

AGRICULTURE EXAMINATION

NOTES GRADE 4-7

Agriculture

- It is the growing of crops and the keeping of animals.
- The practice of farming including the rearing of crops and animals.

Branches in agriculture

- **Agronomy** –deals with soil management and growing of crops
- **Horticulture** – deals with cultivation of vegetables, fruits and ornamental crops.
- **Agriculture economics** – deals with farming business.
- **Agricultural engineering** – deals with knowledge of farm machines and equipment
- **Animal science** –deals with breeding and caring of animals.

Importance of agriculture

- Provides employment
- Provides food
- Provides foreign currency
- Provides raw materials eg hides
- provides fuel eg ethanol
- Provides drugs

Career / Job opportunities in agriculture

- Farm managers
- Fish farm managers
- Plant breeder
- Soil scientists
- Agricultural officers
- Teachers

- Veterinary doctors
- Land surveyors
- Plant biologists
- Food scientists
- Agronomists
- Agricultural engineers
- Wild life inspector
- Water management planner

Agricultural activities

- Weeding
- Rearing animals
- Feeding animals
- Ploughing
- Harvesting
- Pruning trees
- Watering crops and trees
- Spraying chemicals to crops
- Planting crops

FARMING SYSTEMS

Diversified farming

- It is a system of producing a variety of crops or animals on one farm.

Advantages of diversified farming

- There is better use of land
- Best use of all equipment
- Less risk of crop failure and market value of the product.
- Less risk than specialized farming
- Regular cash returns from various projects
- Soil erosion can be checked
- Soil fertility can be checked

Disadvantages

- Difficult to manage so many projects.
- Inspection is difficult
- A lot of equipment is needed.

Specialized farming

- It is when a farmer practice only one kind of farm business. Eg raising food crops or raising dairy cattle.

Advantages of specialized farming

- Easy to manage.
- Farm records can be maintained easily.
- Less equipment and labour needed
- More profitable

Disadvantages of specialized farming

- There is greater risk of loss. When there is crop failure or low market prices of the product.
- No proper use of land.
- Lack of crop rotation
- Soil fertility difficult to maintain.

Mixed farming

A system of farming which involves the growing of crops and raising of livestock.

Advantages of mixed farming

- Provides work throughout the year
- Manure from livestock can be used to improve soil fertility.
- Provide all food needs for the family.
- More profitable
- Crop products can be used to feed livestock.
- Better use of land.

Subsistence farming

- A farmer who grows crops and keeps animals for personal use or domestic use.
- The growing of crops and raising of livestock for family use only not enough for sale.

Commercial farming

The production of crops and farm animals for sale.

The three main groups of farmers in Zimbabwe are **large-scale, small scale and peasant.**

Advantages of using hand harvesting

- They are more accurate than machine harvesting.
- There is less damage to the product.
- Create more employment.
- Cheap to manage.

Advantages of using machine harvesters

- They are fast.
- Less labour is needed
- High wages for workers
- Less labour management problems

Disadvantages of using hand harvesting

- It is slow
- More labour is needed.
- More labour management problems.

Disadvantages of using machine harvesting

- Machines are expensive to buy.
- Machine are expensive to maintain
- Reduce employment.
- Damage of crops is more.

ZIMBABWE

- Is a landlocked country.
- Has five natural regions.
- Highest point is in Nyanga mountain.

- Lowest point is found between the junction of the Runde and Save River.
- Longest river is Zambezi river
- Largest lake/ dam Kariba Dam.

FARMING REGIONS IN ZIMBABWE

- Areas with high rainfall are called highvelds.
- Areas with low rainfall are called lowvelds.

Natural region one

- There is high rainfall. More than 1050mm rainfall per year.
- Suitable for forestry, fruit and intensive livestock production.
- Tea and coffee are grown in this region.

Natural region two

- High rainfall. 700 to 1050mm rainfall per year.
- Suitable for growing tobacco, maize, cotton, beans, barley, groundnuts, sorghum, and others.
- Also good for keeping cattle for meat or dairy **and** poultry.

Natural region three

- Average rainfall- 500 – 700mm rainfall per year.
- Crops grown are maize, tobacco, groundnuts, cotton and more.
- Irrigation is used in this region.

