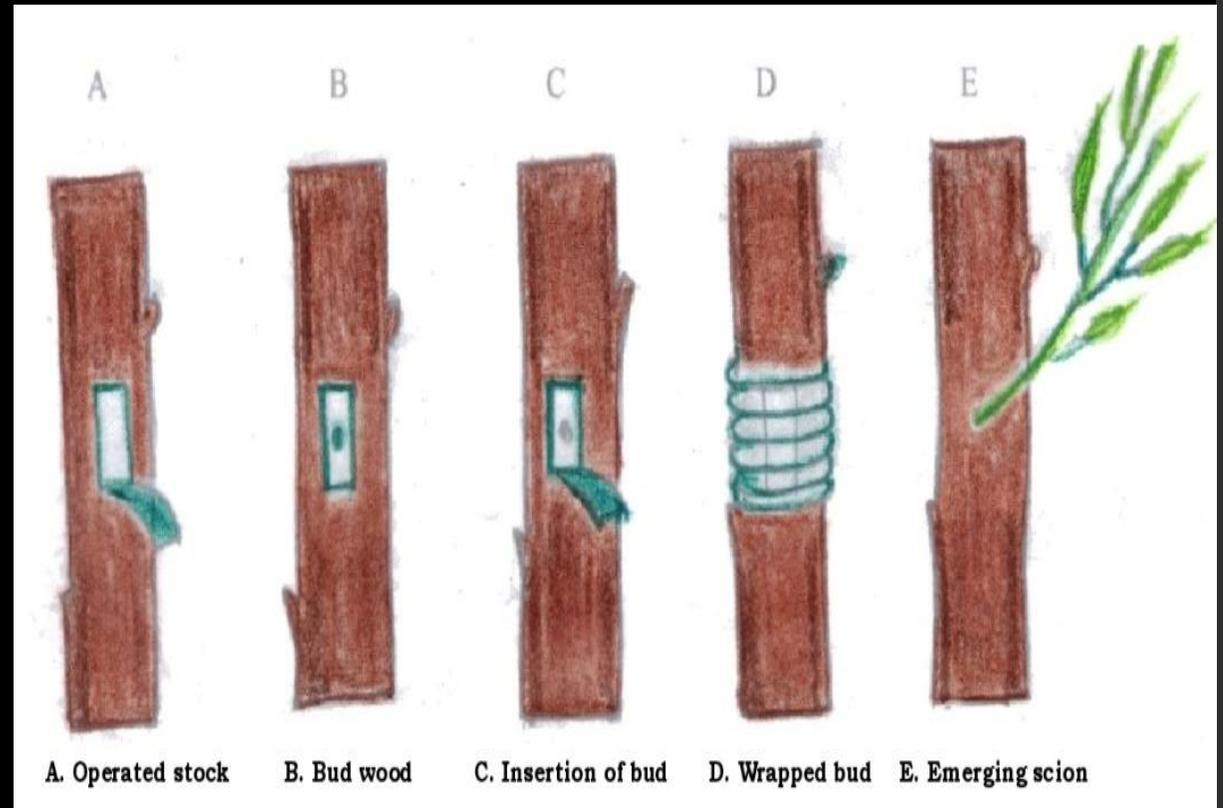
This is a slight modification of ring budding. Instead of removing the complete ring, a narrow portion of the bark about 1/8 of its circumference is left on the stock. A similar portion of the scion is removed along with the bud and is fitted on the cut portion of the stock. The bark of the stock and bud is tied with a polyethylene strip, exposing growing point e.g., *ber*.



