

GRADE 4

**RATIONALIZED
AGRICULTURE AND NUTRITION**

LESSON NOTES

STRAND ONE: CONSERVING OF RESOURCES.

1.1 Soil conservation

Compost manure.

- Compost manure is rotten plant and animal waste.
- It has necessary food for growing crops.
- Crops need their food to grow well.
- They get some of their food from compost manure. Food for crops are called nutrients.
- When crops do not get some nutrients, they do not grow well.
- Compost manure is important for crops to grow well.



Materials for making compost manure.

- The following material are required for making compost manure.
 - ↪ Cut grass.



- ↪ Animal waste like dung.



↳ Kitchen wastes such as food remains, Potatoes peelings, cabbage leaves and others.



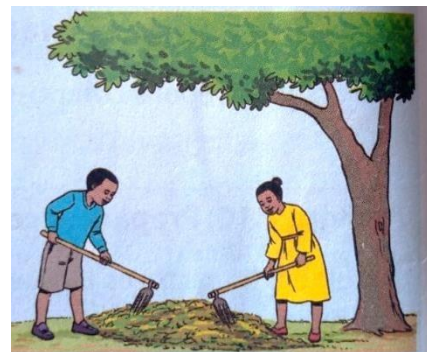
↳ Soil.

↳ Water.

↳ Ashes.

Preparing compost manure.

- Waste materials are arranged as show in the diagram below.
- Water is sprinkled on them to keep the most.
- The compost manure can be ready for use after 3 months.



Importance of compost manure in farming.

Provide nutrients for crops.

It is environmental friends (does not pollute the environment).

1.2-Water Conservation.

In farming water has the following uses:

- i. Watering plants and crops such as flowers, seedbed and growing crops.
- ii. Watering animals such as chicken, cattle, goats and sheep.
- iii. Water is used for making things like medicines, sprays etc.
- iv. Water is used in some farming machines like tractors to cool down engines.



Water conservation in Farming.

What is water conservation?

This is using less water in farm activities to avoid water wastage and keep more for future use.

What ways can we conserve water on the farm?

○ Using drip irrigation by plastic bottles.

○ Use drip irrigation by perforated pipes.

Drip irrigation allows little water to flow to the soil around the crops through perforated pipes or bottles.

It can be done using either bottles or perforated pipes.

Drip irrigation using perforated pipe.	Drip irrigation Using plastic bottles
	

Importance of drip irrigation.

- Saves water.
- Water is used conveniently as droplets drop directly to the soil with the crop.
- Reduces loss of nutrients and soil erosion.

1.3 -Fuel Conservation.

Fuel – refres to any material used to produce heat or light or both in our homes.

Examples of fuels are:

Charcoal.

Firewood.

Paraffin.

Gas.

Electricity.



There are other materials that can be used as fuels in our homes.

These materials include:

- ✧ Saw dust.
- ✧ Maize cobs.
- ✧ Cowdung.

Uses of various fuels at home.

Fuel	What we can use it for.
Firewood	Cook, heat or warm the house and provide light.
Charcoa;	Cook and provide heat or warmth in the house.
Paraffin	Cook and provide light.
Electricity	Cook, heat or warm the house and provide light.
Gas	Cook and provide light.

How do we use and conserve fuel at home?

- ✧ To conserve something is to use it without wasting it.
- ✧ Using fuel without wasting it is conserving fuel.
- ✧ We can conserve firewood abd charcoal by using jikos that use less firewood or charcoal.
- ✧ We can conserve electricity by using energy saving bulbs, and using electricity only when we need to.

How can the following fuels be conserved when in use?

Fuel	How to conserve it.
Electricity	✧ Switch off electricity whe not in use. ✧ Use energy saving bulbs and electronics.

	✧ Ensure the connection is legal and correct.
Paraffin	✧ Use paraffin saving jikos.
Firewood.	✧ Use jikos that use less fuel. ✧ Make sure you are using dry firewood that burn effectively.
Gas	✧ Ensure cooking is done in the right duration. ✧ Always monitor food being cooked using gas. ✧ Ensure no gas leakages.
Charcoal	✧ Use jikos that use less fuel. ✧ Make sure you are using dry charcoals that burn effectively.