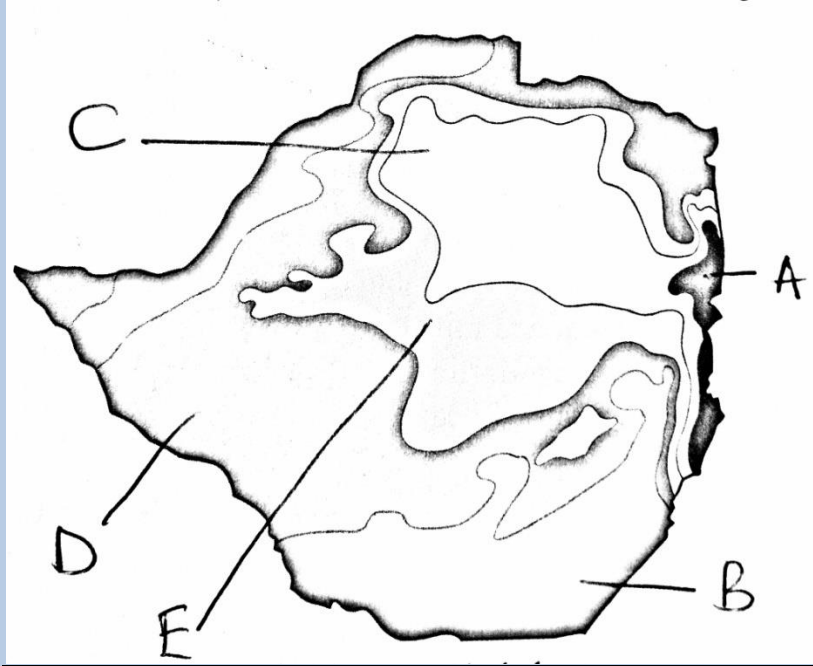
Natural region four

- Low rainfall- 450 – 600mm rainfall per year.
- Drought resistant crops are grown in this region eg millet, sorghum and sunflower. Maize, groundnuts, and round nuts are also grown.
- Irrigation is used in this region.

Natural region five

- Very low rainfall. Less than 500mm rainfall is received per year.
- Sugar cane grows well in this region.
- Irrigation is used to water crops.
- Drought resistant crops are grown.

- Cattle ranching is done.
- A lot of game parks are found in this region. Wild animals are kept in the game parks.



Natural farming region labelled above.

- A...Region one
- B.....Region five
- C.....Region two
- D.....Region four
- E.... Region Three

- Tea and coffee are grown in Chipinge and Nyanga.
- Region five is reserved for wildlife management.
- Sugarcane is grown in Chiredzi and Mkwadini.

Game parks in Zimbabwe

- Gonarezhou National Park
- Chizarira National Park
- Hwange National Park

- Mana Pools National Park
- Antelope Park
- Chimanimani National Park
- Zambezi National Park

CROPS

A plant cultivated for food or other use especially a cereal, fruit or vegetable.

CEREAL CROPS

- They are from the grass family.
- They are also called grain crops or field crops
- They are rich in carbohydrates
- Used as staple food in many countries.

CEREAL CROPS

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

PESTS

- Maize stalk borers
- Caterpillars
- Stem borers which attack millet.

CONTROL

- Use resistant varieties
- Crop rotation
- Weeding
- Raising the fertility of soil
- Use of trap crops
- Early planting
- intercropping

VEGETABLES

Vegetables and fruits are rich in vitamins.

ROOT VEGETABLES

- carrots
- onions
- potatoes
- garlic

LEAF VEGETABLES

- spinach
- cabbage
- broccoli
- rape
- kale
- Covo
- Tsunga

FRUIT VEGETABLES

- tomatoes
- pepper
- cucumber
- egg plants
- pumpkins
- butternuts

PESTS

- aphids
- nematodes
- mites

LEGUMES - they are rich in proteins and can fix out nitrogen in soil.

- Groundnuts
- Round nuts
- Beans
- Peas
- Soya beans

Legumes are used by farmers because they improve soil fertility.

