

GRADE: 8

SUBJECT:

AGRICULTURAL
SCIENCE

WEEK 2
LESSON # 2

Topic : Principles and Practices of Cultivation
Sub-Topic: Asexual Reproduction

Objectives:

Students will:

- Identify the types of asexual reproduction correctly.
- Discuss the methods of artificial vegetative reproduction with little hesitation.
- Identify the crops that can be produced under artificial vegetative means.
- Demonstrate budding and grafting with minimal guidance.

ASEXUAL REPRODUCTION

- ❑ Is the production of new plants by any other way than the planting of seed.
- ❑ Also called vegetative reproduction.
- ❑ There are two types of vegetative reproduction:
 - natural vegetative reproduction
 - artificial vegetative reproduction

TYPES OF ASESEXUAL REPRODUCTION

Natural Vegetative Reproduction

- ❑ Occurs when vegetative parts of plants produce new plants without the aid of man.
- ❑ These may be in two categories –above the ground and under the ground.

Examples of above ground crops

- ❖ Sugarcane stem
- ❖ Fallen bulbis from yams

Examples of below ground crops

- ❖ Root tubers of sweet potato
- ❖ Rhizomes of ginger
- ❖ Bulbs from onions
- ❖ Corms from eddoes

ARTIFICIAL VEGETATIVE REPRODUCTION

This type of reproduction is carried out by man.

Some fruits that can be cultivated by artificial vegetative reproduction

Examples

- ❖ Budding
- ❖ Grafting
- ❖ Layering
- ❖ Air-Layering
- ❖ Cuttings
- ❖ Tissue Culture

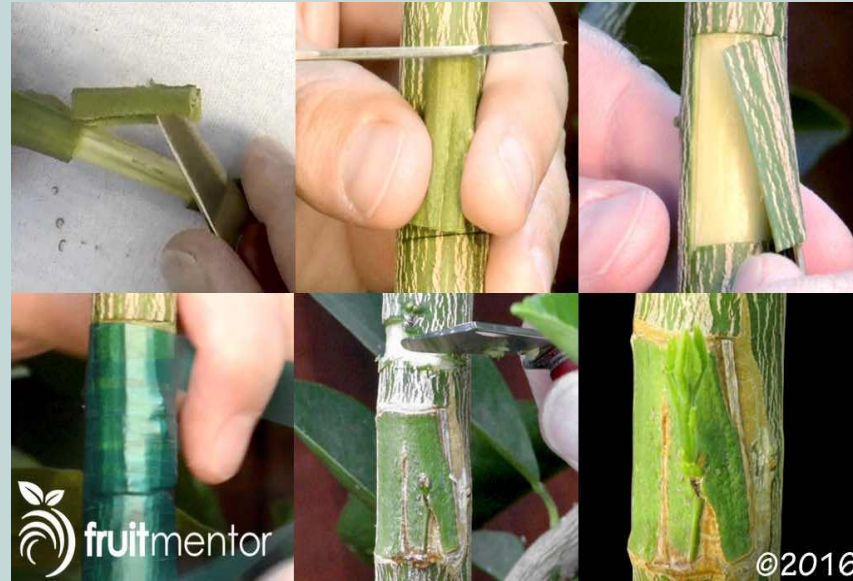


BUDDING

Budding is where the bud of a plant with desired characteristics is placed into a closely related plant which will benefit from the desired qualities of the bud e.g. citrus

Budding consists of three steps:

1. The preparation of the budwood
2. The preparation of the rootstock
3. Budding operation



BUDDING OPERATION

- the bud wood is taken from the stem before the last flush.
- after the leaves are clearly cut off the budwood is stored in a damp cloth.
- an inverted T cut is made on the rootstock at a height of 38-45cm above the ground.
- a bud is removed from the budwood and placed in the rootstock by lifting the bark and pushing the bud upwards.
- budding tape is used to wrap the union.
- after 10 to 14 days the wrap is removed, if the bud is green then it will grow.
- a rectangular patch is removed from the root stock and a similar patch is also removed from the budwood.
- the bud is placed directly on the patch of the root stock and fastened with sellotape.

GRAFTING

Grafting is the act of taking a bud or stick (scion) from a known variety of fruit and joining it with another tree, usually called a rootstock.

In grafting, the entire shoot is used.

Types of Grafting

- Grafting by approach
- Vaneer Grafting
- Cleft Grafting



GRAFTING OPERATION

-a thin long section is removed from the stock and a corresponding cut is made on the scion about 5cm long.

-at first a thin section of the bark is removed, but as the knife goes towards the root, the cut moves deeper into the stem until the end of it is about one third of a diameter.

-a transverse cut at an obtuse angle is made on the stock to accommodate the scion

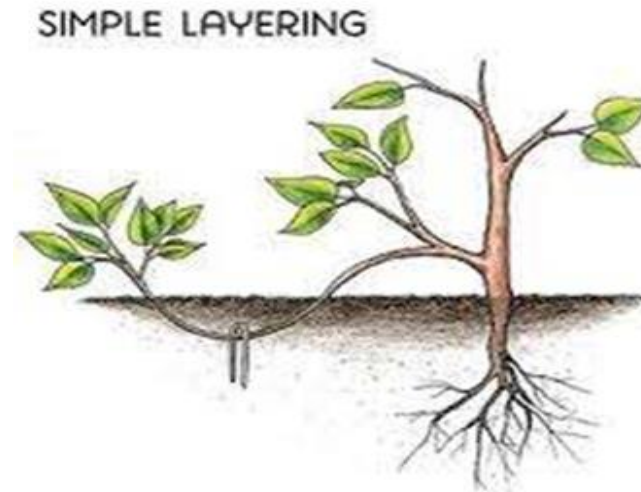
LAYERING

Layering is the development of roots on a stem which is still attached to the parent tree.

