

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME
SEPTEMBER 2020

GRADE: 8
Science

SUBJECT: Agricultural

Week 2

Lesson # 1

Topic: Principles and Practices of Cultivation

Sub-Topic: Sexual Propagation of Crop

Objectives

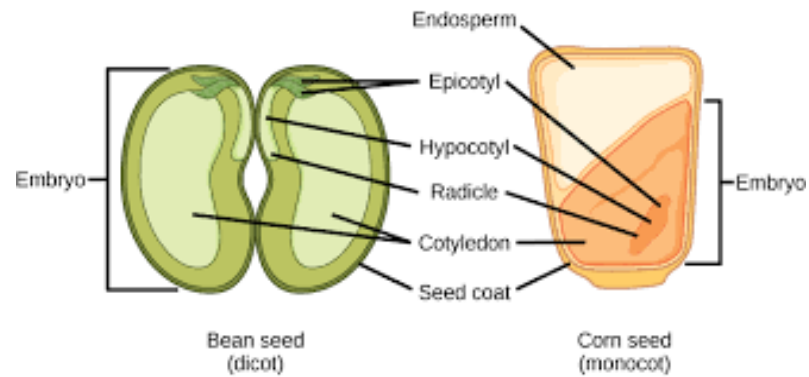
Students will:

- correctly define the concept of sexual reproduction.
- discuss the germination process with minimal guidance.
- accurately draw and label the parts of a seed.

Content

- Propagation of plants is the growing of new plants by using different plant materials.
- There are two basic types of plant propagation: sexual reproduction and sexual reproduction.
- Sexual reproduction is the process whereby seeds are used to produce new plants.
- Seed is a mature ovule which is really a young plant in the resting or dormant stage and reproduces itself when conditions are favourable.

Parts of a Seed



- The Testa which gives protection to the cotyledon and embryo in the early stages of growth.
- The Cotyledons which are seed leaves in which food materials are stored for the embryo.
- The Embryo which is made up of the young shoot or plumule and the young root or radicle.
- The Plumule or embryonic shoot which consists of a short embryonic stem extending above the attachment of the cotyledon.
- The Endosperm which is an additional storage of food in some seeds.

Germination

- Refers to the process by which a plant grows from a seed into a seedling when the conditions are right.

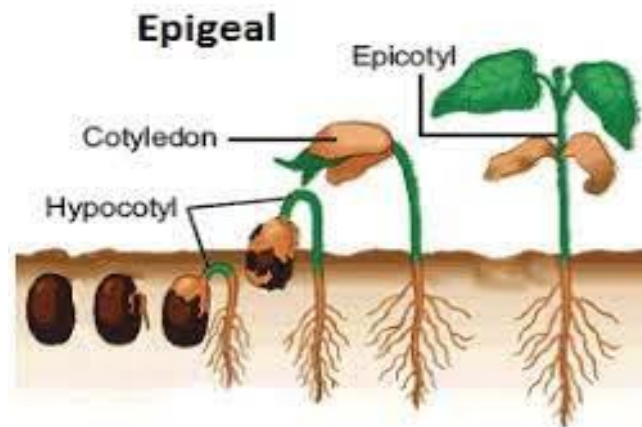


Conditions necessary for Germination

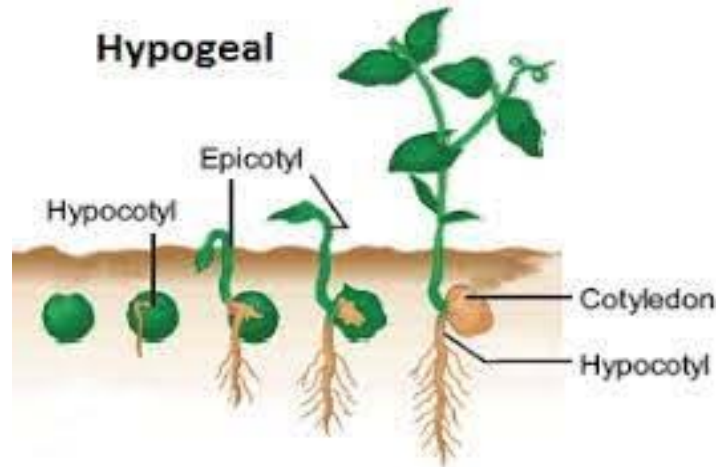
- **Moisture** is the first requirement for germination where some crops require more moisture than some, for example, cabbage require little while rice requires a lot.
- **Temperature** is another requirement. Some seeds such as corn and beans germinate in warm temperature while others such as wheat germinate in cold temperature.
- **Air** contains oxygen which seeds needs for germination. Seeds should be sown at a shallow depth especially in clay soils to receive oxygen in order to germinate.
- **Light** is necessary for the germination of some seeds. Some seeds will only germinate when brought to the surface for sunlight.

Types of Germination

- **Epigeal Germination** is where the germinated seed leaves are lifted above the ground.



- **Hypogeal Germination** is where the seed leaves are left below the ground.



Post Germination Care

- In wet seasons seedlings should be watered when necessary.
- In dry seasons seedlings should be watered twice a day.
- The soil should be stirred up at intervals to encourage aeration, infiltration and prevent crusting.
- Weeds should be hand picked since weeds compete with plants for food nutrients and sunlight.
- Pests and diseases are controlled by the application of appropriate pesticides.



Seedlings Under Shade

Hardening Off

- This is done to prepare seedlings for field conditions.
- Seedlings are watered less frequently and are exposed to the sun and rain.
- After this process, seedlings are transplanted to the field at specific spacing.



Seedlings Exposed to Sun and Rain

Video on Germination of Seed

<https://www.youtube.com/watch?v=TE6xptjgNR0>

Review

Answer the following questions

1. Crops are reproduced _____ and _____.
2. Name and describe any 4 parts of a seed.
3. Discuss the conditions that must be present for germination to take place.
4. Differentiate between Epigeal and Hypogeal germination.
5. Explain the importance of the proper selection of seeds for germination.

References

1. 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 10-15.
2. <https://www.youtube.com/watch?v=TE6xptjgNR0>