Pest	Crop attacked
Dove	Sorghum and sunflower
Snout beetle	maize
Weaver bird	Sorghum and sunflower
Quail	Wheat, sorghum, millet
Semi looper	Soya bean, sunflower
Army worm	maize
Aphids	Groundnuts, wheat, sorghum
Cutworm	Soya bean ,sunflower
Stalk borer	Maize, sorghum

SOIL

SOIL TYPES

Sand soil

- has large particles
- water passes through it easily
- not fertile
- does not sticky
- roots of plants move easily
- has large particles and does not hold water.

Loam soil

- is a mixture of sand and clay soil.
- Fertile soil
- Has good drainage
- Good for most plant growth
- has a mixture of large and small particles and is the best soil for growing crops.

Clay soil

- Has small particles
- Fertile soil
- Sticks when wet
- Has poor drainage
- Plant roots move with difficulty.

- The two types of fertilizers are **Ammonium Nitrate and compound D.**
- **Manure and composite manure** are organic fertilizers.
- **Grass, leaves and dead plants** are used when making a compost.

Soil profile

- It is the arrangement of soil horizons from top to bottom.
- The way the soil particles are arranged with respect of one another. Eg top soil, sub soil, gravel soil.

Soil structure

Soil structure refers to the size distribution of sand, clay, and silt particles in the soil.

SOIL COMPONENTS

Soil is composed of components namely;

- Minerals – 45%
- Organic matter – 5%
- Air – 25%
- Water – 25%

The largest component of soil are minerals with 45% and the least is organic matter with 5%.

ORGANISMS THAT LIVE IN SOIL.

- Earthworms
- Mites
- Nematodes
- Fungi
- Ants

- Bacteria
- Protozoa
- **Plant roots, earthworms , termites ,the sun and organic matter** are agents of soil formation.
- Small organisms influence vegetation by causing faller leaves and branches to decay.

Fertile soil

- it is soil which contain all the major nutrients needed for plant growth.

Infertile soil

- It is soil without major nutrients needed for plant growth.

Plant nutrients

- **Nitrogen-** helps with the growth of plants
- **Phosphorus** – promotes growth of roots and improves quality of fruits
- **Potassium-** increases diseases resistance and formation of fruit
- Other plant nutrients are **calcium, iron, copper, manganese, sulphur and zinc.**

SMALL LIVE STOCKS

- Rabbits
- Poultry
- Sheep
- Goats

Poultry

- Chickens that are mainly kept to produce eggs are called layers.
- Chickens that are mainly kept to produce meat are called broilers.

Caring for poultry

- Provide with clean water for drinking.

- Clean its shelter.
- Houses for poultry should be secure.
- Shelter should be well ventilated.

Poultry diseases

- Newcastle
- Fowl cholera
- Coccidiosis
- Avian influenza
- Fowl pox

Rabbits

Caring for rabbits

- Provide with clean water for drinking.
- Clean its shelter.
- Houses for rabbits should be secure.
- Shelter should be well ventilated.
- Keep them in a cage.
- Separate sick ones.
- Provide a shelter with plenty space.
- Handle them with care.
- Provide with proper medical care.

Processing rabbits

- You can process your own rabbits by skinning.

Selling rabbits products

- Sell rabbit meat in village and butchereries.
- Sell rabbit breeders to other farmers.
- Sell rabbits to the processor.

Rabbits diseases

- Coccidiosis
- Tularemia

- Pasteurellosis
- Enteritis

Animal	Type of meat it provides
<i>Pig</i>	<i>Pork</i>
Cattle	beef
Sheep	mutton

Group of Animals	What they feed on	Example
Omnivores	Meat and plants	Baboon and people
Herbivores	plants and grass	Cattle and goats
Carnivore	Meat	lion and leopard

Farming budgeting

It is a plan on the amount of money and materials needed to start a farming business.

The importance of a budget

- Help calculate profit or loss.
- Help calculate cost of inputs or materials needed.
- Provide the basis for a total farm plan.
- Help to improve production.

Notes

- **Tobacco caterpillar, pod borer, aphids, thrips, termites, white grubs**, pests which mainly attacks groundnuts.
- **Wheat** is a cereal commonly grown in **winter** under irrigation.
- **Wheat, sorghum and millet** are crops are commonly attacked by quail birds.
- **Plastic and metal** are examples of litter which does not decay easily.

