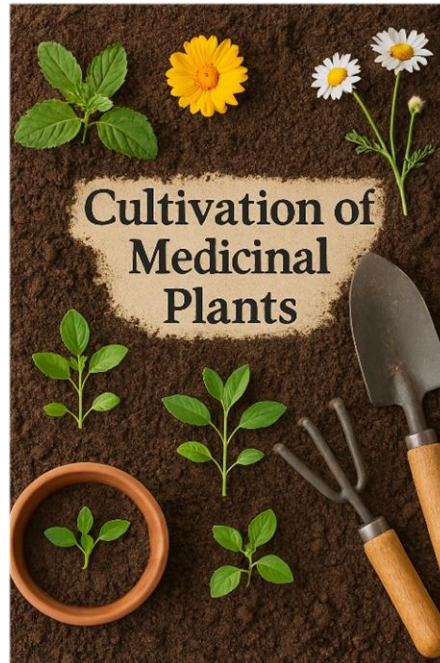


Collection, Processing and storage of drugs of natural origin

Cultivation of Medicinal Plants

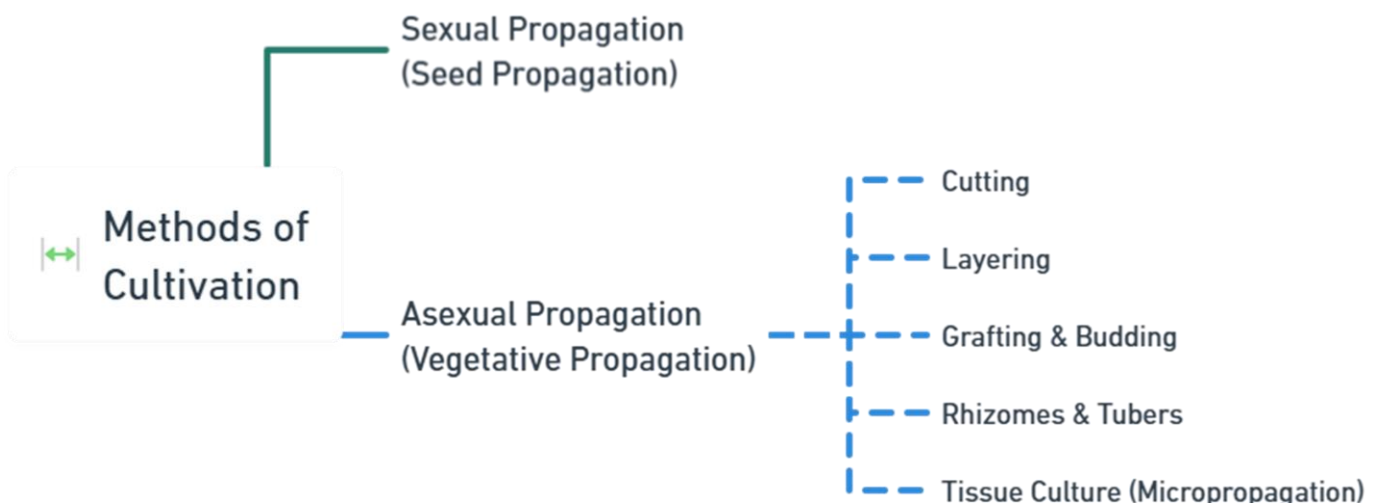
- Cultivation is the scientific and controlled growth of medicinal plants to obtain high-quality drugs in a sustainable manner.



Importance of Cultivation

- Prevents overexploitation of wild medicinal plants.
- Ensures high yield and consistent quality.
- Protects endangered species from extinction.
- Helps in standardization of plant-derived medicines.
- Provides economic benefits to farmers and herbal industries.

Methods of Cultivation



1. Sexual Propagation (Seed Propagation)

- Involves growing plants from seeds.
- Seeds develop through fertilization and genetic recombination.

Examples:

- *Ocimum sanctum* (Tulsi) – Grown from seeds for essential oil production.
- *Papaver somniferum* (Opium poppy) – Cultivated for alkaloid content.

Advantages:

- Genetic diversity enhances adaptability and disease resistance.
- Cost-effective and easy for large-scale farming.
- Seeds can be stored for future use.

Disadvantages:

- **Slow growth** and longer germination time.
- Some plants have **low seed viability**.
- Genetic variations may lead to **inconsistent medicinal properties**.

2. Asexual Propagation (Vegetative Propagation)

- Involves growing new plants from vegetative parts like roots, stems, or leaves.
- Produces **genetically identical** plants (clones).

Asexual Propagation Methods

A. Cutting

- Growing plants from stem, root, or leaf cuttings.
- **Example:** *Mentha* species (Mint) – Propagated from stem cuttings.

B. Layering

- A branch is bent and covered with soil until roots develop.
- **Example:** *Vanilla planifolia* (Vanilla) – Air layering method.

C. Grafting & Budding

- Joining two plant parts to combine desired traits.
- **Example:** *Citrus* species (Lemon, Orange) – Used for medicinal essential oils.

D. Rhizomes & Tubers

- Underground stems or tubers grow into new plants.
- **Example:** *Curcuma longa* (Turmeric) – Propagated from rhizomes.

E. Tissue Culture (Micropropagation)

- Growing plants from small tissue samples in sterile lab conditions.
- **Example:** *Rauwolfia serpentina* (Sarpagandha) – Used for large-scale production.

Advantages:

- Faster growth and early maturity.
- Ensures uniform medicinal properties.
- Allows multiplication of rare or endangered species.

Disadvantages:

- **No genetic diversity**, making plants vulnerable to diseases.
- Some methods (grafting, tissue culture) require technical expertise.
- Higher cost than seed propagation.

Advantages of Cultivation of Medicinal Plants

- Ensures sustainable supply and prevents overexploitation.
- Higher yield and better control over quality.
- Disease-resistant varieties can be developed.
- Prevents adulteration commonly found in wild-collected plants.
- Economic benefits for farmers and herbal industries.

Disadvantages

- High initial investment in land, irrigation, and processing.
- Slow growth for certain plants (Ginseng, Sarpagandha).
- Pests and diseases may require regular management.
- Environmental impact if monoculture reduces biodiversity

Collection of Medicinal Plants

- Collection is the process of harvesting plant materials such as leaves, roots, bark, flowers, and seeds at the right time to ensure maximum potency of active compounds.
- Proper collection techniques help maintain the medicinal value, sustainability, and purity of plant-derived drugs.

Types of Collection

1. Wild Collection

- Harvesting plants from **forests and natural habitats**.
- **Example:** *Taxus baccata* – Collected for the anticancer drug **Taxol**.



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