Challenges faced when using fuels.

- ✧ Wet charcoal or firewood.
- ✧ Unstable electricity.
- ✧ Expensive fuels such as electricity and gas.
- ✧ Cutting down of tree destroying the environment.

How to keep safe when using fuels.

Do not overload electric sockets.

Check the gas cylinder and pipes to ensure they are not leaking.

Do not sleep in a closed room that had a burning charcoal jiko.

Store fuels such as paraffin and gas away from fire.

1.4 Conserving Wild Animals..

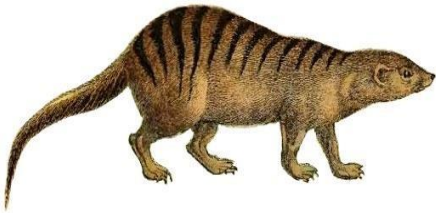
Small wild animals damaging crops and domestic animals.

Some small wild animals are able to damage crops while some attack domestic animals kept on the farm. The animals include:



	Name	Effect and Control	Photograph
1	Weaver birds	Damages the seeds of cereal crops such as maize, sorghum, rice among others. How to control. → Use scarecrows. → Time harvesting of fruits	

		→ Housing young chicks against eagles, hawks and kites	
2	Mousebird	Damages ripe fruits of guavas and tomatoes. It also feeds on leaves of bean seedlings and flowers of some crops. How to control. → Use scarecrows. → Time harvesting of fruits Housing young chicks against eagles, hawks and kites	

3	Eagle/hawk, kite	Feed on young chicks. They kill chicks and eat their flesh. How to control. → Use scarecrows. → Time harvesting of fruits → Housing young chicks against eagles, hawks and kites	
4	Squirrel	Eats grains of maize. Gnawing bark of some trees. How to control. ✧ Use safe traps to catch. ✧ Using hunting dogs to scare them away.	
5	Mole	Eating crop roots such as in sweet potatoes, sugarcane and maize. How to control. ☞ Planting sweet potatoes and cassava on the mound rather than on ridges. ☞ Keeping our farm free from weeds.	
6	Mongoose.	Kill and eat chicken. Scaring chicken. How to control. ➤ Proper housing of chicken. ➤ Rearing hunting dogs to scare away mongoose.	

7	Monkeys	They feed on crops. They eat small domestic animals such as lambs, chicken and young rabbits. How to control. 📁 Scaring them away. 📁 Using hunting dogs to scare them away. 📁 Using catapults to scare away the monkeys.	
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Making and using a scarecrow.

- The following material are used for making scarecrows.
 - ✎ Old clothes.
 - ✎ Sticks.
 - ✎ Dry grass. ✎ Caps.
- The sticks should be joined to make a cross and a structure that looks like human beings.
- It should then be covered with dry grass and old clothes used as well for the image to appear like human beings.

Digital access to information on small wild animals.

Digital devices to access information.

We can use various digital devices to access information on wild animals. These digital devices are:

- Tablets.
- Smartphones.
- Laptops. ○ Computers. ✕ With these devices we can search information on wild animals as well as storing photographs on small wild animals.

We can search and find key words on small animals such as:

- ▲ Mongoose.
- ▲ Squirrel.
- ▲ Monkey.
- ▲ Mole.

- ▲ Mousebird.
- ▲ Weaverbird.

- ✖ We can also click images to see their pictures or photographs and download them.
- ✖ After downloading we can create small folders called small wild animals and store the information in them.
- ✖ The stored pictures can also be printed and stored in photo albums.

Observing safety measures when using digital devices.

- ↪ Use the digital devices carefully.
- ↪ Avoid dropping your digital devices.
- ↪ Avoid exposing your digital devices to wet conditions as water destroys them.
- ↪ Do not put them in the fire.

Which ways can be used to reduce damage of crops and animals?

REVISION QUESTIONS.

Name the animal that eats crop roots through the ground.

Answer.

Mole.

Using safe traps.

Using hunting dogs.

Using scarecrows.

Timely harvesting.

Identify any five animals that destroy crops.

