

2.2 Propagation and Growing Plants

What you need to know...

By the end of this section you should be able to give

- A definition of Propagation
- Provide the advantages and disadvantages of sexual and asexual reproduction.
- Describe different methods of Propagation

Propagation

- **Propagation** is a method of producing plants (Clones) which are **genetically identical to the parent plant**. This can be **natural (vegetative)** or **artificial**.
- Propagation is an example of **asexual** reproduction. Asexual reproduction is the production of new plants **without forming seeds** and involves **only one** parent.

What is the difference between Sexual and Asexual reproduction in plants

- Use the Textbook to identify the difference between sexual reproduction and asexual reproduction
- Give a range of advantages and disadvantages of
 - Sexual Reproduction
 - Asexual Reproduction

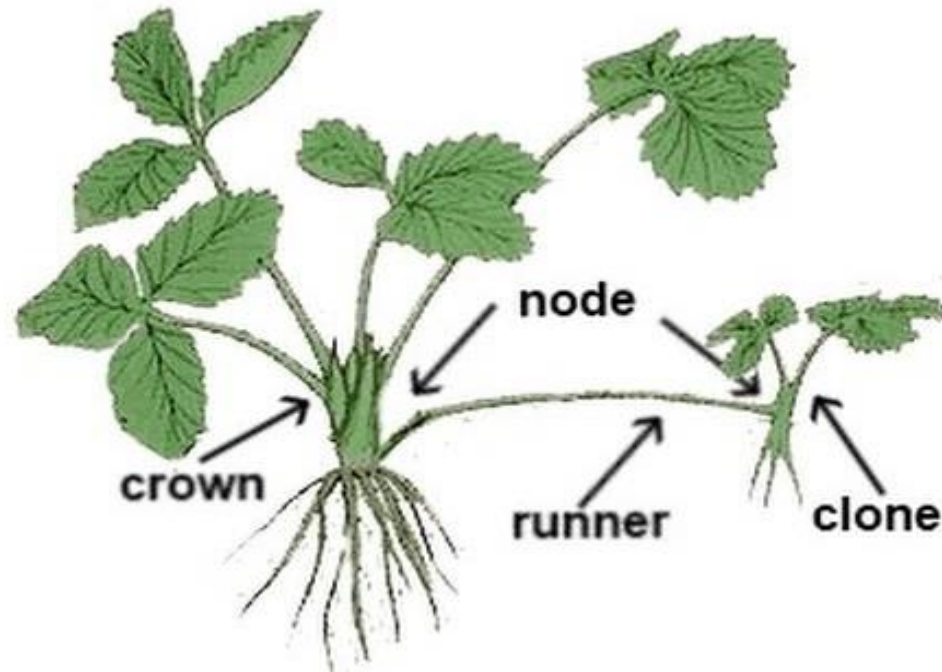
Natural Vegetative Propagation

Natural Vegetative propagation is the method of asexual propagation which occurs naturally in nature. There are several methods

- Runners
- Tubers
- Bulbs
- Plantlets
- Offsets

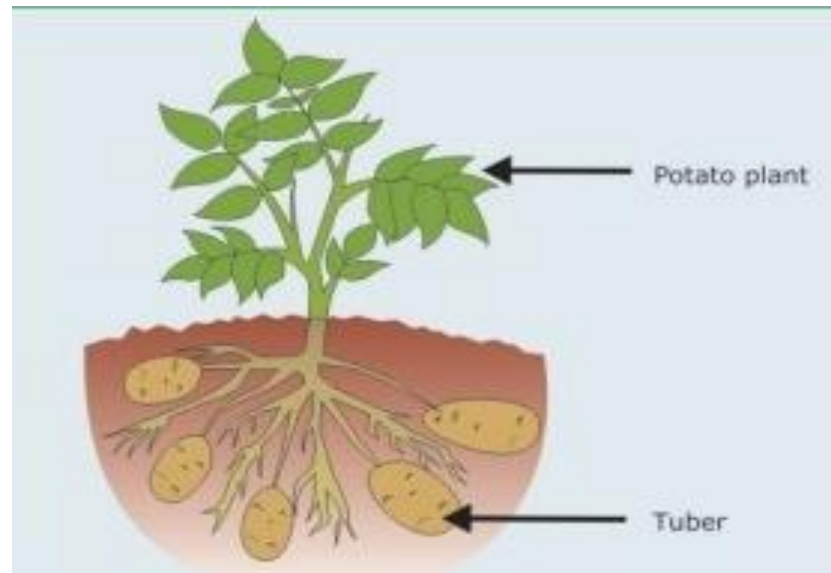
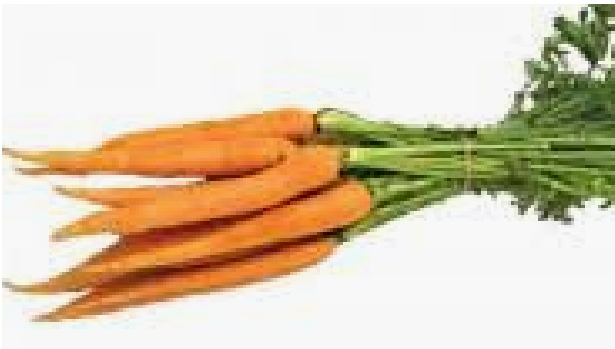
Runners

