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P.4SCIENCE-STUDY LESSONS SET ONE

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Dear Primary Four children, you are most welcome to Science self- study lessons.

You will study one lesson daily. Use the following references for further reading; MK Integrated Science Book 4, Baroque Integrated Science Book 4 and Comprehensive Science Book 4 .

TOPIC: GROWING CROPS

By the end of this topic, you should be able to:

1. Identify common crops people grow in their surroundings.
2. State the reasons for growing particular groups of crops.
3. Practice some crop growing practices in their gardens at home.
4. Practice the ways of caring for crops.

LESSON 1

Sub topic : COMMON CROPS:

By the end of this lesson, the learner should be able to:

1. Identify examples of common crops grown by people in their area.
2. State reasons why people grow particular crops.
3. State the groups of common crops and examples of each.

Common crops: These are crops commonly grown by people in our community.

People grow crops for different purposes.

Some crops are grown for **food** while others are grown for **sale**.

- **Food crops** are crops grown for home consumption.
- **Cash crops** are crops grown for sale.

Examples of common crops grown by people

1. Maize
2. Beans
3. Soya beans
4. Ground nuts
5. Coffee
6. Tea
7. Cotton
8. Cassava
9. Sweet potatoes etc.

Groups of common crops

Crops grown by people in our community are grouped according to their rate of maturity.

They include:

- a) Annual crops.
- b) Perennial crops.

Annual crops

Are crops which mature within a year.

When planted, they grow, flower, bear fruits and are harvested in within a year. Such plants include the following;

- Maize
- sorghum
- Peas
- groundnuts
- Tomatoes
- Cassava
- Cotton
- soya beans
- sweet potatoes etc

Groups of annual crops:

All annual crops **are similar** in a way that **they mature within a year**. However, they are different in their nature basing on some other characteristics.

Because of this, we have different groups of annual crops. These include:

- a) Cereal crops
- b) Legumes

- c) Vegetable crops
- d) Fruit crops
- e) Root crops.

a) **Cereal crops:**

- These are crops that produce grains.
- Their seeds are usually small and have one cotyledon. When planted they undergo **hypogeal germination**.
- When processed, we can get flour from them. We can then use that flour to mingle as posho or prepare porridge from it.
- Their leaves have a parallel net work venation.
- These crops are good sources of **carbohydrates** when eaten.

Examples of cereal crops

- Maize
- Sorghum
- Millet
- Wheat
- Rice
- Barley

Activity

1. Define the following terms;
 - a) Food crops
 - b) Cash crops
2. Identify any one common crop grown in your community.
3. State any one importance of crop growing in your community.
4. Why is maize regarded as an annual crop?
5. Which food nutrient is obtained from eating cereals?
6. How are cereals important in a P4 child's diet?
7. Which type of germination does a maize grain undergo?

LESSON 2

By the end of this lesson, the learner should be able to:

1. Identify examples of common crops grown by people in their area.
2. State reasons why people grow particular crops.
3. State the groups of common crops and examples of each.
4. Identify characteristics of different types of crops.

b) **Legumes**

- Legumes are crops which have root nodules on their roots.
- Their seeds undergo epigeal germination when planted.
- They store their seeds in pods.
- They are very good sources of proteins when eaten.
- The leaves of legumes have a net work venation.

Examples of legumes

- Beans
- Ground nuts
- Soya beans
- Peas
- Bambara nuts

c) **Vegetable crops:**

These are plants whose leaves or fruits are eaten as sauce.

Types of vegetable crops:

- a) Leafy vegetables
- b) Fruit vegetables.
- c) Root vegetables.

Leafy vegetables

These are crops whose leaves are eaten as vegetables

Examples of leafy vegetables:

- Cabbage
- Spinach
- Amaranthus(dodo)
- Nakati
- Bbuga
- Sukuma wich

Fruit vegetables:

These are crops whose fruits are eaten as sauce.

Examples of fruit vegetables

- Egg plants
- Bitter berries
- Tomatoes
- Green pepper

Root vegetables

These are crops whose roots are eaten as sauce.

Examples of root vegetables.

- Carrots

d) **Fruit crops**

- These are crops which provide people with fruits.
- They are good sources of vitamin C.

Examples of fruit crops

- Passion fruits
- Jack fruits
- Mangoes
- Oranges
- Grapes
- Apples

e) **Root crops**

These are crops whose roots are eaten as food.

Examples of root crops:

1. Cassava
2. Sweet potatoes
3. carrots

Perennial crops:-

These are crops which take more than a year to mature.