Squirrels.

Mole Rats.

Monkeys.

Birds.

Housing young chicks against
hawks and eagles



Name the animals in the photograph
above.

Answer.

Squirrel.

Which crops is being damaged by the
animal?

Answers.

Maize crop.

How can we reduce the damage of the
animal to the crops?

Answers.

Use safe traps.

Use hunting dogs.



Name the animals that is attacked.

Answers.

Chicks/chicken.

Identify the dangerous animal.

Answer.

Eagle.

How can the animals attacked be
prevented and kept safe?

Answers.

Use scarecrows.

Keep chicks or chicken in poultry
houses.

TOPIC 2 FOOD PRODUCTION PROCESSES

Fruit seed collection.

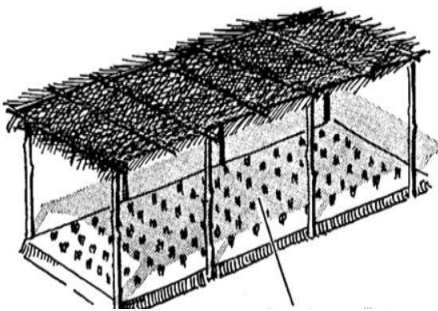
- Fruits such as guavas tree and tomatoes can be found in our garden.
- They can also be bought from fruit sellers.

Fruit seed preparation.

Seeds for planting can be prepared by:

- ~ Extract or removing from fruits such as guavas and tree tomatoes safely.
- ~ Washing and cleaning the seeds. Throw away the bad seeds since they will not grow.
- ~ Drying the good seeds in the sun.
- ~ Ensure the seeds are protected from birds.

Fruit tree nursery bed.



- 🕒 When planting seeds on container, plants few seeds in each container.
- 🕒 When planting seeds on ground nursery bed, plant them in rows.
- 🕒 Cover the seeds lightly with soil.
- 🕒 Sprinkle water on nursery bed and apply light mulch.

Nursery management practices.

The following are nursery management practices done to the seedlings before transplanting;

- ↪ Watering seeds- this prevents them from drying up.
- ↪ Removing weeds (weeding)-remove weeds to prevent competition for nutrients.
- ↪ Removing excess seedlings (thinning)-to ensure few seedlings remain to grow well.
- ↪ Apply dry grass (mulching)-to prevent evaporation of moisture /conserve moisture.

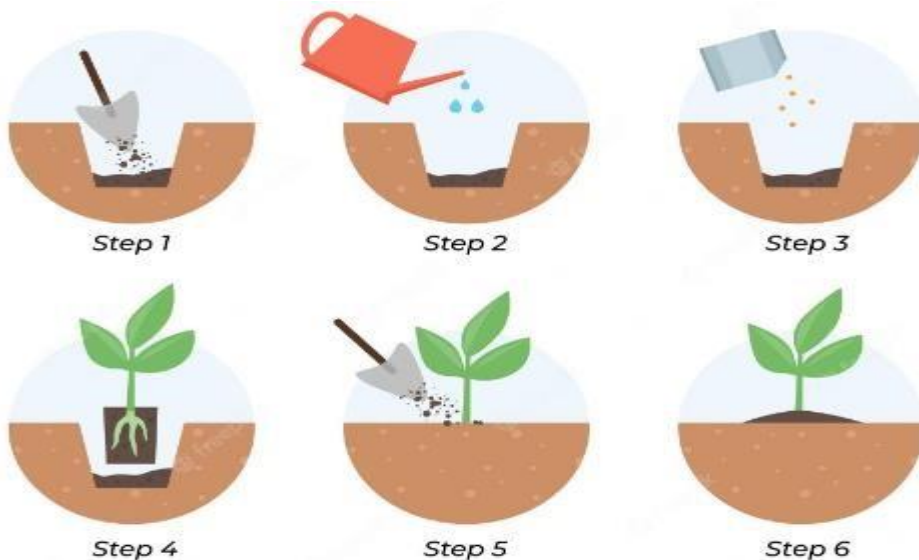
↪ Erecting a shade over the seedlings (shading)-to conserve water.

Transplanting.