- The three main groups of farmers in Zimbabwe are **large-scale, small scale and peasant**.
- **cloud seeding** is the use of chemicals to produce rainfall.
- **Fodder** is food for cattle.
- Sprinklers and hosepipes are irrigation implements.
- Money used to start a business is called **capital**.

- All farm assets are recorded in the **inventory record**.

- The green colouring of leaves on plants is called **chlorophyll**.

- **Organic fertilisers** are the remains of plants, animals and insects.
Natural fertilisers.

- **Inorganic fertilisers** are made artificially. Eg compound D, Ammonium Nitrate, Compound C, Urea, Compound S and more.

- **Major dams in Zimbabwe are;**
 - Lake Mutirikwi
 - Mazvikadei Dam
 - Kariba Dam
 - Lake Chivero
 - Osborne Dam

SAFE SOURCES OF WATER.

- Spring
- Borehole
- Tap
- Covered well

UNSAFE SOURCES OF WATER.

- Dam
- River

- Unprotected well

WATER POLLUTANTS.

Water pollutants are substances that pollutes water. To pollute is to make something dirty.

These are:

- Industrial waste
- Sewage
- Agrochemicals
- Cow dung
- Fertilisers
- Dead leaves

CHANGING STATES OF WATER

States of water	Process
Liquid to solid	freezing
Solid to liquid	melting
Gas to liquid	condensation
Liquid to gas	evaporation

DEFINATIONS

Inputs

- Resources which are needed in farming production.

Inputs

- Seed
- Chemicals
- Equipment
- Food
- labour

- Fertilisers

Crop production inputs

- Seeds
- Fertilisers
- Manure
- Labour
- Equipment /tools
- Insecticides
- Land

Animal production inputs

- Stock feeds
- Pesticides / animal drugs
- Equipment

Output

- It is the products that are gained after farming business. Eg money , meat, milk, crops, eggs

Indigenous trees

These are trees which originate naturally in a particular country.

Examples of indigenous trees

- Musasa
- Mutamba
- Munhondo
- Mopani
- musawu

Exotic trees

- These are trees which originate from other countries.

Examples of exotic trees

- Mango
- Oranges
- Lemon
- Peaches
- Guava
- Paw paw
- Bananas

- Gum tree

TYPES OF TREES.

- **EVERGREEN**- These trees grow continually all year round. These are also called conifers. One example of a conifer is pine tree.
- **DECIDUOUS**- These trees shed leaves and stop growing during the dry season. One example of a deciduous tree is Musasa.

CONSERVING TREES.

THE FORESTRY COMMISSION.

- It looks at ways of protecting our trees.
- It encourages new plantations to replace felled trees.

NATIONAL TREE PLANTING DAY.

The National Tree Planting Day is the first Saturday of December.

USES OF TREES.

- Wood for firewood.
- Building poles
- Fencing poles
- Roots for medicine.
- Animals eat tree leaves.
- Fruits
- Honey
- Used as windbreaks.
- Trees are shelter for birds and other animals.
- Making paper

REASONS WHY TREES ARE DISAPPEARING FAST

- Need for land.
- Poles for building in rural areas.
- Need for firewood.

- Too many animals.
- Grass fires.

Reforestation

- Planting of trees in an area to replace those that were cut.

Afforestation

The growing of trees where there were no trees.

Deforestation

The cutting of trees without replacing them.

Deforestation often leads to soil erosion.

EFFECTS OF DEFORESTATION.

- Loss of habitats
- Increase in soil erosion
- Poor soils
- Expanding desert

Intercropping

- The growing of two or more crops on the same piece of land at the same time.
- To plant a crop in the same land with another.
- The practice of growing two or more crops together in the same land.

Advantages of intercropping

- It saves water.
- It increases yields.
- Provides cover or shade to plants.
- It reduces the growing of weeds
- Maintains soil fertility
- Reduces soil run off

Monoculture

- It is the use of land for growing only one type of crop.
- The growing of only one crop without using the land for other uses.