Examples of perennial crops

- Coffee
- Tea
- Banana
- sugar cane
- sisal

-cocoa

-pineapple

Activity

1. How are annual crops different from perennial crops?
2. Identify any one crop whose leaves are eaten as food.
3. Why are beans regarded as legumes?
4. Identify one crop whose leaves are eaten as food.
5. Why are we advised to grow food crops?
6. Identify one reason as to why coffee is regarded as a perennial crop.

LESSON 3

Sub topic : GARDEN TOOLS

By the end of this lesson, you should be able to:

1. Give examples of garden tools.
2. Identify garden tools used for different garden activities.
3. State and practice ways of caring for garden tools.

Garden tools: These are equipment farmers use for different activities in the garden.


There are different activities carried out in the garden and these include:

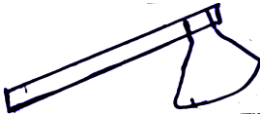
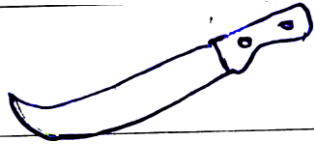

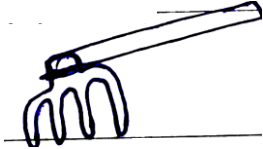

1. Digging
2. Ploughing
3. Transplanting
4. Cutting trees
5. Carrying manure
6. Collecting rubbish etc.

All those activities are carried out using different garden tools. They include:

1. pangas
2. wheel barrow
3. trowel
4. tape measure
5. secateurs
6. sickle
7. knapsack sprayer
8. rake
9. knife
10. Hoe
11. Forked hoe

Garden tools and their uses

TOOL NAME	DIAGRAM	USE
Hoe		For digging

Axe		Cutting big trees
Panga		For cutting small trees
Rake		For collecting rubbish
Forked hoe		For digging in stony areas and harrowing
Trowel		Transplanting seedlings

Care for garden tools:

Garden tools need to be cared for in order them to work for long efficiently.

This can be done in the following ways;

- Keeping them in a cool dry place to prevent them from cracking and rusting.
- Painting to prevent them from rusting.
- Repairing all the damaged parts.
- Oiling the garden tools. This also prevents them from rusting.
- Clean tools before storing them.

Activity

1. What garden tool is used by farmers to transplant seedlings?
2. Why is it advisable to keep garden tool in a cool dry place after use?
3. Draw a garden tool used to dig is rocky places.
4. How is a wheel barrow useful to a farmer?
5. What are perennial crops?

6. Suggest one activity done to care for garden tool after use.

Lesson 4

By the end of this lesson, the learner should be able to:

1. Define food path
2. State the types of food path.
3. Explain the different stages in each type.

Sub topic : FOOD PATH:

Food path are stages of food production from clearing the land up to when food is eaten.

These stages include:

1. land clearing
2. seed selection
3. planting
4. weeding
5. spraying
6. harvesting
7. transporting.
8. preparing food.
9. eating.

Types of food path.

There are three different types of food path namely;

- a) Village food path.
- b) Town food path.
- c) Earning food path.

Village food path:

This is a type of food path common in rural areas.

It occurs in places where people produce food from their gardens.

Stages in village food path.

In the village food path, the following stages occur and each of them is very important in the production of food.

- i. Land preparation.
- ii. Selecting the seeds/plant materials.
- iii. Planting.
- iv. Caring for the crops.
- v. Harvesting.

- vi. Storing.
- vii. Food preparation/cooking.
- viii. Eating.

Town food path:

This type of food path occurs in areas where people do not produce food from their gardens.

Instead, they depend on food produced by those in rural areas.

They buy this food from markets, shops or food stores.

This commonly occurs in towns/ urban areas that is why it is called **town food path**.

Stages of town food path.

1. Buying food
2. Transporting it home
3. Preparing it
4. Eating.

Earning food path:

This type of food path is common among people who earn salary after a certain period of time.

These people buy and stock their food after they have earned salary.

Stages of earning food path

1. Earning salary.
2. Buying food from shops or markets.
3. Transporting it home.
4. Storage.
5. Preparation of food.
6. Eating.

Blocks in food path:

These are the problems that hinder the production of food at a particular stage.

They are called blocks of food path because they delay or prevent the production of food at particular stages which makes the entire food path affected.

This may result into lack or scarcity of food in certain areas.

Examples of blocks in food path:

- pests and diseases
- drought.
- poor roads
- volcanic eruptions
- hail storms
- strong wind etc.

Activity

1. Define the term food path.
2. Which type of food path is practice by many people in kabasanda village?
3. Identify the first stage in the town food path.
4. What is the last stage in any food path?
5. Identify any one block of food path.
6. How do crop pests and diseases affect food production?