- Examples include spider plants and strawberries
- A runner is a horizontal stem that grows from the parent plant then forms a plantlet at the end.
- The plantlet can form roots and grow into new plant



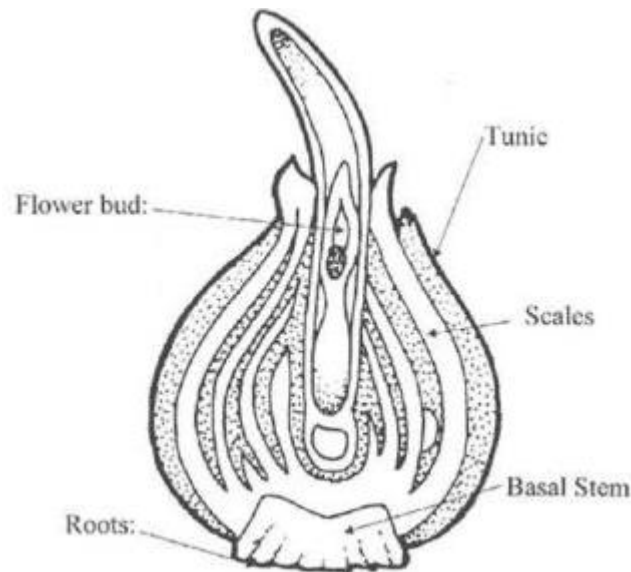
Tubers

- Examples include potatoes and carrots
- Swollen stem or root with stored food.
- Tuber can grow into new plant.
- Advantage of stored food is early growth in spring.



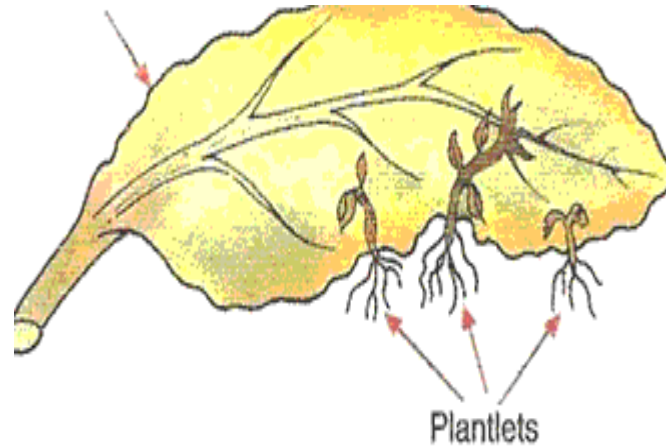
Bulbs

- Examples include daffodil and onion
- Leaf bases are swollen with stored food
- Side buds are found between leaf bases
- Side buds can develop into daughter bulbs