- After seedlings have been grown in the nursery, they should be planted to a place where they can grow until they are mature for harvesting. This is called transplanting.
- Before seedlings are transplanted they are prepared first by:
 - Removing or reducing the shade covering them.
 - Reducing the number of watering the seedlings.
- Reducing shading enables the seedlings to be ready for the strong direct sunlight.
- The seedlings get hardened and will grow in the field or the farm.

Steps followed when transplanting seedlings.

- ✍ Dig a hole for the seedlings.
- ✍ Mix the soil with manure.
- ✍ Remove the can without damaging the roots of the seedling.
- ✍ Put the seedlings carefully in the hole at the centre.
- ✍ Hold the base of the seedling and apply soil to cover the hole. ✍ Water the seedlings.



Care for young fruit trees.

We can take care of transplanted fruit tree seedlings by:

↔ Protect against people stepping on them.

- ⇔ Planting in a fenced garden to keep of animals.
- ⇔ Watering them to supply water.
- ⇔ Mulching to prevent evaporation of moisture or to conserve water.
- ⇔ Weeding to remove weeds. This can be done by uprooting weeds.

Surplus fruit tree seedlings.

After transplanting, excess seedlings might still remain in the nursery bed.
The excess seedlings can be sold to earn money which we can use to buy tools for farming.

Conservation project. Edible crop gardening.

Care for established fruit trees.

Established fruit tree can be taken care of by:

- Weeding-this is to prevent nutrients from being used by the weeds. Weeding is done by uprooting.
- Mulching should be done to conserve water.
- Apply manure to give nutrients to the plant.
- Fence to protect the fruit tree from animals.
- Remove excess branches for the tree to grow well and bear good fruits.

Care for tree tomato plant.

Watering.

Weeding using a hoe or panga.

Fence to protect the plant against damage by animals and people.

Harvesting fruits.

Fruits are ready for harvesting when mature.

We can know the fruits are ready to harvest when:

- ↪ They start appearing brighter in colour i.e. brighter green to yellow.
- ↪ When they become soft when pressed between your fingers.

- Fruits are harvested by picking carefully.
- Avoid throwing stones and sticks at the fruits since it will damage unripe fruits.
- Wash and eat ripe fruits to get nutrients.

REVISION QUESTIONS.

Name two types of nursery beds.

[Answer.](#)

Ground nursery bed.

Container nursery bed.

The process of transferring seedlings from the nursery bed to seed is called _____ [Answer.](#)

Transplanting.

After transplanting, excess seedlings can be _____

[Answer.](#)

Sold to earn money.

Write down ways we can take care of fruit trees after planting.

Applying manure.

Watering.

Weeding.

Shading.

Fencing to keep off animals.

Mulching to conserve moisture.

Which management practices are done in a nursery to ensure seeds grow well?

[Answers.](#)

Watering seedlings.

Remove weeds (weeding)

Applying dry grass (mulching)

Remove excess seedlings (thinning)

Put up shade (shading)

Name two practices done to prepare seeds for planting.

Answers.

Reduce shading for the seedlings.

Reduce number of times of watering.

Grade four learners noticed the following in the school tree nursery.

Seedlings were overcrowded.

Some seedlings had not germinated.

Nursery had a lot of weeds.

Few seedlings were wilting

Name the practice they were supposed to carry out in the nursery.

Answers.

Seedlings were overcrowded-thinning.

Some seedlings had not germinated-gapping.

Nursery had a lot of weeds-weeding.

Few seedlings were wilting-watering/mulching.

Mulching is done to keep _____ for the plant. (water/ soil) Answer.

Water.

The practice of removing excess or overcrowded seedlings from the nursery is called _____ Answers.

Thinning.

The unwanted plants that grow around transplanted crops are called _____

Answers.

Weeds.

When we apply dry grass to the soil that has growing crops it is called _____

Answer.

Mulching.

2.2 Uses of Domestic Animals.

Types of domestic animals.

Domestic animals are animals kept at home for companionship.

There are various animals we keep at home.

