PlusOne

Updated Curriculum

AGRICULTURE

GRADE 7

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Learner's Book

PlusOne

Agriculture

Grade 7

Learner's Book

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Topic

1

IMPORTANCE OF AGRICULTURE

Topic Introduction

Agriculture is the backbone of Zimbabwe's economy. Zimbabwe's economy is agriculture based therefore agriculture is important in Zimbabwe. Agriculture is the growing of crops and rearing of farm animals. In Zimbabwe, farmers grow different crops and keep different animals for home consumption and for selling. Agriculture provide food to people and animals. It also supplies raw materials to industries which are agriculture based. The selling of crops and animals to other countries brings foreign currency to the country. Since the economy of Zimbabwe is agro-based therefore many people should be involved in agriculture. In this topic, we are going to learn career opportunities in agriculture and different forms of agriculture in Zimbabwe.

Unit 1

IMPORTANCE OF AGRICULTURE

Unit Objectives

At the end of this unit, you should be able to:

(a) identify career opportunities in agriculture.
(b) describe what is involved in each career.
(c) describe the different types of agriculture in Zimbabwe.
(d) explain the farming systems.
(e) explain the importance of irrigation farming in Zimbabwe.
(f) discuss the importance of land reform to Zimbabwe.

Looking Back

In grade six, you learnt that there are five branches of agriculture namely soil science, agriculture engineering, crop production, animal production, agriculture economics, horticulture and forestry and wildlife. For farmers to realise maximum profits in agriculture, they must have the correct tools to use. The security of tools should always be guaranteed in the shed for large farm machinery and storeroom for small tools. The storerooms must have tool racks for hanging tools. Chemicals are also used to control pests, parasites, diseases and weeds. These chemicals must be used correctly to avoid poisoning. Colour codes and instructions on chemicals help farmers to know how to use the chemicals.

Key Words

Laboratory – a room for scientific researches and tests.
Career – one's occupation in life.
Irrigation – artificial supply of water to crops using canals, ditches or pipes.

Career opportunities in agriculture

There are many career opportunities in agriculture. A number of professionals are employed in this sector. The economy of Zimbabwe is agro-based, this means, agriculture is the back bone of the economy. Agriculture is an industry. It is a primary industry which produces raw materials for other industries. Many people are employed and work in agriculture.

An example of this type of farming is the production of tobacco in natural farming region 2, sugarcane growing in Lowveld areas like Chiredzi and Triangle, maize production in natural farming region 2 and 3, dairy farming, beef cattle production in natural farming region 4 and 5 and citrus fruit trees growing.


A tobacco farm

The advantages of specialised farming are:

- the farmer will develop special skills on that particular enterprise.
- high yields or outputs are obtained because the farmer and workers have skills on producing a particular product.

The farmer concentrates on producing one product and does not venture into any other farming enterprise. The biggest problem with this kind of farming is that when weather conditions are not favourable or when drought occurs, there will be total crop failure or production failure.

2. Diversified farming

This is a farming system whereby the farmer is involved into many enterprises. In other words, the farming system involves growing many different crops at the farm. The farmer does not produce one product at a time. Many different products are produced at once.

For example, the farmer may grow cotton, maize, groundnuts, sunflower, field beans, water melons and Irish potatoes at once.


A maize and groundnuts enterprise

This is very common in communal farms and commercial farms. The farming system involves also keeping different types of farm animals.

3. Mixed farming

This is a farming system whereby the farmer grows some crops and at the same time keep animals or poultry at the farm.

There are some farmers who carry out farming activities which complement each other at a farm. A farmer can produce maize at his or her farm, and also produce broilers at that same time.

Manure from broiler production is used to fertilize the soil in fields where maize will be


Crop and animal enterprise

grown, then the maize produced is used to feed the broilers.

This also helps the farmer when one area is affected by weather or natural factors, the farmer has another area to look up to.

The following are some methods which farmers use when growing crops. Sometimes it depends with the size of land a farmer has; be it crops or animal production.

(a) Monoculture

It is when a farmer grows one type of crop on the same piece of land year after year.

(b) Intercropping

This is a farming system whereby the farmer grows two or more crops in the same land. There are some farmers who grow different types of crops at the same time on the same piece of land. This is called intercropping. On a piece of land where green beans are grown, maize is also grown.

Maize and green beans grown on the same piece of land

Sometimes water melons are grown in the maize field as farmers will be trying to utilise to the fullest that piece of cultivated land.

Legume crops are usually intercropped with other crops. Cowpeas can be intercropped with maize in the same field.

(c) Intensive farming

This is a farming system where many inputs are used and there is high production. The farmer maximises land to produce crops and farm animals.

On whatever size of land covered with crops, yield will be high because there is high management. Small piece of land can be used to produce high yields. A large sum of capital or money is required in intensive farming.

An intensive farm

In intensive farming, a lot of inputs like fertilizers, seed and chemicals are used in crop production. In animal production, chemicals and feeds are needed in large quantities to raise animals either on large land or small piece of land.

Machinery is used in intensive farming and this leads to high yields or high production. The farming system requires workers who are skilled because of mechanisation which is done.

(d) Extensive farming

This is a system whereby the farmer produces less on a big farm. Farmers who practice this type of farming have very large pieces of land but produce few products.

This is usually done in animal production. Animals are allowed to move around freely and search their food.

Another example is free range system of poultry production like keeping of road runners which is done in communal areas. Few inputs are used in extensive farming.

Extensive system, sheep are allowed to roam around

(e) Crop rotation

This is the growing of different crops from different families on the same piece of land year after year. When a crop has been grown on a piece of land, that crop will not be grown again on that piece of land for the next three to four years. This practice controls weeds and pests and also improves soil fertility.

NB: *A legume crop should always be included in any crop rotation because legume crops increase soil fertility by fixing atmospheric nitrogen into the soil. The nitrogen will be left in the soil and will be used by the crop which will follow in rotation.*

Farming systems

Farmers grow crops or keep animals for either sale or family consumption. The main farming systems are shifting cultivation, commercial farming and subsistence farming.

1. Commercial farming

Soya beans and maize grown under commercial farming

This is a farming system in which the farmer grow crops and keep animals mainly for selling. It involves growing crops or keeping animals only for sale. Many workers are employed in commercial farms to provide labour.

Importance of irrigation farming

Irrigation means the artificial application of water to crops which are growing in the field or in the garden. Crops can be grown during the dry season when there is no rainfall and the crops are watered using irrigation.