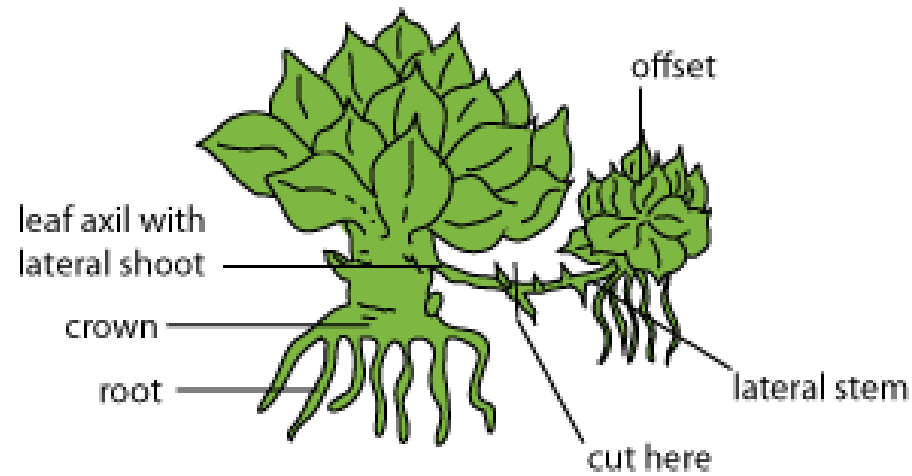
Plantlets

- Examples include a Mexican hat plant
- A plantlet is a tiny version of a plant attached to somewhere on the parent plant (e.g. on leaves)



Offsets

- Examples include mother in laws tongue and aloe vera
- An offset is a tiny plantlet that develops as a side shoot at the base of the parent plant.



Dividing a succulent



Task

- Use the information from the previous five slides and produce a table containing the following information
 - Methods of Natural Vegetative Propagation
 - Examples
- Use classroom resources to identify the advantages and disadvantages to Natural Vegetative Propagation?

Advantages and Disadvantages

Advantages of Natural Vegetative propagation include the following;

- Faster and cheaper to grow
- Advantageous traits can be maintained
- Plants produce a consistent crop

Disadvantages include;

- loss of biodiversity
- Whole crops can be lost through disease.

Artificial Propagation

Artificial propagation is when **humans make use of a plant's ability to reproduce asexually**. There are three main methods of artificial propagation:

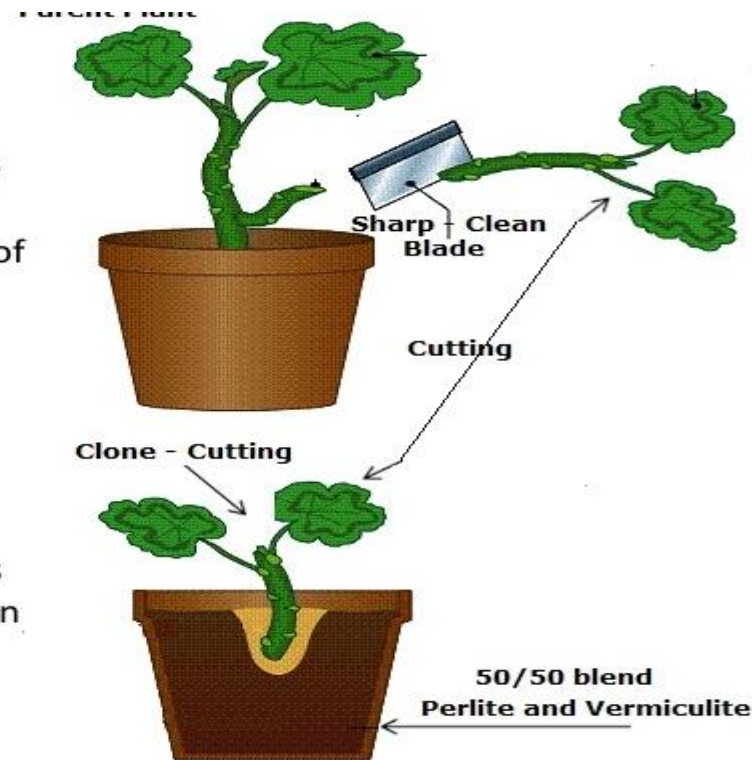
- Cuttings
- Grafting
- Layering

Cuttings

- A small section of ROOT, STEM or LEAF is cut from the plant and encouraged to form roots and grow.