# Types of Budding

## 5. Forkert budding

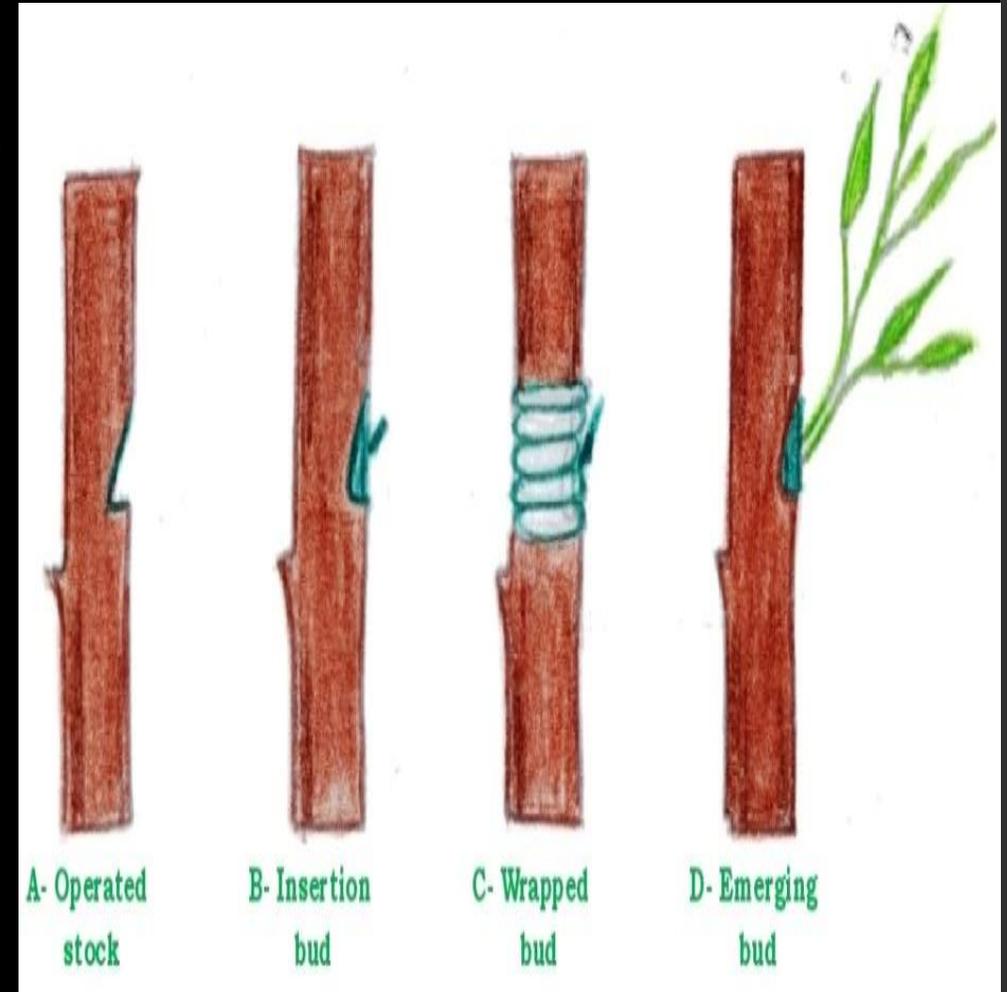
It is just like patch budding, but patch is not totally removed from the stock. It is left attached from one side. While placing a bud on the patch, the bark patch is again placed on the bud by removing a little portion in flop to sprouting of bud.



# Types of Budding

## 6. Chip budding

This method is followed when the bark is thin and cannot be removed easily. A piece of thin bark along with some wood piece is removed in between two nodes of the rootstock and the same size of chip, which is similar in shape and is collected from the scion, is placed on rootstock. This is mostly practised in February–March. Fruits like apple, grapes and pear can be propagated through this technique.



# Tissue Culture

It is a technique for growing plant tissues isolated from the parent plant in an artificial medium and controlled environment over a prolonged period under aseptic conditions. It is used on commercial scale in gerbera, orchid, banana, carnation, anthurium, etc. It is based on the phenomenon of 'totipotency' of a cell, which denotes the capacity of a plant cell to regenerate into a full-fledged plant having different organs. Callus is produced on explant *in vitro due to* wounding and growth substances, either endogenous or supplied exogenous in the medium. For the collection of explants, plant parts, such as stem, root or leaves can be used. After disinfection, they are induced to form 'callus'. Examples are banana, papaya, gerbera, carnation, rose, orchid, etc.

# Plant Propagation by Specialised Organs

Specialised organs are modified stems or roots, developing above or underground, which may be used for multiplication of plants. In horticulture, bulbous ornamentals include bulbs, corms, tubers, tuberous roots and rhizomes.

## 1. Corm

Corm is an underground modified solid or compressed stem oriented vertically in the side having nodes and buds, e.g., gladiolus, crocus, etc



# Plant Propagation by Specialised Organs

## 2. Bulb

Bulb is a specialised underground structure having a flat basal stem and surrounded by fleshy scales, e.g., onion, tuberose, amaryllis.



**Bulb (tuberose)**

## 3. Tuber

It is an underground storage organ having special swollen modified stem or roots, e.g., root tuber—dahlia, caladium, dioscorea, Jerusalem artichoke, stem tuber—begonia, potato, etc.



**Root tuber (dahlia)**

# Plant Propagation by Specialised Organs

## 4. Rhizome

A modified stem of some plant growing horizontally just below the ground surface, e.g., *canna*, ferns, ginger, iris, *etc.*



Rhizome (*canna*)

## 5. Runner

It is a modified stalk, which is creeping in nature, produced in the leaf axil and grows out from the parent plant. It grows horizontally along the ground where roots are produced at the nodes, which can be used to produce new plants, e.g., *doob* grass, strawberry, *chlorophytum*, *etc.*



Runner (*chlorophytum*)

# Plant Propagation by Specialised Organs

## 6. Sucker

Suckers are special shoots arising from the roots or stem portion of the plant below the ground level, e.g., chrysanthemum (stem), *Clerodendron splendens* (root suckers), anthurium, etc.



**Suckers**

# Summary

In this session you have learnt about plant propagation by budding and specialised organs.

**Project Coordinator : Dr. Rajiv Kumar Pathak**

**Assistance**

**Dr. Narendra Vasure**

**Dr. Sanvar Mal Choudhary**



**Joint Director**

**PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India**

---

**E-mail: [jdpsscive@gmail.com](mailto:jdpsscive@gmail.com)**

**Tel. +91 755 2660691, 2704100, 2660391, 2660564**

**Fax +91 755 2660481**

**Website: [www.psscive.ac.in](http://www.psscive.ac.in)**