**RATU NAVULA COLLEGE**

**YEAR 11 NOTES AND ACTIVITY 2021 – WEEK 5**

**AGRICULTURAL SCIENCE**

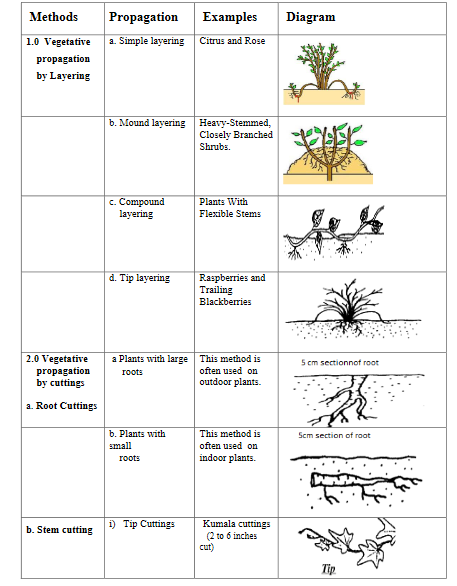
**LESSON 48**: **NATURAL AND ARTIFICIAL VEGETATIVE METHOD OF PLANT PROPAGATION**

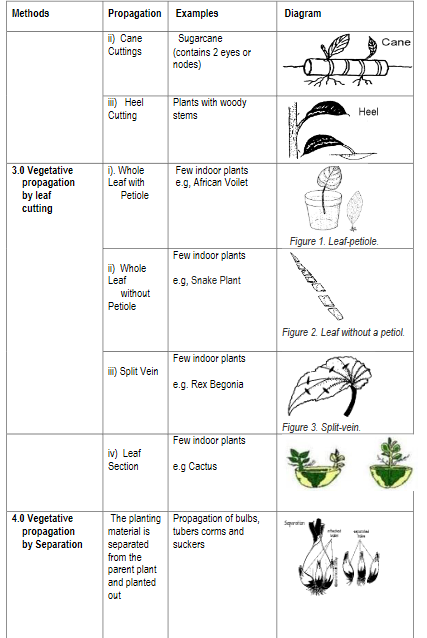
**LESSON OUTCOME**: Distinguish among and explain natural vegetative propagation and artificial vegetative propagation methods

**Natural vegetative propagation methods**

|  |  |  |
| --- | --- | --- |
| **Method** | **Propagation** | **Examples** |
| Vegetative propagation by roots | Swollen tap root  -a primary root that grows vertically downward and gives off a swollen lateral roots | Carrot, raddish, turnip |
| Adventitious root  -aerial roots that arise from a stem or trunk, penetrates the soil. | Asparagus, sweet potato, yam, dahlia etc |

**Artificial vegetative propagation methods**





**LESSON 49: MICRO PROPAGATION (TISSUE CULTURE)**

**LESSON OUTCOME**: Describe tissue culture

Protoplast – the colorless material comprising of the living part of the cell

Aseptic – free of pathogenic microorganisms

Callus culture – a growing mass of unorganized plant cells

Explant – pieces of tissue or organ removed from a plant

**What is micro propagation?**

* It is a method of producing a large number of plants from a small piece of plant tissue or cells cultured in a nutrient medium.
* The aseptic culture of plant protoplasts, cells, tissues or organs under condition which lead to cell multiplication or regeneration of organs or whole plants.

**Steps in micro propagation**

**Step 1: select planting material**

* Choose healthy plant with desired characteristics eg. Axillary bud

**Step 2: Initiation stage**

* The explant is extracted from the planting material chosen under sterile condition. The tissues are placed in a nutrient medium with disinfectant solution for a period of time. Alcohol. Bromine water, silver nitrate can be used as disinfectant.

**Step 3: Multiplication stage**

* The explant is placed in a growth medium which help to undergo rapid tissue multiplication and formation of a callus.

**Stage 4: Rooting stage**

* The callus is divided up and provided with a different growth medium to induce root formation

**Stage 5: Acclimatization stage**

* Transfer of growing plants to potting medium for growing out and hardening.

