

Level: Forms 4 & 5

CSEC Agricultural Science Syllabus

SECTION B: CROP PRODUCTION

1. Anatomy and Physiology

Specific objective(s):

1.4 Distinguish between sexual and asexual reproduction in plants;

Artificial (propagation techniques) – layering, root cuttings, stem cuttings, budding, **grafting**, tissue culture.

1.5 Demonstrate the techniques used in plant propagation;

SBA Skill # 8:. Demonstrate plant propagation techniques;

8 (a) Budding (done in a separate lesson)

8 (b) Grafting

8 (c) Layering (done in a separate lesson)

8 (d) Cuttings (done in a separate lesson)

GRAFTING AVOCADO

var. (Pollock)

e.g. artificial asexual
plant propagation



Objective

- ▶ Define Grafting.
- ▶ Describe Crown/ Cleft Grafting.
 - ▶ List tools and materials used in Crown Grafting
 - ▶ Explain how to select and prepare scion for Crown Grafting.
 - ▶ Explain how to prepare rootstock for Crown Grafting
 - ▶ List the steps involved in Crown Grafting

What is Grafting?

- ▶ Grafting is similar to budding.
- ▶ BUT an **entire whole shoot** is used instead of a bud.
- ▶ The goal is to get the cambia of the rootstock and the scion material to fuse.



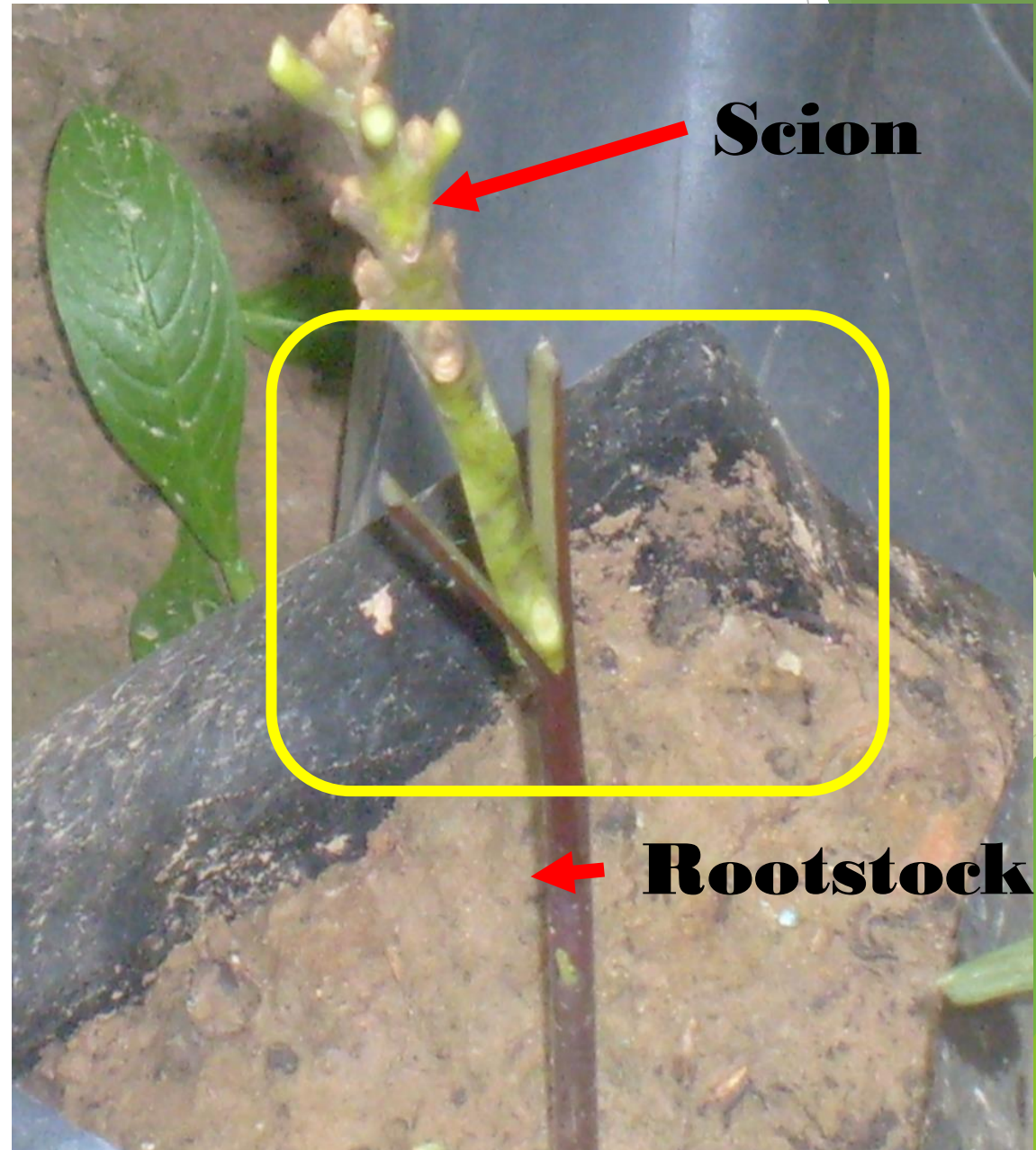
Scion



Rootstock

What is Crown/ Cleft Grafting?