Disadvantages of monoculture

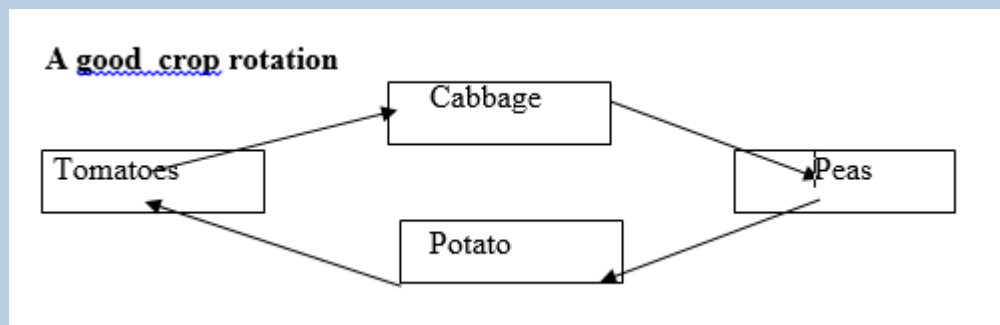
- Diseases spread more easily
- Less profitable

Shifting cultivation

- The use of land at a short period of time and abandon it for another land.
- The system in which land is cultivated temporarily, then abandoned.

Crop rotation

- The growing of different crops on the same land at a different time.
- A good crop rotation has the following ; leafy vegetable, fruit vegetable, root crop and legumes.



Advantages

- Helps to maintain soil fertility.
- Helps to control diseases.
- Helps to control weeds.
- Controls soil erosion.
- Improves soil structure.

Mulching

- The covering of soil around plants by grass, leaves plastics or any material to prevent moisture loss.
- Farmers can retain moisture in a vegetable bed by mulching.

Advantages of mulching

- Retain soil moisture.
- Provide warmth to plants.
- Prevent erosion.
- Improves soil fertility.
- Reduces growth of weeds.

Soil erosion

- The washing away of top soil by water or wind.

Agents of soil erosion

- Moving water
- Wind
- Gravity
- Moving animals

Ways of preventing soil erosion

- Add mulch
- Plant grass or trees
- Crop rotation
- Reduce over grazing
- Improve drainage

Weathering

- The breaking down of rocks into small particles to form soil.

Types of weathering

- Biological weathering
- Mechanical weathering

- Chemical weathering

Agents of weathering

- Moving water
- Wind
- Sudden temperature changes
- Growing roots
- Plant acids
- Rain
- Wind
- Rolling stones in a river bed
- Moving animals

Weather

- The state of the atmosphere at a place over a short period of time.
- It is the state of atmosphere, to the degree that it is cold or hot, wet or dry, calm or stormy, clear or cloudy.

Weather elements

- Temperature
- Humidity
- Wind speed
- Wind direction
- Rainfall

Weather elements that affect plant growth

Temperature – very high temperatures and very low temperatures.