In Zimbabwe, irrigation is practised in many places throughout the country. Examples of irrigation schemes in Zimbabwe are those in the Lowveld at Triangle Sugar Estate, Hippo Valley and Chiredzi. There are also many other small and large irrigation schemes in different areas of Zimbabwe.

Irrigation is important in farming in the following ways:

- Irrigation allows farmers to grow crops during the dry season and this increases crop yield.
- Irrigation improves the quality of crop produce.
- It enables the growing of crops like wheat in winter when there is no rainfall.
- Irrigation extends the growing period of crops especially at the beginning of the season, when the rains are gone and in winter dry season.
- Irrigation prevents crop failure because crops can be grown even when the rain season is short.
- Irrigation enables farmers to grow special crops like horticultural crops.
- It improves household food security because people will be always assured of harvesting crops hence availability of food.
- Irrigation ensures continuation of growing of crops that is one crop after the other even in off rainy season.

Land reform in Zimbabwe

After the Second Chimurenga in Zimbabwe, minority white farmers remained with large farms whilst black people occupied small pieces of land which was less productive. Zimbabwe started the land reform programme in the year 2000. Land reform programme refers to the process where the farms were taken from white commercial farmers and were given to black people so that they own the land.

Most of the farms, about 4 500 in Zimbabwe were owned by minority white commercial farmers. The Zimbabwean government under the late former President Robert Gabriel Mugabe saw it fit to take farms from white farmers and distribute them to Zimbabweans. The land was redistributed and given to black Zimbabwean farmers under what was known as Fast Track Land Reform Programme.

Reasons for land reform programme

The reasons why land reform programme was done in Zimbabwe were to:

- give land to landless black Zimbabwean people who are the majority people in the country.
- create employment in farms.

- de-congest people who were crowded in low rainfall rural areas where soil fertility was poor.
- increase agricultural production by giving the farmers more fertile lands and empower them.
- produce raw materials from the farms such as cotton, soya beans and maize needed in industries for processing into products.

Importance of land reform in Zimbabwe

- Land reform programme freed and liberated the black people from the dependency syndrome.
- Many black people lived in compounds without enough free space for self-development. Now they own land, they can build permanent homes.
- It contributes to the national food security as many people can now harvest their crops and sell them to national markets like GMB for the benefit of the country.
- Since many people can now grow their crops the government has less burden to feed the starving communities.
- It helped to address the imbalances as the main reason for the liberation war was the land question.

Activity 3

In groups, discuss the importance of land reform in Zimbabwe.

Exercise 3

1. Give any two types of irrigation.
2. Name any two crops that can be grown under irrigation.
3. What is the importance of irrigation to a farmer?
4. What led to the land reform programme in Zimbabwe?
5. What are the benefits of the land reform program to black Zimbabweans?

Key points in this unit

- There are many career opportunities in agriculture. Some people are skilled, semi-skilled whilst others are unskilled.
- Types of agriculture are mixed, specialised and diversified farming.
- Some workers are involved directly in agriculture whilst other contribute indirectly.
- The systems of farming are commercial, subsistence farming and shifting cultivation.
- Intensive farmers produce large outputs from a small portion whilst extensive farming uses large pieces of land.
- Irrigation is used by farmers to support crops when there is little rainfall and is also used in drier seasons and in drier parts of the country.
- Land reform programme in Zimbabwe was carried out to address the imbalances on the occupation of land which was in favour of whites.

Unit Revision Exercises

Multiple Choice Questions

1. Which of the following farming practices improves soil fertility?
   A. Intercropping **B.** Monoculture **C.** Crop rotation **D.** Extensive farming
2. _____ is a leguminous crop.
   A. Rice **B.** Carrots **C.** Beans **D.** Potatoes
3. _____ is a type of farming.
   A. Commercial farming **B.** Shifting cultivation
   C. Subsistence farming **D.** Specialised farming
4. A form of manure mainly used in shifting cultivation is _____.
   A. compound D **B.** cattle dung **C.** ash **D.** ammonium nitrate
5. The system of farming where produce is only for sale is _____.
   A. commercial **B.** shifting **C.** subsistence **D.** diversified
6. A place where animals are slaughtered for meat is called _____.
   A. butcher **B.** abattoir **C.** farm house **D.** killing place
7. Where in Zimbabwe is sugarcane grown at a large scale under irrigation?
   A. Harare **B.** Mutoko **C.** Victoria Falls **D.** Hippo Valley
8. Large farms before the land reform programme were occupied by _____.
   A. blacks **B.** whites **C.** workers **D.** politicians

Structured Questions

1. The growing of one type of crop on the same piece of land year after year is called _____.
2. Give one example of a skilled worker in agriculture.
3. Identify any two types of irrigation.
4. What is intercropping?
5. What is crop rotation?

5. Walls metal rods pins hanger tool racks

These are metal rods which are fixed on the storeroom wall and tools are put on the rods. They are used to hang tools like shoves, garden forks and spades. Handle bars are inserted into the rods of metals fixed on walls.

Activity 1

Design and make a simple tool rack using pieces of sticks for the tools that you have in your school. You can tie or join your sticks using thread or pieces of soft tying wire.

Exercise 1

1. Tools are kept in a _____.
2. Tool racks are made of _____.
3. Where do we keep farm tools when we are not using them?
4. Give one example of a tool that needs to be sharpened before use.
5. State two reasons why tools must be put on racks.
6. Name three farm tools which can be placed on racks.

Designing and keeping an inventory of farm tools

To avoid unnecessary losses, a farmer must keep a record of his/her farm tools. This stock of tools is called an inventory. In this inventory, all tools are recorded. This record indicates all kind of tools a farmer has, how many tools are there and their condition.

The tools should also be numbered. Newly bought tools must be added to the record before use. If there are any tools missing that must also be recorded quoting their numbering or labelling.

See Cheryl's inventory of her school tools. She is a student at Whitehead Primary School.

Name	Number labelled	Total	Good working	Not working	Missing
Hoes	H001 – H015	15	12	1	2
Axes	X1 – X5	5	4	0	1
Canes	C1 – C5	5	5	0	0
Slashers	S01 - S20	20	14	1	5
Picks	P1 – P8	8	7	0	1
Shovels	SH01 - SH04	4	4	0	0

Activity 2

Prepare an inventory of your school tools. You can prepare your own, following the example given above or you can design your own.