Types of Layering

- Air Layering
- Simple Layering

Simple Layering is where a soft stem is gently pulled to the ground and covered with two inches depth of soil. The soil is kept moist and root develop.



CUTTING

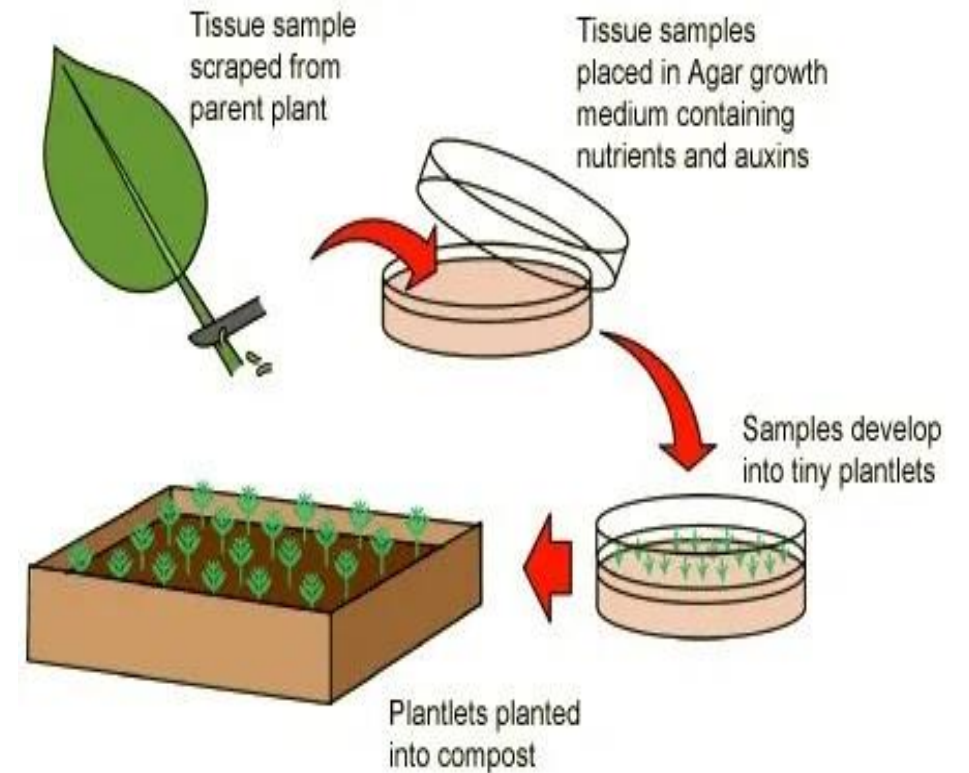
- ❑ A plant cutting is a piece of a plant that is used vegetative propagation.
- ❑ A piece of the stem or root of the source plant is placed in a suitable medium such as moist soil.



TISSUE CULTURE

□ Tissue culture involves the use of small pieces of plant tissue which are cultured in a nutrient medium under sterile conditions.

□ Using the appropriate growing conditions for each explant type, plants can be induced to rapidly produce new shoots, and, with the addition of suitable hormones new roots.



VIDEO LINKS FOR BUDDING, GRAFTING, LAYERING AND TISSUE CULTURE

<https://www.youtube.com/watch?v=adkhSOOTjMg>

<https://www.youtube.com/watch?v=PigCopBQ2CA>

<https://www.youtube.com/watch?v=6y13hYGPi8Q>

<https://www.youtube.com/watch?v=f-kg8aX0Hil>

REVIEW

COMPLETE THE WORDSEARCH

L	N	A	T	U	R	A	L	C	A
S	A	F	B	T	B	S	C	L	E
C	R	Y	V	B	U	D	U	E	V
I	T	V	E	R	D	A	T	F	E
O	I	C	P	R	D	Y	T	T	G
N	F	I	K	O	I	U	I	S	E
E	I	O	D	O	N	N	N	T	T
C	C	N	C	T	G	O	G	L	A
V	A	N	E	E	R	I	S	R	T
F	L	G	R	H	L	K	R	D	I
T	I	S	S	U	E	T	S	B	V
O	P	R	O	P	A	G	A	T	E
R	O	O	T	S	T	O	C	K	S
R	E	P	R	O	D	U	C	E	D

REPRODUCE

LAYERING

BUDDING

NATURAL

ARTIFICIAL

PROPAGATE

VEGETATIVE

CUTTINGS

ROOTSTOCK

TISSUE

BUD

SCION

VANEER

CLEFT

ROOT

REFERENCES

Book

Weever, et al (1993), Agricultural Science for Secondary Schools in Guyana, BK 2, Ministry of Education National Center for Educational Resource Development, Georgetown, Guyana. Chapter 1, pages 18-24.

Video Links

<https://www.youtube.com/watch?v=adkhSOOTjMg>

<https://www.youtube.com/watch?v=PigCopBQ2CA>

<https://www.youtube.com/watch?v=6y13hYGPi8Q>

<https://www.youtube.com/watch?v=f-kg8aX0Hil>