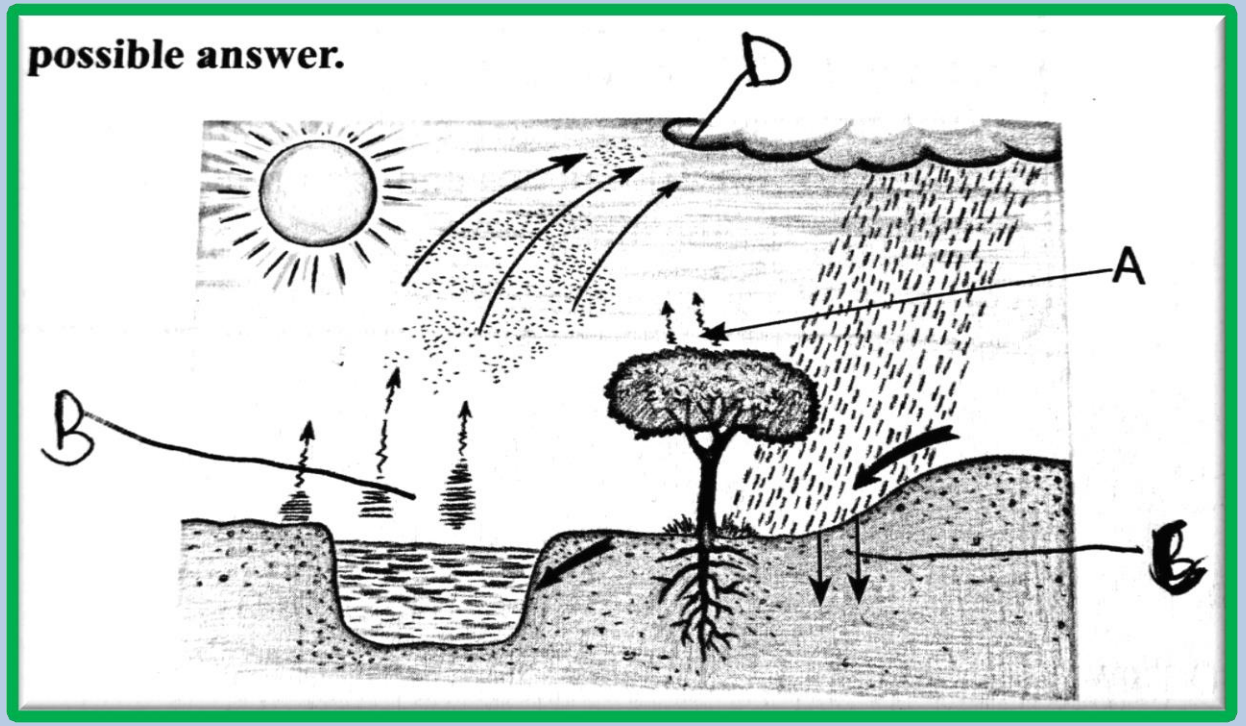
Rainfall – very low rainfall and very high rainfall.

Weather Conditions	Instrument Use to Measure It	Measured in
Temperature	Thermometer	Degrees Celsius
Wind Direction	Wind vane	

Humidity	Hygrometer	
Rainfall	rain gauge	Millimetres mm
Wind Speed	Cup anemometer	Km/ hr

Climate

- Is the statistics of weather over a long period of time.



State what is happening at points labelled.

- A transpiration
- B evaporation
- C run off
- D. condensation

Siltation

It is the filling of dams and rivers with mud caused by soil erosion.
It is the filling of dams and rivers by fine sand, clay and other materials carried by running water.

Nursery

- It is a seed bed.

- It is a place where seeds are grown to a useable size. Eg tomato nursery, onion nursery.

Humidity

The amount of water vapour or gas in the atmosphere.

Precipitation

Rain, snow or hail that falls to or condenses on the ground.

Forms of precipitation

Rain

Snow

hail

Transplanting

it is to move seedlings from a seed bed a permanent bed.

- **Evaporation** is the process whereby water change from liquid to gas.
- **Condensation** is changing from gas to liquid.
- **Runoff** is water that flows on the surface of the ground.
- **Seepage or percolation** is water which sinks into the ground.

Transpiration

The loss of water by trees through leaves.

PLANTS

Plant parts and uses

Stem

- They support the plant.
- They carry water and food to other parts.

Roots

- They absorb water and minerals from the soil to the plant.
- They support the plant.

Leaves

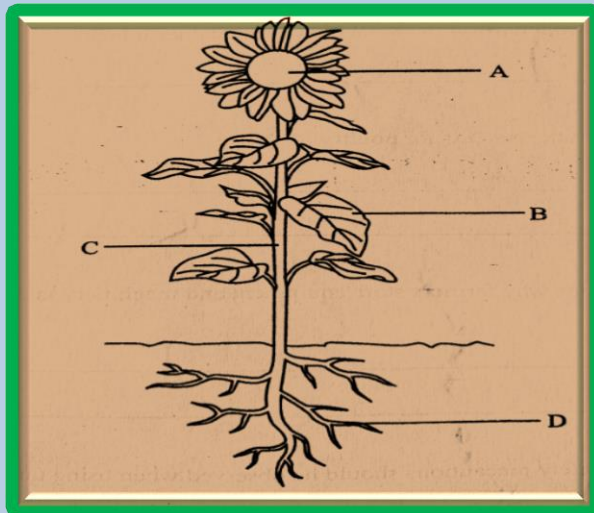
- Responsible for exchange of gasses and provide us with oxygen.