- In Crown/ Cleft grafting the joining of a scion and the root stock occurs at the very top



Material and equipment



Grafting Knife



Scion



Root Stock



**Polythene strips/
grafting tape**

Safety precautions

- ▶ Ensure budding knife is handled properly and held in the correct manner to prevent injury to self and others.
- ▶ Wear protective wear at ALL times.
- ▶ Ensure all materials used are stored in a safe place after use.

How to select and prepare scion for Crown Grafting.

1. Choose a parent plant with desirable traits e.g.

- Resistance to diseases
- Produces high quality fruits
- Produces a high quantity of fruits

2. Budwood taken from the stem before the last flush

3. Remove leaves without damaging the bud

How to prepare rootstock for Crown Grafting



**Rootstock
material**

Pre-sown seed of
common avocado

AVOCADO ROOTSTOCK



- Select 3-4 month old common avocado rootstock

Root Stock

Pencil thin
stem and
purplish
brown in
colour.



The Crown Grafting Operation



Step 1

- Remove the crown of the rootstock.
 - (Cut the crown of the rootstock just under the last leaf of the young plant using a grafting knife)

The Crown Grafting Operation



Step 2

- Splice the rootstock down the middle 2cm from the top

The Crown Grafting Operation



Step 3

- ▶ Select the scion
 - ▶ Thickness of scion should be similar to the thickness of the rootstock

The Crown Grafting Operation



Step 4

- Preparing the Scion
 - Cut the base of the scion into an arrow head shape with a grafting knife.

The Crown Grafting Operation



Step 5

- Insert the prepared scion into the 2cm splice of the rootstock

The Crown Grafting Operation



Step 6

- ▶ Join the Scion onto the Rootstock

The Crown Grafting Operation



Step 7

- ▶ Securing the graft
 - ▶ Wrap grafting tape securely around the graft

The Crown Grafting Operation



Step 8

- ▶ Securing the graft
 - ▶ Tie end of tape/strip securely

Grafted Pollock Avocado



Successful union of
scion and rootstock



Successful graft - A healthy
green *Pollock* Avocado
ready for planting

EVALUATION

1. Define the term “grafting”
2. Why is the process referred to as CROWN Grafting
3. What is the difference between budding and grafting?
4. Explain the difference between scion and rootstock
5. Identify Three (3) desirable traits of a parent plant from which scion material is selected
6. Outline the steps required to produce a grafted avocado plant

Answers

1. Define the term “grafting”

Grafting is similar to budding, but an **entire whole shoot is used instead of a bud**. The goal is to get the cambia of the rootstock and the scion material to fuse.

2. Why is the process referred to as CROWN Grafting

In Crown/ Cleft grafting the joining of a scion and the root stock occurs at the very top

3. What is the difference between budding and grafting?

In budding, the scion material is a single bud, while in grafting, the scion material is a whole shoot.

Answers

4. Explain the difference between scion and rootstock

- The scion which comes from the plant with the desired qualities, will eventually grow to produce the branches, leaves, flowers, and fruit.
- The root stock is the lower portion of the plant, which produces the root system and the very bottom part of the trunk.

5. Identify Three (3) desirable traits of a parent plant from which scion material is selected

- ...

Answers

5. Identify Three (3) desirable traits of a parent plant from which scion material is selected

- Resistance to diseases
- Produces high quality fruits
- Produces a high quantity of fruits

Answers

6. Outline the steps required to produce a grafted avocado plant

1. Remove the crown of the rootstock
2. Splice the rootstock down the middle 2cm from the top
3. Select scion material
4. Cut the base of the scion into an arrow head shape with a grafting knife.
5. Insert the prepared scion into the 2cm splice of the rootstock
6. Join the Scion onto the Rootstock
7. Securing the graft with plastic tape
8. Tie end of tape/strip securely

References

Ragoonanan S. 2003. Agriculture for CSEC New Edition Revision Course. La Romaine: Caribbean Educational Publishers.

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