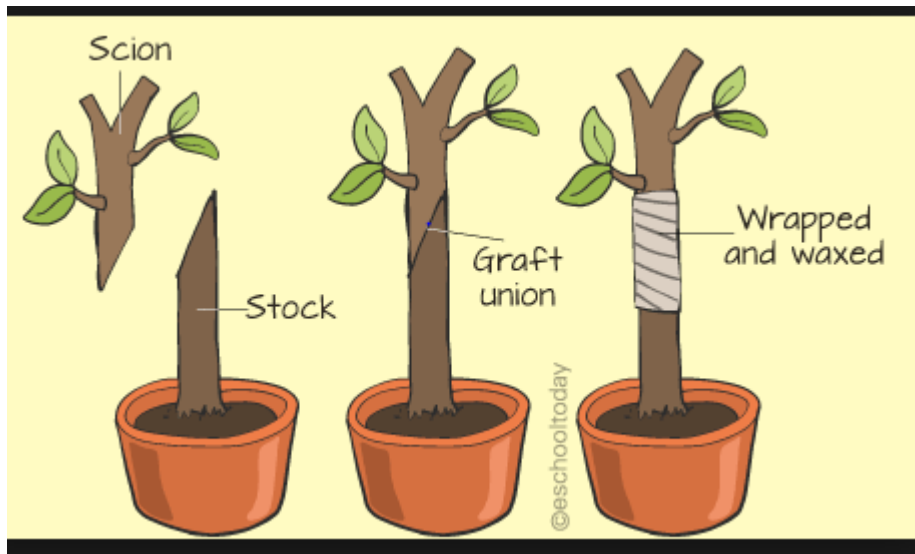
STEM CUTTINGS

- Stem cutting from healthy, disease-free plants, preferably from the upper part of the plants.
- Cutting should generally consist of the current or past season's growth.
- Remove any flowers and flower buds when preparing cutting.



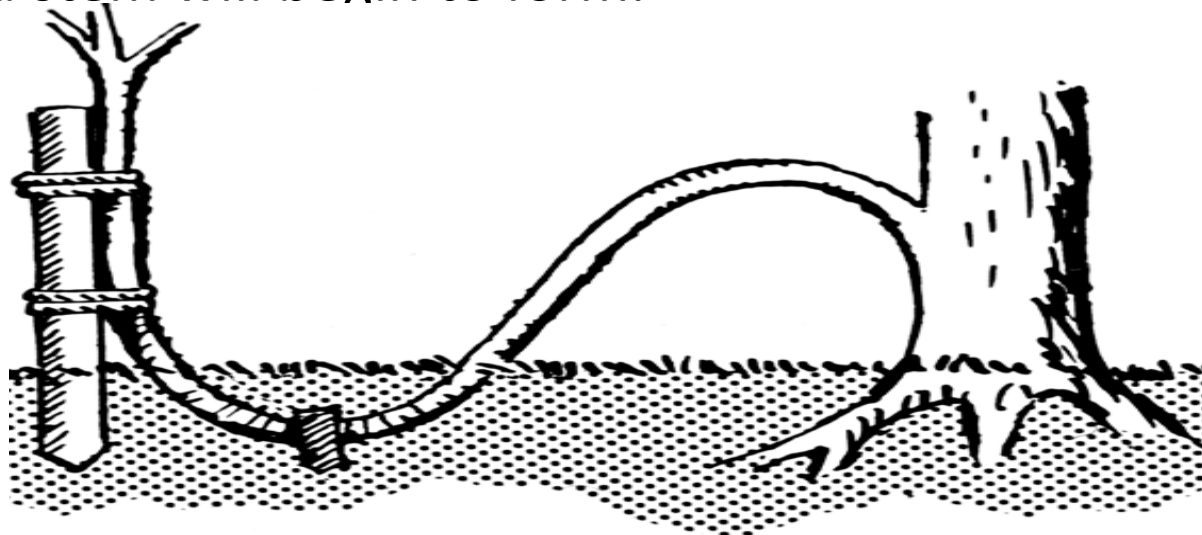
Grafting

- A part of the plant you want to grow is joined to a plant with an established root system.



Layering

- Part of the stem of the parent plant is bent and wounded so that it touches the ground and will produce roots while still attached to the parent
 - a. The stem is pulled down to the ground and a small cut is made above the node.
 - b. The stem is now pushed into the soil and pegged down.
 - c. New roots and stem will begin to form.



Advantages of Artificial Propagation

Gardeners and plant growers can:

- Get a quick method of reproduction
- Produce the exact variety required by the customer
- Get large numbers of plants from a single stock.

Revision Questions

1. What is the definition of Propagation
2. What are the advantages and disadvantages of
 - a. Sexual Reproduction
 - b. Asexual Reproduction

3. Explain the propagation techniques for the following plants

a. Potato Plant

b. Strawberry Plant

c. Onion Plant

d. Aloe Vera

e. Mexican Hat Plant

4. What are the advantages and disadvantages of natural vegetative propagation?
5. What are the advantages of Artificial Propagation?