Flowers

Produce fruits.

Name the parts of the plant below:

- A. flower
- B. leaves
- C. stem
- D. roots



SEASONS IN ZIMBABWE

- There are four main seasons in Zimbabwe.
- The wettest season in Zimbabwe is during the summer season.
- The coldest season in Zimbabwe is during the winter season.
- The hottest season in Zimbabwe is during the spring season.
- The post rain season is called autumn. It is a season after summer and before winter.

Season	Period
Main Rainy Season	Dec to March
Winter	Mid May to mid August
Post Rainy Season	March to mid May
Spring	Mid August to early November

Trees and forestry

Orchard

- It is a land planted with fruit trees.
- A place where fruit trees are grown.

Orchard trees

- Oranges
- Mangoes
- Lemons
- Apples
- Bananas
- Pears
- Guavas
- Peaches
- Limes
- Grapefruits
- tangerine

Citrus fruits

- lemon
- oranges
- grapefruit
- tangerine

A good orchard site

- Plant near your home to protect from thieves and animals.
- Plant where there is water nearby.

- Plant on well drained soils.
- Plant where there is full sunlight.
- Use a fenced area.
- Plant away from buildings.

Caring of an orchard

- Water the trees regularly.
- Prune the trees annually.
- Fence the land.
- Provide trees with fertilisers or manure.
- Mulch your trees.
- Spray your trees with chemicals.

Pests and diseases

- Leaf curl disease which attacks peach trees.
- Fungal diseases.
- Fire blight attacks apples and peaches.
- Codling moth is an insect that attack fruit trees.

Farm tools and machinery

Caring of farm tools

- Clean them after use.
- Oil them.
- Keep them in a store room.
- Repair them when broken.
- Paint them.

Examples of farm machinery

- Tractor
- Combine harvester
- Cultivator
- Blower sprayer
- Aircraft sprayer
- Cotton harvester

Farm tools

- **Spade** – is used for digging, planting, hoeing, shoveling, and cutting lawn edges.
- **Rake / harrow** – is used for braking up rough soil surfaces making fine seed bed, to open and close seed drills, and to remove dead grass or leaves. Used to spread soil.
- **Hoe** – is used for digging, weeding, and raking off hoed weeds.
- **Trowel** – is used for transplanting or planting of seedlings and harvesting of carrots.
- **Watering can** – used for watering plants and spraying chemicals
- **Garden fork** – is used for digging, for compost making.
- **Pruning saw**- used for pruning
- **Sickle**_it is used to cut grass.
- **Shovel** – it is used for digging or to load bulk materials like soil or manure.
- **Knapsack sprayer** – used to spray chemicals.
- **Axe** – used to cut trees.
- **Slasher**- used to cut grass.
- **Mattock** _ is used for cutting, uprooting stumps, and digging.
- **Pick** -_used for digging.
- **Wheelbarrow**- _carrying heavy loads

Safety to consider when using agrochemicals

- Wear protective clothes whenever you use chemicals. Eg overalls, gum boots, long sleeved shirt.
- Mix pesticides outdoors.
- Mix only what you need to use.
- Avoid the spilling of the pesticide
- Do not eat when using agrochemicals
- Read the instructions before use.
- Avoid windy conditions when using agrochemicals
- Wash your hands with soap after use.

- **An agricultural activity** which causes water pollution is use of agrochemicals.

Triangle {colour}	Danger warning {meaning}
Green	Caution
Orange	Dangerous
Red	Very dangerous
Purple	Extremely dangerous

Question: You want to grow cabbages at your school garden. Two packets of seeds are needed at \$3.50 each. Two bottles of chemicals at \$8 each. Chicken manure is bought from Mr Mutali at \$5 per wheelbarrow. Two wheelbarrow are needed per bed and you are going to have ten beds. Each bed will have 20 plants. The cabbages will be sold at a dollar each.

a) How much will you need for the following items;

- i. Seeds (1)
- ii. Chemicals (1)
- iii. Manure (2)

b) Calculate;

- i. the expected expenditure (2)
- i. the expected income (2)
- ii. the expected profit (2)