Exercise 2

1. A stock of tools on hand is known as a _____.
2. Why is it important to keep a record of farm tools?
3. What causes farm tools to go missing one after the other at a school or farm time and again?
4. From the table above (Cheryl's inventory), which digging tools does the school have?
5. The table above is an inventory (Cheryl's inventory) for a certain child, what agricultural activities do you think are done by that school?

Key points in this unit

- Tools help us to make work easier so we must take good care for them.
- Tools are stored in a store room on tool racks.
- Sharpen blunt tools, paint to prevent rust and grease or oil moving parts.
- Keep a record of tools that a farm or school has to avoid unnecessary losses.
- It is important to label or number tools so that if any tool goes missing, the individual who was assigned to it takes responsibility.

Unit Revision Exercises

Multiple Choice Questions

1. Which of the following tools is NOT kept in a store room?
   A. Rake **B.** Hand fork **C.** Garden trowel **D.** Earth mover
2. Which part of a tool do we sharpen to increase efficiency?
   A. Blade **B.** Handle **C.** Axle **D.** Needle
3. Oiling of moving parts on a tool help reduce_____.
   A. force **B.** friction **C.** rusting **D.** efficiency
4. Which material do we use if we want to make strong tools?
   A. Glass **B.** Wood **C.** Clay **D.** Steel
5. Rusting of tools can be prevented by _____.
   A. friction **B.** greasing **C.** painting **D.** racking
6. An inventory of tools does NOT show _____.
   A. number of tools **B.** condition of tools **C.** missing tools **D.** who painted the tools
7. Cutting edges of tools _____.
   A. must be blunted **B.** must be stored pointing downwards
   C. must be placed on the floor **D.** must be stored in a shed
8. Where do we expect to find garden tool racks?
   A. Shed **B.** Office **C.** Storeroom **D.** Battery cage

Unit

9

SOIL FERTILITY

Unit Objectives

At the end of this unit, you should be able to:

(a) explain how to manage soil fertility.

Looking Back

When you were in grade six, you learnt soil nutrients. Soil nutrients are those minerals which are needed with plants. Some of the soil nutrients are nitrogen, phosphorus and potassium. You also learnt that soil nutrients are supplied from organic and inorganic fertilisers. You learnt about sources of organic fertilisers as well. Some of the organic fertilisers are cattle manure, humus, compost and green manure. In this unit, you are going to learn the management of soil fertility in arable lands or crop fields.

Key Words

Inherent fertility – natural fertility found in the soil.
Legumes – crops which produces pods, which have seeds inside pods.
Crop rotation – growing different crops on the same piece of land in a cycle.
Basal dressing – application of fertiliser to crops at planting.
Top dressing – application of fertiliser to crops after germination.

Management of soil fertility

Soil fertility refers to quantity of nutrients in the soil. Different types of soils have different levels of fertility. Clay is the most fertile, followed by loam and sand is the least fertile. The fertility of the soil can be improved or enhanced using natural means or artificial. Crops take nutrients from the soil, so continous growing of crops on a piece of land reduces the amount of nutrients in the soil.

Managing soil fertility

1. Applying fertilisers (organic and inorganic fertilisers)

The fertility of the soil can be improved by putting either organic or inorganic fertilisers in crop fields or in the garden on vegetable beds. Inorganic fertilisers are made in factories,

nitrogen into nitrates in the soil for plants to use. So, legumes should always be included in any crop rotation. Crop rotation increases organic matter content into the soil as leaves from plants fall on soil and decay.

3. Liming

Lime is mostly used to control level of acids in the soil. It is used to treat acidic soil so that the soil will be suitable for crop growth. However, lime contains some trace elements such as calcium or magnesium. These are nutrients which are needed by plants. Therefore, liming indirectly helps to improve soil fertility.

Application of lime to the soil

Activity 1

Prepare a compost which measures 2m length by 1,2m width and 2m height. Materials you can use include leaves, grass, soil, water, kitchen waste and animal manure. Add that manure to the vegetables in your school garden.

4. Green manuring

Green manure refers to plants which are grown in the field and are ploughed back into the soil at flowering stage. They will rot and become manure. Farmers should grow crops which they plough back into the soil whilst they are still green. Green manuring is a good soil fertility management practice in crop fields or arable lands.

Green manure

5. Plough crop stalks or stover in the soil

After harvesting, crop stalks should be ploughed back into the soil after harvesting. The stalks will rot and become manure thereby increasing soil fertility. It is discouraged to burn crop stalks from harvested crops as doing so will reduce soil fertility.

6. Mulching

Mulching is the putting of organic matter such as grasses or crop stalks on the soil to cover it when growing crops. The materials used for mulching will eventually rot and become manure. This increases soil fertility in the field.

Mulching is done when practising conservation farming. It is used as a fertility management in field crops or garden crops.

Mulching

Materials which are used for mulching include grasses, kraal manure, wheat straw, sawdust wood shavings and dry maize stalks.

Exercise 1

1. State three ways of managing soil fertility in the soil.
2. Name two types of organic manure.
3. Which soil is the most fertile amongst the soil types?
4. Why is it important to keep the soil fertile in the garden and in the field?
5. Name three types of straight fertilisers.
6. What are compound fertilisers?
7. What is green manure?

Key points in this unit

- Soil fertility refers to the quantity of nutrients in the soil.
- Soil fertility is improved in the soil by adding inorganic fertilisers, organic fertilisers, practising crop rotation, mulching and green manuring.
- Organic fertilisers are those substances which are obtained from dead and decomposed plant and animal remains.
- Compound fertilisers are applied as basal fertilisers during planting of the seeds.
- Straight fertilisers are applied after the germination and emergency of plants or when plants are growing.
- Examples of straight fertilisers which supplies plants with nitrogen are ammonium nitrate, urea and nitrate of soda.
- Organic fertilisers are natural fertilisers.