LESSON 5

By the end of the lesson, you should be able to:

- a. Identify the stages of food production.
- b. Identify activities done in each stage

Sub topic ; **Stages of food production**

1) Land preparation

- This is the first stage in crop growing.
- It is done in the dry season

Activities done during land preparation.

- Slashing grass
- Cutting down big trees
- Digging
- Harrowing
- ploughing

Note

- ploughing is the act of digging deep into the soil in preparation for planting.
- Harrowing is the act of breaking the large lumps of soil after ploughing.

2) PLANTING

Planting is the act of putting seeds or any other plant materials in the soil to grow into a new plants.

This is done during the rainy season.

There are two methods of planting namely;

- a) row planting methods.
- b) broad casting methods.

a) Row planting:

This is the practice of planting seeds in straight lines.

Illustration:



Examples of plants planted in rows;

- Cassava
- Maize
- Soya beans
- Ground nuts
- Banana plants etc.

Advantages of row planting

- Crops are easy to harvest.
- Weeding is made easy since there is enough spacing.
- Spacing in the lines helps to control pests.
- It prevents wastage of seeds/ plant materials.

Disadvantages of row planting

- i. It takes a lot of time.
- ii. A big space in the garden is wasted.

Broad casting method

Broad casting is the method of planting seeds by scattering.

Illustration:

Seeds that are scattered;

- Sorghum
- Simsim
- Rice
- Millet
- Wheat.

Advantages of broad casting method

- i. It is quick and easy to use
- ii. Animals can be used to cover soil in case of millet / sorghum.

iii. A big garden can be planted in a shortest possible time.

Disadvantages of broad casting

- Many seeds are used
- Some seeds may land in bad places like on rocks
- Crops are not easy to weed, spray or harvest
- It leads to overcrowding of crops

Activity

1. State any one advantage of row planting to plants.
2. Why do we transplant seedlings in the evening?
3. State any one disadvantage of broad casting method of planting to a farmer
4. Define the term harrowing.
5. Give one reason why some farmers choose to plant their crops in rows.
6. Mention one plant which can be planted using the broadcasting method.
7. Why do farmers plant crops during the rainy season?

LESSON 6

By the end of this lesson, you should be able to:

1. Define a nursery bed.
2. State reasons why some plants are first grown in a nursery bed.
3. Identify factors considered when siting a nursery bed.

Sub topic: A NURSERY BED

- A nursery bed therefore is a small piece of garden where seeds are first planted before being taken to the main garden
- Some plants are very weak when still young. Such plants need special care and attention from the crop farmer in order for them to grow into mature plants.
- To achieve this, farmers first prepare small gardens in which such plants are raised and later transfer them to the main garden after they have grown abit.

Factors considered when setting up a nursery bed.

A nursery should be put in an area:

- a) With good drainage.
- b) Near water source for easy watering
- c) Far from bushes to protect the seedlings from pests.

How to prepare a nursery bed

- i. Clear the place of weeds
- ii. Dig into the soil deeply (ploughing)
- iii. Break the soil lumps and make the surface smooth and fine using a rake (harrowing)
- iv. Apply manure and mix it well with soil
- v. Scatter or make furrows in which the seeds are able to be planted
- vi. Cover the seeds lightly with soil.
- vii. Apply some mulches
- viii. Construct a shed about one metre high
- ix. When seedlings are ready, **transplant** them using a **trowel**.

Transplanting

- Transplanting is the transfer of seedlings from the nursery bed to the main garden.
- Transplanting is done using a **trowel**.

It is done in the evening to prevent seedlings from wilting.

Advantages of a nursery bed (seedbed)

- It provides shelter for the seedlings. (protects seedlings from direct sunshine)
- Helps in proper care of seedlings before transplanting.
- Helps in proper selection of seedlings during transplanting
- Helps water to sink deeply in the soil

Hardening off

- Hardening off is the exposing of seedlings to garden conditions.
- This is done before the time of transplanting.
- It is done to enable seedlings get used to garden conditions like strong sunshine, rainfall before transplanting is done.

Activities done during hardening off

- Removing shelter
- Direct watering

Exercise

1. What is transplanting?
2. At what time of the day is transplanting recommended?
3. Why should farmers first raise seedlings in a nursery bed?
4. State any two crops whose seedlings are raised in a nursery bed.
5. Name the garden tool used to transplant seedlings.
6. Why is the garden you have mentioned suitable for transplanting?
7. Why is hardening off recommended in crop growing?

Stay home stay safe