

Plant Propagation Techniques

Plant Propagation Techniques – Study Notes

1. Overview

Plant propagation is the process of creating new plants from existing material. It can be divided into two main categories:

Category	Definition	Typical Uses
Sexual propagation	Production of offspring from seeds (resulting from fertilization).	Breeding programs, maintaining genetic diversity.
Asexual (vegetative) propagation	New plants arise from parts of the parent plant (no seed formation).	Cloning desirable traits, rapid multiplication, preserving cultivars.

2. Sexual Propagation – Seeds

Technique	Key Steps	Advantages	Limitations
Direct sowing	Scatter or place seeds in prepared seed-raising mix; keep moist and at appropriate temperature.	Simple, low cost; good for large numbers.	Variable germination; may need stratification or scarification.
Seed pretreatment	<i>Stratification</i> (cold/moist), <i>scarification</i> (abrasion), <i>soaking</i> in water or hormone solutions.	Improves germination of dormant or hard-seeded species.	Extra time and handling.
Seedling care	Thin seedlings, provide light, fertilize lightly, transplant when true leaves appear.	Produces vigorous plants if managed well.	Higher labor than vegetative methods.

3. Asexual (Vegetative) Propagation

3.1. Cutting Propagation

Type	Source tissue	Typical species	Procedure highlights
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Stem cuttings	Softwood, semi-hardwood, or hardwood stems.	Roses, coleus, tomato, many shrubs.	Cut 5-15cm length, remove lower leaves, dip in rooting hormone, place in moist medium, cover to retain humidity.
Leaf cuttings	Whole leaf or leaf sections.	African violet, begonias, kalanchoe.	Place leaf on moist substrate; roots emerge from leaf margin or base.
Root cuttings	Sections of fine roots.	Blackberry, raspberry.	Plant horizontally in a shallow tray; keep moist.

Key factors: hormone (IAA) concentration, temperature (20-25°C optimal for most), humidity, and light (bright but indirect).

3.2. Division

- **Method:** Separate a mature plant into multiple sections, each with roots and shoots.
 - **Best for:** Perennials (hostas, daylilies), grasses, clumps of herbaceous plants.
 - **Steps:**
 1. Dig up the plant when dormant.
 2. Gently split the root mass with a sharp knife or hands.
 3. Re-plant each division at the same depth, water thoroughly.
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3.3. Layering

Type	Description	Typical plants	Procedure
Simple layering	Bend low branch to ground, cover with soil, keep tip moist; roots form at contact point.	Raspberries, blueberries, wisteria.	Pin branch with a U-shaped nail, mulch, wait 4-12 weeks.
Air layering	Strip bark from a section of stem, apply rooting hormone, wrap with moist sphagnum moss, cover with plastic.	Ficus, citrus, magnolia.	Cut a 2-3cm ring of bark, treat, wrap, monitor for root growth.
Tip layering	Similar to simple layering but only the tip of a trailing stem is buried.		