Unit Revision Exercises

Multiple Choice Questions

1. Inherent fertility of the soil is _____.
   A. organic manure **B.** organic fertiliser **C.** inorganic fertiliser **D.** straight fertilisers
2. Agricultural lime is _____.
   A. organic fertiliser **B.** not needed in farming
   C. inorganic fertiliser **D.** compound fertiliser
3. In NPK, what does P stands for?
   A. Lime **B.** Nitrogen **C.** Potasium **D.** Phosphorus
4. Amonium nitrate is a _____ fertiliser.
   A. compound **B.** straight **C.** organic **D.** basal
5. The following are organic fertilisers except _____.
   A. kraal manure **B.** poultry manure **C.** compost **D.** urea
6. Application of fertiliser at planting is known as _____.
   A. straight fertiliser **B.** basal dressing **C.** top dressing **D.** compound D
7. The bacteria which fixes nitrogen in the soil is found in _____.
   A. leaf vegetables **B.** legumes **C.** cereals **D.** fruit vegetables

Unit

10

SOIL EROSION

Unit Objectives

At the end of this unit, you should be able to:

(a) explain the importance of conserving soil.
(b) describe methods of controlling soil erosion.

Looking Back

In grade six, you have learnt that erosion is the washing away of top soil causing gullies to form in the environment. Dongas and gullies that we see are evidence that sometime before erosion took place on that piece of land. The washing away of top soil is caused by wind or water. When top soil has been washed away, it is sometimes deposited in the dams and rivers causing siltation. When top soil has been washed away it means there is less quality soil for plant growth. Yields are also reduced because that is the same soil farmers need for crop production.

Key Words

Deforestation – cutting down of trees.
Conservation – protecting or keeping something in safe state.
Soil erosion – the washing away of top soil by wind or flowing water.
Overstocking – keeping too many animals on a small piece of land.

Importance of soil conservation

Soil conservation is the process of protecting soil from agents of erosion so that the soil remain on its place.

The soil should be safe guarded by people. People should look after the soil so that it is not washed away by flowing water or carried away by wind.

Erosion causes gullies to form in the environment. When moving around, you can easily notice that the place experienced erosion sometime before because of the degradation that is caused by water or wind.

Flowing water carries away top soil and sometimes it is deposited into dams and rivers resulting in siltation. When top soil has been washed away it means there are less nutrients in the soil for plant growth.

The agents of erosion are wind and water. If the soil is left without enough cover, wind and flowing water can carry bare soil away.

An eroded piece of land

Vegetation usually covers the soil and protects it from erosion. Plant roots prevent erosion by binding the soil particles so firm that it can not be washed away easily.

Soil is under threat from erosion. Human activities contribute much to erosion because of the following:

(a) deforestation.
(b) stream bank cultivation.
(c) cultivating down slopes.
(d) overgrazing which is usually caused by overstocking.
(e) monoculture.
(f) poorly sited roads and pathways which become eroded.

Importance of conserving soil

- Fertile top soil should be protected from soil erosion. Most plants grow on top soil so the soil must be protected from erosion.
- Soil organisms are protected and kept in the soil and these help to decompose organic matter. Most of small living organisms live in the soil, so if the soil is not protected then there will be no habitat for these micro living organisms.
- Movement of people and animals will be easier if soil is not eroded. Gullies develop of land erosion and these cause problems to transport systems and movement as they reduce or prevent movement using tractors or cars in the farm.
- Most developmental projects are carried out on the soil, so if the soil is eroded it means those places eroded will not be considered for developmental projects like road, and house construction.
- Pastures and grazing lands will be available and animals will grow well and health. If the soil is not conserved and becomes eroded, the size of grazing land and pastures is reduced. Farm animals will not have enough feed and some will die due to hunger.
- Crop field will be safe and protected. Soil erosion reduces the size of agriculture fields. This reduces yields from crops.

Ways of controlling soil erosion

- Afforestation – planting more trees to increase vegetation cover.
- Reforestation – planting trees to replace destroyed trees.
- Ploughing across slopes.
- Practising crop rotation.

4. Overstocking is not good because it leads to _____.
   A. overgrazing **B.** paddocking **C.** terracing **D.** rotation
5. Crop rotation _____.
   A. helps reduce erosion **B.** intensifies erosion
   C. creates erosion **D.** encourages erosion
6. How do trees prevent erosion?
   A. They take nutrients from the soil. **B.** Tree roots bind the soil.
   C. Tree leaves cause land pollution. **D.** Small organisms live in the soil.
7. When soil is washed away what is likely to happen to dams?
   A. Weathering **B.** Erosion **C.** Melting **D.** Siltation
8. People who cultivate stream banks must _____.
   A. clear more land there to get more yields
   B. be ignored
   C. given stiff penalties
   D. be encouraged
9. Soil erosion is increased by _____.
   A. removing vegetation cover **B.** planting cover crops
   C. adding organic matter in the soil **D.** applying lime in the field

Structured Questions

1. Give two causes of soil erosion.
2. State three reasons why it is important to conserve the soil.
3. State three ways of controlling soil erosion.
4. Give two effects of soil erosion which occurs when soil is not conserved.
5. How does shifting cultivation promote erosion?
6. Why is it important to educate people of the causes and control of erosion?

17. Name any one drought tolerant crop.
A. Sugarcane B. Rice C. Groundnuts D. Sorghum
18. What instrument is used for measuring rainfall?
A. Rain gauge B. Thermometer C. Wind vane D. Watering cane
19. Wildlife management is reserved for natural farming region _____.
A. 1 B. 3 C. 4 D. 5
20. What unit is used for measuring rainfall?
A. Millimetre B. Degrees celsius C. Centimetre D. Litres
21. Climate change is caused by _____.
A. wild animals B. deforestation C. heavy machinery D. minimum tillage
22. In Zimbabwe, the post rain season is _____.
A. November to February B. March to April
C. July to September D. after December
23. Give one example of a man-made source of water.
A. River B. Aquifer C. Borehole D. Spring
24. Which agricultural project requires a lot of water for it to be successful?
A. Piggery B. Cotton production
C. Erecting perimeter fence D. Wood carving
25. Which of these crops is produced under market gardening?
A. Macadamia B. Cotton C. Maize D. Cucumber
26. Which fuel do we get from sugarcane?
A. Petrol B. Paraffin C. Petrol D. Ethanol
27. What are farmers encouraged to do when there is too little rainfall, in one of the seasons?
A. Stop growing crops that season. B. Choose drought tolerant varieties of crops.
C. Grow any crops. D. Sell everything and change your focus.
28. Which of these is an ornamental plant?
A. Soya beans B. Rose C. Blood wood D. Witch weed
29. Where in Zimbabwe are these estates common?

