

UNIT 2: SYLLABUS

* CONTENT:

- Cultivation and collection of drugs of natural origin.
- Factors influencing cultivation of medicinal plants.
- Plant hormones and their applications.
- Polyploidy mutation and hybridization.

* Cultivation and collection of drugs of natural origin:

1. Cultivation:

Cultivation is the process of growing the plants by providing all forms of necessary requirements.

- ▶ Advantages: 1. Ensure quality and purity of medicinal plants.
2. Give better yield and therapeutic quality.
3. Not face problems of shortage.
- ▶ Disadvantages: 1. Cost effective.
- ▶ Methods : a. Sexual method
b. Asexual method

a. Sexual method (Seed propagation);

Plants are raised by propagating the seeds. These plants are known as seedlings.

▶ Methods of seed propagation:

1. Broadcasting method e.g. isabgol and linseed
2. Dibbling e.g. papaya seeds and castor seeds

3. Asexual method (Vegetative propagation)

Plants are raised by using the vegetative parts of the plants.

b. Asexual method (Vegetative propagation);

Plants are raised by using the vegetative parts of the plants.

▶ Methods of vegetative propagation;

1. Cutting e.g. sugarcane
2. Layering e.g. rose
3. Grafting e.g. desired varieties of mango, lemon etc.
4. Budding e.g. apple, peaches

2. Collection of the drugs:

After sufficient growth the plant should be collected from wild or cultivated plants at specific season and specific time period to get best quality of products.

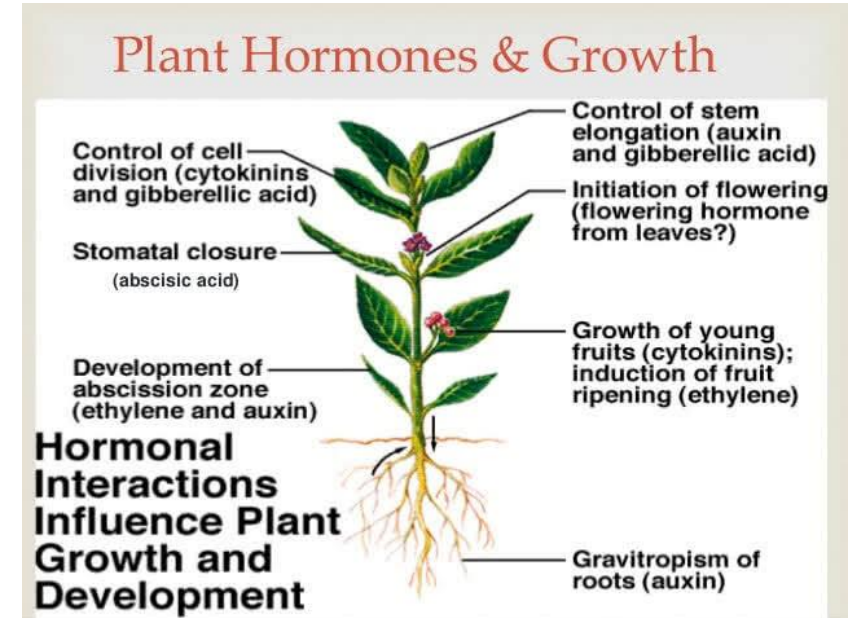
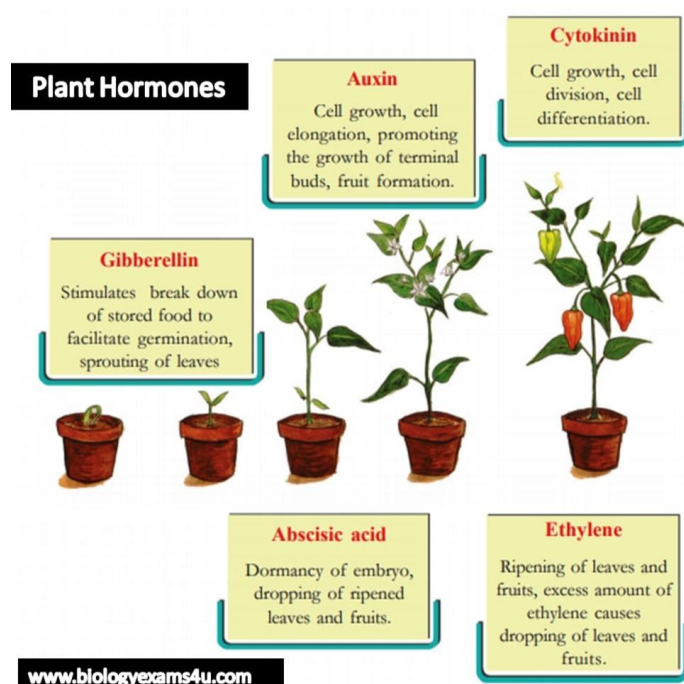
Harvesting is used as a method of collection of drugs. After collection the drug is subjected to processing then storage-