- ✧ Adult female cattle is called a cow.
- ✧ Adult male cattle is called a bull.
- ✧ A young one of a cattle is called a calf.
- ✧ An adult female goat is called a nanny.
- ✧ An adult male goat is called a buck or Billy.
- ✧ A young one of a goat is called a kid.
- ✧ An adult female sheep is called a ewe.
- ✧ An adult male sheep is called a ram.
- ✧ A young one of a sheep is called a lamb.

Poultry such as chicken, ducks, turkey and goose are also kept on the farm.

A cock is a male chicken while a hen is a female chicken.

↪ Domestic animals are kept to provide us with:

Milk.

Eggs.

Meat.

Wool.

- ↪ Some domestic animals provide us with labour.
- ↪ Cattle give us milk, meat and hides.
- ↪ Goat provide us milk, meat and skins.
- ↪ Sheep can give us meat, skins and wool.
- ↪ Meat of sheep is called mutton.
- ↪ Meat of a goat is called goat meat or chevon.
- ↪ Cutting of wool from a sheep is called shearing.
- ↪ Meat of a cattle is called beef.
- ↪ Poultry animals can give us meat and eggs.
- ↪ Farm animals can give us manure. This is from the animals' waste such as cattle dung, sheep, goat and poultry droppings.

Digital access to information on domestic animals.

Information on domestic animals can be searched and found using digital devices such as computers, laptops, smartphones and tablets.

After searching over the internet, the text, images and videos can be shown to you.

Text give written information about the domestic animals.

We can store photos in albums or computes or other devices.

We can also use devices such as a flash disk or CD to store information.

REVISION QUESTIONS.

Name the things we get from the following animals.

Bull-meat and labour.

Sheep-wool and meat.

Duck-meat.

Goat-milk and meat.

Cattle-milk, meat and skin.

Chicken-meat.

Identify the
and name them.

bull

cock

nanny

following animals

cow



hen



—



buck or billy



A male sheep is called _____ while a female sheep is called _____

Answer.

Male sheep is ram.

Female sheep is ewe.

Write down the animals that help us to do work at home.

Bull or oxen.

Camel.

Donkey.

Horse.

2.3 Balanced diet

Importance of a balanced diet.

- ✧ Provides necessary energy required.
- ✧ Improves ability of the body to protect one from diseases. (Improves immunity)
- ✧ Helps in growth.

Classifying food.

Foods can be grouped as follows:

- Energy giving foods.
- Body building foods.
- Protective foods.

Energy giving foods.

- ↗ They are also called carbohydrates.
- ↗ These are foods when eaten we get energy.
- ↗ They give us energy to help in daily activities.
- ↗ Examples of energy giving foods are:

- | | |
|-------------|-------------------|
| ✖ Ugali | ✖ Yams. |
| ✖ Maize. | ✖ Sorghum. |
| ✖ Rice. | ✖ Sweet potatoes. |
| ✖ Potatoes. | |

Body building foods.

- ↗ They are also called proteins.
- ↗ They help in building the body.
- ↗ They also help to repair worn out part for example when someone is cut, body building foods are used to replace the area affect to be back to normal.
- ↗ Examples of body building foods include:

- | | |
|------------|----------------|
| ✖ Meat. | ✖ Beans. |
| ✖ Chicken. | ✖ Milk. |
| ✖ Fish. | ✖ Green grams. |

Protective foods

- ↗ They are foods that protect us from diseases.
- ↗ They are mostly fruits and vegetables ↗ They include:

- | | |
|--------------|-----------|
| ✖ Mangoes. | |
| ✖ Oranges. ✖ | ✖ Kunde. |
| Kales. | ✖ Manage. |
| ✖ Cabbages. | |

2.4 Boiling and Shallow Frying Food.

There are different methods of cooking food.

Some of the methods include boiling and shallow frying.

Other methods include baking, deep frying, grilling and roasting.

Boiling-it is done by covering food with water and then heating the food to boil until it is cooked.

Examples of foods that can be boiled include:

- ✕ Eggs.
- ✕ Potatoes. ✕ Cassava.



Shallow fry-this is method of cooking food in a small amount of oil that has been heated.

A frying pan is mostly used.