A. Kariba B. Triangle C. Victoria Falls D. Matopo
30. Solar energy comes from _____.
A. water B. panels C. batteries D. sun
31. Soil conservation is done to protect the soil from _____.
A. sunburn B. rainfall C. erosion D. cold
32. _____ does not decompose to form plant nutrients.
A. Glass B. Leaves C. Insects D. Grass
33. In which natural farming region do we find Chirinda forest?
A. Region 1 B. Region 2 C. Region 3 D. Region 4

34. One example of a straight fertiliser is _____.
A. compound D B. compound L C. compound S D. ammonium nitrate
35. Which one of these small animals destroy the farmer's crop?
A. Mouse B. Lizard C. Chameleon D. Scorpion
36. The occurrence of _____ leaves gullies in the environment.
A. weathering B. erosion C. decomposition D. pollution
37. The last horizon of the soil profile going down is the_____.
A. parent rock B. top soil C. sub-soil D. weathered rock
38. Soil pollutants come from all these except _____.
A. mines B. industries C. farms D. kraals
39. Which soil type has the highest water retention capacity?
A. Clay B. Loam C. Sand D. Gravel
40. Growing different types of crops in a cycle on different pieces of land is _____.
A. intercropping B. crop rotation C. mono cropping D. mixed farming
41. Using high capital and labour on a small piece of land to produce high yields is _____.
A. free range B. intensive farming
C. extensive agriculture D. agribusiness
42. What percentage is inorganic matter in the soil?
A. 5 B. 25 C. 25 D. 45
43. Tied ridging is done to _____.
A. conserve moisture B. prevent erosion
C. prevent pollution D. prevent leaching
44. Rubbing soil between fingers is done to test for _____ of the soil.
A. texture B. structure C. colour D. type
45. Which one is not a use of micro-organisms in the soil?
A. Decomposing plant and animal remains.
B. Improving aeration.
C. Leaf eating on our crops.
D. Improving drainage.
46. Weathered rock is a layer on the soil profile which is also known as _____.
A. top soil B. sub-soil C. gravel D. parent rock
47. What dissolves nutrients in the soil?
A. Microorganisms B. Aeration C. Mineral content D. Water
48. Climate change can be controlled if we _____.
A. clear vast pieces of land for farming
B. cut down more trees
C. use fire to clear grass and trees in velds
D. grow a lot of trees
49. The following contribute to biological weathering except _____.
A. animal movements B. small organisms
C. root action D. temperature changes
50. How can the structure of the soil be improved?
A. Adding moisture. B. Adding compound D.
C. Adding straight fertilisers. D. Adding organic matter.

Paper 2: Structured Questions

[2 hours 30 minutes]

This is a structured short answer type paper. This paper is marked out of 50. It consists of two sections namely Section A and Section B.

Section A

This section consists of 6 compulsory short questions from key concepts of the syllabus, each question carries five marks.

1. (a) State two reasons why it is important to read instructions on agrochemical containers is _____ and _____. [2]
   (b) Give three examples of professionals in agriculture. [3]
2. (a) Why is sugarcane grown under irrigation in Chiredzi? [1]
   (b) Explain the following types of farming;
   (i) Diversified farming. [2]
   (ii) Specialised farming. [2]
3. (a) Give two examples of protective clothing to be worn when applying agrochemicals. [2]
   (b) How did black Zimbabweans benefit from the land reform programme? [3]
4. (a) In which natural farming regions do we find these places?
   (i) Harare. [1]
   (ii) Beitbridge. [1]
   (b) What agricultural activities are done in the following regions? Give one.
   (i) Region 1. [1]
   (ii) Region 3. [1]
   (iii) Region 5. [1]
5. Give five causes of soil pollution. [5]
6. (a) One form of organic matter is _____. [1]
   (b) Define the following terms;
   (i) Compound fertiliser. [2]
   (ii) Straight fertiliser. [2]

Section B

In this section, three questions are set from key concepts of the syllabus. Candidates answer 2 questions. Each question carries 10 marks. Section total is 20 marks.

1. (a) Define the term climate. [2]

   (b) Complete the table below.

Climatic condition	Disasters
_____	floods
Too high temperature	_____
_____	frost
Too low rainfall	_____

   [4]

   (c) Give any four effects of climate change. [4]

2. (a) What are the four causes of soil pollution? [4]

   (b) Identify four effects of soil pollution. [4]

   (c) Suggest two ways of controlling soil pollution. [2]

3. (a) Give any two-alternative forms of fuel that can be used in place of firewood. [2]

   (b) Organic matter is useful in the soil in that it _____ and _____. [2]

   (c) The downward movement of dissolved nutrients from top soil to horizons underground is known as _____. [2]

   (d) Suggest four ways of controlling erosion. [4]

Topic

5

PLANTS

Topic Introduction

Plants are important in an ecosystem. Plants are major source of food for living organisms such as animals and people. This is so because plants are able to use sunlight energy to make their own food. In turn, other living organisms like insects, animals and people eat plant parts to get nutrients from food made by plants. Plants also release oxygen into the atmosphere which animals and people breathe. For plants to grow, different parts on plants carry out different functions. In this topic, functions of plant parts are going to be highlighted.

Unit

14

PLANT STRUCTURE

Unit Objectives

At the end of this unit, you should be able to:

(a) state the functions of leaves on plants.
(b) list functions of roots on a plant.
(c) explain functions of a stem on a plant.
(d) state functions of flowers on a plant.

Looking Back

The way in which plant parts function are inter related. The parts compliment or support one another to function normally. While you were in grade 6, you studied the various parts of plants which are leaves, stems, roots and flowers. In this unit, you are going to study the functions of plant parts.

Key Words

Transpiration – a process whereby plants lose water through leaves in form of water vapour.

Photosynthesis – a process whereby green plants manufacture their food in the presence of carbon dioxide, water, light energy and chlorophyll.

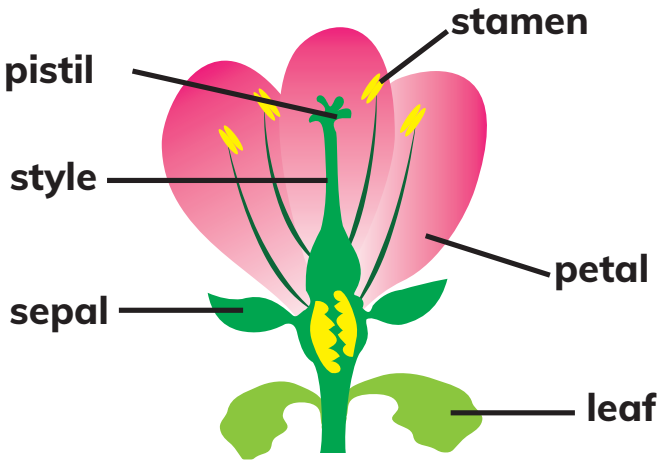
Translocation – the movement of manufactured food from leaves to all parts of a plant or from storage organ to all parts of plant.

