Ministry of Education
Curriculum Planning & Development Division

Level: Standard 4

Primary School Curriculum of Trinidad and Tobago

Subject: Agricultural Science

Specific objective:

2.1.1 Understand how to grow plants, employing good environmental practices.

2.2.1 Investigate the growth, development and yield of plants.

-Sequence the steps in growing plants (2.1.1) – Sowing seeds

Investigating the growth of plants

Conducting a Germination Test

Source: https://www.lovethegarden.com/uk-en/article/guide-germinating-seeds

Objectives

1) Define the term ‘germination’
2) Identify the conditions necessary for seeds to germinate
3) Conduct a germination test
4) Calculate germination percentage using the correct formula

What is Germination?

- Germination is the process by which a seed begins to sprout into a seedling.

Source: https://xvirity.com/2019/04/02/planting-with-seedling

The Conditions Necessary For Seeds To Germinate

- In order for a seed to germinate successfully, the seed must have the right conditions. These conditions are:
  - There must be adequate air
  - There must be adequate warmth
  - There must be adequate moisture
  - The embryo in the seed must be alive

Seed Selection

- Farmers usually select the best seeds with the highest quality for sowing.
- The seeds must be high in quality and should able to successfully germinate and grow
- Seeds must also be disease resistant and give high yields

Conducting a Germination Test

- A germination test is done to test how many seeds in a given batch will germinate.
- This information will guide a farmer as to how many seeds should be placed in a hole when planting.

Conducting a Germination Test – Materials Needed

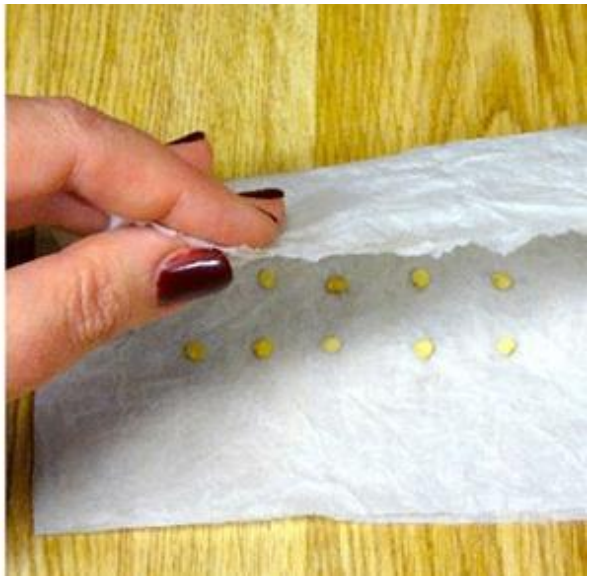
1. 25 seeds of your choice. Some examples of seeds you can use include : red bean, black eye, channa, pigeon peas.
2. 1 paper towel sheet
3. 1 zip lock bag
4. Masking tape
5. 1 Marker
6. Disposable gloves
7. Bowl with water

Conducting a Germination Test – Procedure

1. Put on protective gear – disposable gloves
2. Place paper towel in bowl with water
3. Remove paper towel and squeeze excess water until it is just damp.

Source: https://growagoodlife.com/simple-seed-germination-test/

Conducting a Germination Test – Procedure



Source: https://growagoodlife.com/simple-seed-germination-test/

4. Place seeds on one side of the paper towel with even spaces between them and fold the paper towel over to cover the seeds

Conducting a Germination Test – Procedure

Source: https://growagoodlife.com/simple-seed-germination-test/

5. Place paper towel with the seeds into the zip lock bag and seal the bag

Conducting a Germination Test – Procedure

Source: https://growagoodlife.com/simple-seed-germination-test/

6. Using the masking tape and marker, label the bag with the date and type of seeds.
7. Store in a cool dry place

Conducting a Germination Test – Procedure

8. Open the bag daily and count the number of seeds germinated (this occurs when the radicle is visible)

Conducting a Germination Test – Procedure

9. Remove the germinated seeds and record your observations in a table

10. Repeat process for 8 days.

11. Clean up materials at the end of the activity

Day	Number of seeds germinated
1	
2	
3	
4	
5	
6	
7	
8	
Total number of seeds germinated	

Conducting a Germination Test - Calculating Germination Percentage

12. Calculate the germination percentage using the formula below:

$$\text{Germination Percentage} = \frac{\text{Number of seeds germinated}}{\text{Number of seeds sown}} \times \frac{100}{1}$$

EXAMPLE :

After 8 days it was observed that 20 seeds germinated out of 25 seeds sown

$$\text{Germination Percentage} = \frac{20}{25} \times \frac{100}{1} = 80\ \%$$

The germination percentage for this batch of seeds is 80%. This means that if these seeds were planted, only approximately 80% would germinate.

WORD BANK

WORD	MEANING
Germination	The process by which a seed begins to sprout into a seedling. Return
Adequate	Sufficient Return
Resistant	Ability to withstand Return
Yield	Harvest Return

EVALUATION

1. Define the term ‘Germination’
2. Identify 4 conditions that are necessary for successful germination to occur
3. Explain the reason why a germination test is conducted.

EVALUATION

4. Calculate the germination percentage from the data below:

Total seeds sown= 30

Day	Number of seeds germinated
1	0
2	0
3	2
4	4
5	5
6	5
7	7
8	4
Total number of seeds germinated	

ANSWERS

1. Define the term ‘Germination’

Germination is the process by which a seed begins to sprout into a seedling.

2. Identify 4 conditions that are necessary for successful germination to occur

1. There must be adequate air
2. There must be adequate warmth
3. There must be adequate moisture
4. The embryo in the seed must be alive

3. Explain the reason why a germination test is conducted.

A germination test is done to test the viability of seeds in a given batch. This information will guide a farmer as to how many seeds should be placed in a hole when planting.

ANSWERS

4. Calculate the germination percentage from the data below:

Total seeds sown= 30

Day	Number of seeds germinated
1	0
2	0
3	2
4	4
5	5
6	5
7	7
8	4
Total number of seeds germinated	**27**

After 8 days it was observed that 27 seeds germinated out of 30 seeds sown

$$\text{Germination Percentage} = \frac{27}{30} \times \frac{100}{1} = 90\ \%$$

The germination percentage for this batch of seeds is 90%. This means that if these seeds were planted, approximately 90% would germinate.