**Advantage and disadvantage of micro propagation**

|  |  |
| --- | --- |
| **Advantages** | **Disadvantages** |
| Produce large number of plants in a short time | Requires sophisticated facility / lab |
| Produce disease free plants | Requires skilled people |
| A method that use a small explant from a plant to mass produce plants | High production and maintenance cost |

**Activity**

1. Describe how tissue culture is done.
2. List three advantages of tissue culture.

**LESSON 50:**  **OVERVIEW OF LANDSCAPING**

**LESSON OUTCOME: Explain, identify the four main elements of and distinguish among the main types of landscaping.**

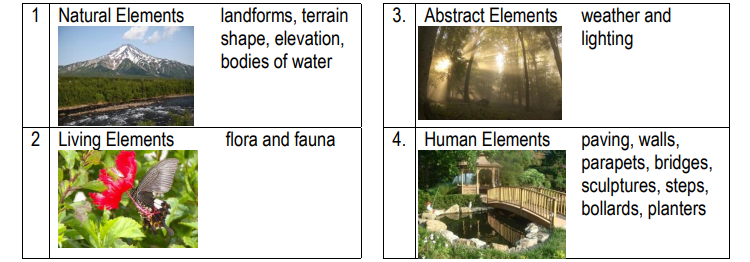


**Landscape Architecture -** the design of outdoor public areas, landmarks, and structures to achieve environmental, social-behavioural or aesthetic outcomes.

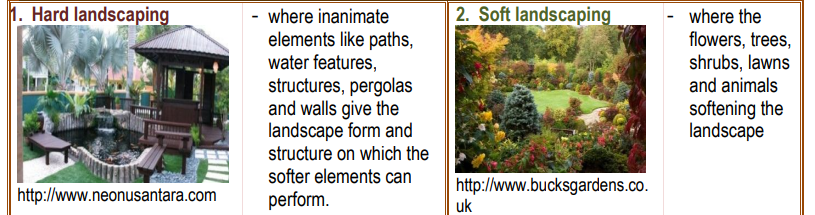
**Landscaping - any** activity that modifies the visible features of an area of land, including: living elements, such as flora or fauna

**Aesthetic -** concerned with beauty or the appreciation of beauty. Ornamental - a plant grown for its aesthetic appearance.

**The four main elements of a landscape are:**



**Landscaping is divided into two components which complement each other.**



**Types of landscaping include :**

1. **Environmental landscaping** -which is used for educational, sporting and aesthetic purposes



1. **Residential landscaping** - which is meant to improve the area to be lived in by individuals and families.



1. **Commercial landscaping** - which involves buildings used for business



**STUDENT ACTIVITY**

1. Differentiate between soft and hard landscaping.

**LESSON 51 : BENEFITS OF LANDSCAPING**

**LESSON OUTCOME: Discuss the benefits of landscaping.**

Conservation - the act of preserving, guarding, protecting or wise use

**ADVANTGES OF LANDSCAPING**

**1. Economic reasons**

a) Increases tourist revenue –tourists visit are attracted to landscaped venues and accommodation.

b) Increased property value - a well landscaped garden can increase the value of property.

c) Employment - grounds keeper, landscape planner and maintenance labourer.

1. **Life style reasons**

a) Physical exercise

b) Healthy food

c) Therapeutic – afford patients solace and tranquility and so assist in healing.

d) Privacy – shrubs, trees and buildings provide a private outdoor space for relaxation.

e) Creates outdoor rooms – the relaxed outdoor setting provides a suitable environment for learning, entertaining and exercising.

**3. Environmental reasons**

a) Protects water quality

b) Improves air quality – plants filter air of impurities.

c) Reduces noise, wind and glare – landscapes can be planned to minimise the effect of pollution including noise, wind and glare from direct and reflected sunlight.

d) Conserves energy-reduce the fluctuations in temperature and keep environment clean.

e) Haven for Wildlife-shelter for wildlife

**LESSON 52: LIMITATIONS OF LANDSCAPING**

**LESSON OUTCOME:** Discuss the disadvantages of landscaping.

**Site** - the location on the surface of the earth.

**Investment -** time, energy, or matter spent in the hope of future benefits

**Disadvantage**

1. Requires a lot of time and effort

2. Landscaping is expensive

3. An expert is required to carry out landscaping

4. Wild fire can be a hazard

5. Less attractive due to less range of species

6. hard to find native species

**STUDENT ACTIVITY**

1. Explain why landscaping can be a costly exercise.
2. Discuss the disadvantages of landscaping.