Osmosis – the movement of water molecules from a region of higher concentration to a region of lower concentration through a semi permeable membrane.

Functions of plant parts

Plants have different parts which are leaves, stem, roots and flowers.

These parts have different functions which are indicated below.



A flower with labelled parts

1. Leaves

Leaves on plants have different shapes and sizes. Some plants have broad shaped leaves while others have narrow shaped leaves or needle-like shaped leaves. Leaves should be green in colour. The green pigment or colour in leaves is known as chlorophyll. The chlorophyll traps sunlight energy needed for food manufacturing process to take place.

Functions of leaves

The functions of leaves on plants are:

- Leaves make or manufacture plant food. The process whereby green plants make their food is known as photosynthesis. Its only green plants which are able to make food or photosynthesize.
- Leaves allow gaseous exchange to occur through diffusion. Oxygen gets out of the leaves and goes into the atmosphere while carbon dioxide gets into the leaves of plants. Carbon dioxide is used to make food of the plant.
- Leaves allow excess water which will be in form of water vapour to be released into the atmosphere. The process whereby water vapour is released into the atmosphere from leaves is called transpiration. Loss of water from plants through leaves or transpiration cools down the plant and allow plants to absorb more water and dissolved mineral salts from the soil.
- Some plants store their food in leaves for example, cabbages, aloe, banana plants and onion plants.

2. Stem

The stem joins or links the roots to the upper parts of the plant such as leaves and flowers. Some plants have woody stems, others have soft stems and others have climbing stems.

Functions of the stem

- Stem holds the branches, leaves and flowers for them to get sunlight energy and air.
- Some plants store their food in the stem for example, sugarcane.
- Green stems make or manufacture plant food.

3. *Check inside both plastic papers after 3 hours.*

Observations

Write what you observed in both plastic A and B.

Activity 2

Plant maize seed in dry soil and wet soil and observe which seed will germinate early.

Exercise 1

1. State three uses of stem on a plant.
2. List three uses of roots on a plant.
3. Explain the following terms;
   (a) Photosynthesis.
   (b) Translocation.
   (c) Osmosis.
4. Why is transpiration important in plants?
5. State three conditions needed for seeds to germinate.

Key points in this unit

- Leaves make or manufacture plant food.
- Only green plants are able to carry out photosynthesis.
- The green pigment or colour in plants is known as chlorophyll.
- Plant roots anchor the plant firmly into the soil and absorb water and dissolved mineral salts from the soil.
- Flowers produce seeds which are eaten with people like bean seeds and maize grain.
- Plants need light energy in order to make food.
- Plants store their food in different organs.
- Conditions which are needed for germination to occur are water/moisture, suitable temperature/warmth and oxygen/air.
- Seeds should be viable for them to germinate.

Unit Revision Exercises

Multiple Choice Questions

1. The green pigment colour in plants or leaves is known as _____.
   A. chlorophyll **B.** chlorosis **C.** carbon **D.** carbon dioxide
2. The following are uses of leaves on plants except _____.
   A. leaves absorb water from the soil **B.** leaves make plant food
   C. leaves allow gaseous exchange **D.** leaves lose water

- Poor growth rate. Plants have stunted growth. Plants remain short.
- When nitrogen is in serious short supply, leaves turn brown and fall off from plants before they are mature.
- Slow growth rate of plants.

2. Phosphorus (P)

Phosphorus is also a major plant nutrient required in large quantities in the same manner as nitrogen. It is absorbed with plants as phosphates.

Maize leaves become purple

Deficiency symptoms of phosphorus in plants

Signs of shortage of phosphorus in plants are:

- poor root formation and development.
- leaves on plants fall off before they are mature.
- dead areas on some fruits and on some leaves.
- poor formation of nodules in legume plants. Bacteria which fix nitrogen in the soil live in these nodules. So, if there is poor formation of nodules or poor nodulation in legume roots, few nitrogen is fixed and left in the soil. Nodules are small swellings which develop on roots of legume plants. Examples of legume plants are beans, peas and cow peas.
- poor formation and development of tubers in Irish potatoes. Tubers which are formed are small and very few.
- in maize, leaves become dark to dark green and has purple colour stems and leaves.
- lateral buds on the stem remain dormant.

NB: The deficiency symptoms of phosphorus appears on the lower old leaves first because too much phosphates are moved from older leaves to small new leaves.

3. Potassium (K)

Potassium is naturally available in soil in Zimbabwe. Therefore, it does not cause many problems in crop production. Potassium is more available in clay soils than in sandy soils. So, some deficiency symptoms may occur in sand soil. It is absorbed by plants as potassium ion.

Potassium deficiency on plants

Deficiency symptoms of potassium in plants

When potassium is lacking in plants, plants show the following signs:

- The edges of leaves are scorched. Scorching or firing of leaves occurs on the tips and along the edges of leaves while the inside of leaves remains green. This condition is known as marginal necrosis or fired margins.

3. Why are farmers discouraged to apply nitrogenous fertilizers when heavy persistent rainfall is being received?
   A. It causes osmosis to occur. **B.** Leaching of nitrogen will occur.
   C. It causes plyasmosis to occur. **D.** Nitrogen will be available in large quantities.
4. When maize crop is turning yellow, it's a deficiency symptom of _____.
   A. potassium **B.** phosphorus **C.** nitrogen **D.** oxygen
5. When plants have yellow leaves which nutrient should be applied to correct this deficiency symptom?
   A. Carbon. **B.** Oxygen. **C.** Hydrogen. **D.** Nitrogen.
6. Rape leaves turning orange with scorched leaf edges shows lack of _____.
   A. calcium **B.** nitrogen **C.** phosphorus **D.** potassium
7. Leaf vegetables with purpling leaves indicate lack of _____.
   A. urea **B.** zinc **C.** nitrogen **D.** phosphorus
8. Which nutrient shortage causes poor development of roots?
   A. Nitrogen. **B.** Potassium. **C.** Phosphorus. **D.** Oxygen.