Some examples of foods that can be cooked by shallow frying are:

- ✕ Eggs.
- ✕ Chapati.
- ✕ Pancakes.



TOPIC 3 HYGIENE PRACTICES.

3.1 Personal Hygiene.

Health Practice that promote personal hygiene.

- ✖ Hand washing.
- ✖ Use of personal protective equipment.
- ✖ Use of clean water.
- ✖ Cleaning food before cooking.

3.2 Domestic Hygiene.

We clean our homes by:

- ↪ Sweeping- uses brooms to remove dust on the floor.
- ↪ Mopping- a wet mop is used to scrub on the floor to remove dust attached on the floor which cannot be removed by sweeping.
- ↪ Dust surfaces.
- ↪ Dispose refuse materials.
- ↪ Washing windows.

Items we use when cleaning home.

Long broom 	Broom 	Dust pan 
Hand brush 	Soap 	Mop 
Dustbin	Dustbin.	Floor cloth.



3.3 Cleaning Personal Protective Equipment

✖ Personal protective equipment are special clothing or equipment we wear or put on for protection.

Examples of PPEs.

- ✖ Gloves.
- ✖ Dust masks.
- ✖ Gum boots.
- ✖ Headgear.
- ✖ Overall.
- ✖ Canvas shoes.

Gloves	Dust masks	Gumboots
		
Headgears	Overall	Canvas shoes.



Cleaning personal protective equipment.

Personal protective equipment are made from different materials such as leather, plastic or canvas.

Personal protective equipment can be cleaned by:

- Washing.

- Wiping.

TOPIC 4 PRODUCTION TECHNIQUES.

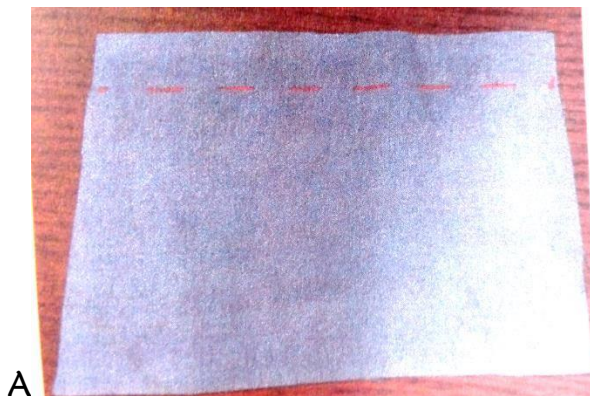
4.1 Making Tackling Stitches

Stitches can be used in various purposes.

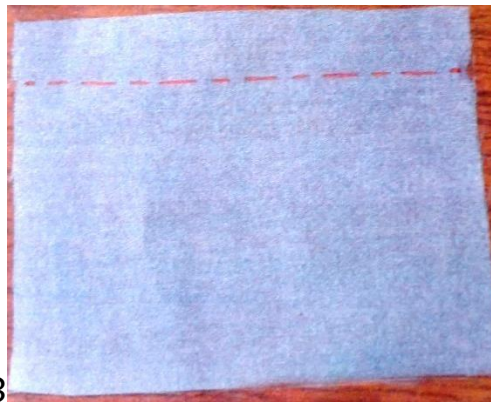
They can be used for:

- ☞ Join two fabrics during sewing.
- ☞ Repair torn areas.
- ☞ Decorate a household article or garment.
- ☞ Hold the edge of a piece of cloth to prevent threads from coming out.

There are several stitches used on clothes and household articles. One of the stitches used is tackling stitch.



A



B

- The stitches A are called even tackling stitches.
- Even tackling stitches are all of the same length as shown in A.

- The stitches in B are called long and short tackling stitches.
- Long and short tackling stitches are made of a long stitch followed by a short stitch.

Steps of threading a needle.

- Have a needle, a thread and a pair of scissors.
- Cut a piece of thread using a pair of scissors.
- Hold the needle between your thumb and index finger, with the eye of the needle pointing up.
- Put the thread through the eye of the needle. In case the thread does not go through, wet the end with some water. And repeat the process of inserting it in the needle eye.
- When the thread gets through, pull it from the opposite end.

Teacher student activity Making handkerchief.