- Washing
- Dying
- Garbling (dressing)
- Storage

*Factors influencing cultivation of medicinal plants:

1. Altitude
2. Light
3. Temperature
4. Humidity
5. Rainfall
6. Soil and soil fertility
7. Fertilizers
8. Pest and pest control

*Plant hormones and their applications:



*Polyploidy, mutation and hybridization:

1. Polyploidy:

A cell or organisms having more than two set of chromosomes is known as polyploidy.

Here, Poly means many and ploidy means chromosomes.

Applications in polyploidy-

1. Mutation breeding
2. Seedless fruits
3. Bridge crossing
4. Industrial applications

2. Mutation:

It is a permanent alteration in the genetic material or character of an organism.

► Types of mutation :

1. Spontaneous mutation
2. Point mutation
3. Transhift mutation
4. Artificial mutation

► Application :

1. To obtain high yield
2. To improve quality
3. Resistance to diseases or insects
4. Hybridization – Process of interbreeding between individuals of different species result in the formation of hybrid having different characteristics.

► Types of hybridization:

1. Intra-varietal hybridization
2. Inter-varietal (Intraspecific)
3. Interspecific (Interagenic)

► Applications:

1. For crop improvement
2. Good quality of plants
3. To produce disease resistance

*Conservation of medicinal plants:

► Conservation is about preventing damage and loss to our culture heritage

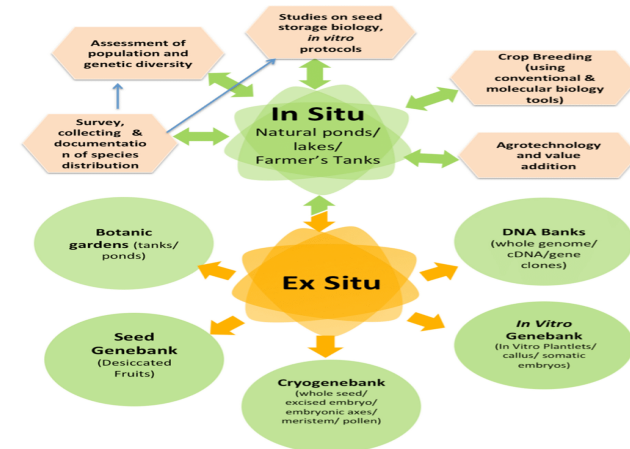
► **Methods of Conservation:**

1. In-situ conservation:

In situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticates or cultivated species, in the surroundings where they have developed their distinctive properties.

2. Ex-situ conservation:

Ex situ conservation is the technique of conservation of all levels of biological diversity outside their natural habitats through different techniques like zoo, captive breeding, aquarium, botanical garden, and gene bank.



IN SITU CONSERVATION VERSUS EX SITU CONSERVATION

Onsite conservation	Offsite conservation
Conservation of species in a natural ecosystem in an attempt to protect endangered plants and animals.	Conservation of endangered species outside their habitat (artificial habitat)
Natural environment	Artificially created environment
National parks, biosphere reserves, parks, sanctuaries	Zoo, aquarium, seed banks
Dynamic	Static
Captive breeding is not effective in case of all species	Captive breeding can easily increase the numbers (Only in case of some species)
It is cheap and convenient	It is meant for commercial purposes.

*REFERENCES:

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3. Pharmacognosy – Nirali praksashan
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PREPARED BY : Ms. Pokharkar Maya
Ms. Shinde Siddhi

GUIDE BY : Ms. Kokne Rutuja

DEPARTMENT : Pharmacognosy and phytochemistry-1

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