Structured Questions

1. State three deficiency symptoms of nitrogen in plants.
2. List three deficiency symptoms of phosphorus in plants.
3. State two deficiency symptoms of potassium in plants.

Unit

18 ORCHARD/FRUIT TREES

Unit Objectives

At the end of this unit, you should be able to:

(a) describe how to care for fruit trees.
(b) name some fruit trees.

Looking Back

Fruit tree seedlings are raised in a nursery. The seeds are sawn into potted pots. Some of the fruit tree seedlings are grown from cuttings. The cuttings are first planted into plastic polythene pots. When the seedlings are growing, they need to be watered. Tree seedlings need to be protected from animals and insect pests. Examples of fruit trees are orange trees, lemon trees, mango trees, lime trees, apple trees, avocado trees and guava trees. In this unit, the focus is going to be care of fruit trees which will have been planted in an orchard.

Key Words

Orchard – is a place in which fruit trees are grown.
Fruit trees – are trees which bear fruits which are eaten.

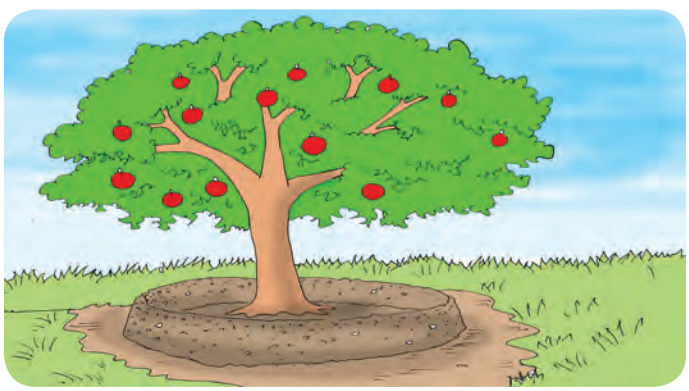
Caring for orchard/fruit trees

If fruit trees are looked after properly the trees will bear many fruits and will also produce quality fruits. Financial returns per fruit tree will be higher after selling fruits.

1. Watering

Fruit trees should be watered during the dry season or when there is no adequate soil moisture in the rain season. Water requirements for fruit trees varies depending on tree species. The general guide is to apply 25 litres of water per square metre of basin.

Make basins around trees using soil mound. If the tree basin is 4m then you apply 4 × 25



An orange tree with a basin around it

Early Blight	Fungi	Tomatoes Potatoes	• Mature leaves become black and develop some copper like rings.	Plant resistant varieties.	Spray fungicides Use Mancozeb and copper oxychloride
Late blight	Fungi	Tomatoes Potatoes	• Dark brown patches occurs. • Leaves die within 4 days. • Tomato fruits rot.	Plant resistant varieties.	Spray fungicides. Use Mancozeb and copper oxychloride.
Smut	Fungi	Sugarcane	• Affected plants have powders which are dark to black.	Practice crop rotation.	Spray fungicides such as Mancozeb.

4. Viruses

Viruses are micro-organisms which live and survive in cell sap. They survive only while living inside tissues. Viruses are spread from one plant to another by sap sucking insects (vectors) like aphids and by handling plants.

Viral plant diseases

The table below shows plant diseases caused by viruses.

Disease	Cause	Plants affected	Signs and symptoms	Prevention and control	
Maize streak	virus	Maize	• Affected plants have leaves with parallel streaks or lines without chlorophyll. • Stunted growth.	Cultural control	Chemical control
Tobacco Mosaic	virus	Tobacco	• Small yellow patches or areas occurs on green surface of leaves. • Mottles or spots on leaves.	Rogue affected plants.	There is no chemical for the disease.

Rosette	virus	Groundnuts	• Stunted growth • Stems have short inter nodes. • Groundnuts produce very small leaves.	Remove affected plants. Practice crop rotation.	
Leaf curl	virus	cotton	• Leaves curl.		
Ratoon stunting	virus	Sugarcane	• Affected sugarcane plants are stunted. They do not grow.	Uproot affected plants and burn them.	There is no chemical control for the disease.

Activity 1

Go to your school garden or agriculture fields and scout for diseases on vegetable crops or field crops. Identify the diseases which you notice on the vegetables or field crops. Your teacher will help you to identify the diseases. Discuss in groups how the crop diseases can be controlled.

Exercise 1

1. Name two micro-organisms which cause plant diseases.
2. Which micro-organism causes bacterial wilt?
3. Name any two crop diseases.
4. Chemicals which are used to control fungal disease are known as _____.
5. What causes damping?
6. Viruses are spread with sap sucking insects which are known as _____.

Ways of controlling plant diseases

Plant diseases are generally expensive to control using chemicals. The common method of controlling fungal disease is through application of fungicides. Fungicides are sprayed on crop leaves and they kill fungi which will be spreading on crops. Example of fungicides are Bordeaux mixture, Copper Oxychloride, Maneb, Mancozeb, Captain and Thiram.

Most of plant diseases are generally controlled using cultural control methods.

Some of the methods which are used to control plant diseases are:

- use of certified seed dressed with chemicals.
- planting resistant varieties.
- use of clean tools and machinery.
- correct spacing of crop.

- Viruses live and survive in living tissues.
- Farmers should not handle plant leaves unnecessarily to reduce the spread of micro-organisms.
- Farmers should plant certified seeds.
- Crop rotation helps to control diseases in plants.
- Previous crop stalks or stover should be burnt or put in a compost heap.
- Plant diseases reduce crop yields.

Unit Revision Exercises

Multiple Choice Questions

1. Which chemical is used to control fungi on plants?
   A. Fungicides **B.** Nematicides **C.** Pesticides **D.** Herbicides
2. Which of the following is a bacterial disease?
   A. Bacterial wilt **B.** Late blight **C.** Leaf spot **D.** Powdery mildew
3. Choose a disease which is caused by fungi from the following.
   A. Leaf rust **B.** Maize streak **C.** Tobacco mosaic **D**. Bacterial blight
4. Which of the following is a vector of plant diseases?
   A. Locusts **B.** Crickets **C.** Quelea birds **D.** Aphids
5. The following are cultural methods of controlling plant diseases except _____.
   A. practising crop rotation **B.** use of fungicides
   C. use of clean seed **D.** uprooting affected plants
6. A learner observed the following signs and symptoms on tomato plants. Plants and leaves were wilting while the tomato plants were watered and soil moisture was there in the soil. Which disease had affected the tomato plants?
   A. Black rot of cabbage **B.** Smut
   C. Maize streak virus **D.** Bacterial wilt
7. Which disease cause white powder to develop and cover leaves and pods of peas and bean plants?
   A. Leaf rust **B.** Powdery mildew **C.** Stem rust **D.** Potato blight
8. Which of the following is caused by fungi in plants?
   A. Smut **B.** Bacterial blight **C.** Maize streak **D.** Tobacco mosaic
9. All of the following cause plant diseases except _____.
   A. Fungi **B.** Bacteria **C.** Ticks **D.** Viruses
10. Roguing affected plants means _____.
    A. watering the plants
    B. looking after affected plants
    C. marketing affected plants
    D. removing affected plants by uprooting them

TEST 2

Paper 1: Multiple Choice Questions

Answer all the questions in this paper. Answer the questions with either A, B, C or D.

1. Identify a function of leaves on a plant from the following.
   A. Anchors the plant so that the plant does not fall down.
   B. Manufacture plant food.
   C. Absorb water and dissolved mineral salts.
   D. Fix nitrogen into the soil.
2. Plant nutrients in the soil are dissolved in _____.
   A. fertilisers. B. air. C. water. D. compost.
3. Study the diagram below showing rotation of field crops. What is possible plant represented by X?

   Maize ⟶ Beans ⟶ X

   A. Sorghum. B. Millet. C. Rapoko. D. Sunflower.
4. Which of the following is a cereal crop?
   A. Potatoes. B. Tomatoes. C. Sugarcane. D. Sorghum
5. Which one is a field crop?
   A. Rape. B. Onion. C. Tomatoes. D. Sorghum.
6. What name is given to the process by which plants lose water through leaves?
   A. Transpiration. B. Evaporation. C. Osmosis. D. Photosynthesis
7. A plant requires 3 grams of Urea fertiliser during top dressing. How many grams of fertiliser are required for 20 plants?
   A. 20 grams B. 60 grams C. 50 grams D. 23 grams
8. Yellowing of maize leaves in the margin indicates a shortage of _____.
   A. nitrogen B. phosphorus C. zinc D. potassium
9. Which of the following is not a management process of fruit trees?
   A. Pruning. B. Watering. C. Weeding. D. Dosing
10. The process of covering tree basins with grass to reduce water loss through evaporation is known as _____.
    A. scouting B. mulching C. evaporation D. transplanting
11. Weeding in maize is done to remove _____ .
    A. pests B. diseases C. weeds D. water
12. In which family are peas, beans and groundnuts belong to?
    A. Cereal. B. Legume. C. Leaf. D. Fruit
13. Which trees are grown in an orchard?
    A. Sisal fibre. B. Indigenous trees.
    C. Exotic timber trees. D. Fruit trees.
14. Mulching is done to _____.
    A. provide warmth B. conserve moisture
    C. provide a good bed D. provide manure

50. Choose a correct order of crop rotation in vegetable crops grown in a garden.

A. Rape → Covo → Beans
B. Carrots → Beans → Rape
C. Beans → Peas → Cabbage
D. Cabbage → Rape → Covo

Paper 2: Structured Questions

This is a structured short answer type of paper. This paper is marked out of 50. It consists of two sections, Section A and B.

Section A

Answer all questions in this section. There are six questions in this section.

1. (a) State one way in which farmers can protect crops from the following:
   (i) Drought. [1]
   (ii) Animals. [1]
   (b) What is monoculture? [1]
   (c) State two advantages of crop rotation. [2]

2. (a) List two functions of roots. [2]
   (b) (i) When plants are turning yellow, its a sign that they are lacking which nutrient? [1]
   (ii) Name the fertiliser which is applied to plants when their leaves have turned yellow in colour. [1]
   (c) The growing of different crops in the same land while changing them and growing different crops from different families is known as _____. [1]

3. (a) Define the following words:
   (i) Afforestation. [1]
   (ii) Deforestation. [1]
   (b) State two reasons for mulching in orchard trees basins. [2]
   (c) How are orchard trees protected from domestic animals? [1]

Exercise 2

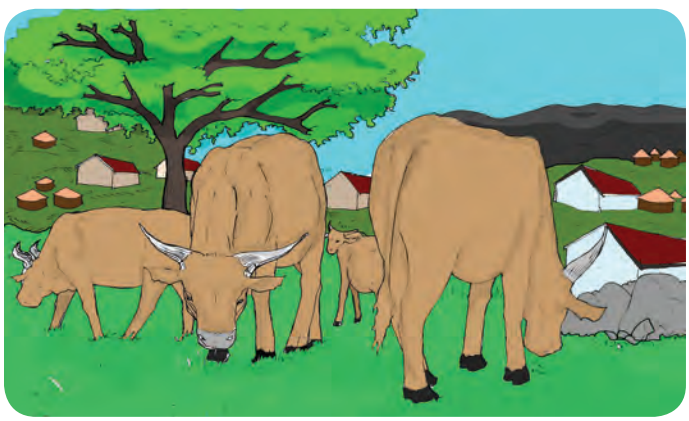
1. State three ways of caring for animals.
2. List three ruminant animals which can digest food with cellulose.
3. Green grass which is cut at flowering and kept so that it is used to feed animals during dry season is known as _____.
4. List two ways of controlling ticks.
5. Internal parasites are controlled by _____.
6. State three effects of parasites on farm animals.
7. List two uses of water in animal bodies.
8. State four ways of controlling diseases.
9. Drugs which are injected into farm animals to prevent diseases are called _____.
10. Name four predators of farm animals and poultry.

Animal management system

Ways in which farm animals are kept at farms are classified under extensive system, semi intensive and intensive system. Management refers to how farm animals are looked after, housed and the level of profit which the farmer gets as the farmer keeps the animals.

(a) Extensive management system

Extensive system means farm animals are allowed to roam freely or go wherever they want without control and animals look for their own food. Cattle graze anywhere and are looked after by herd boys or herd men. Chickens go where they want to go and come back at night for shelter in a fowl run. This also applies to pigs, sheep and goats which also look for their food in the veld. Level of management put by the farmer is low. The farmer uses very little amount of capital and the returns are low.



Animals in communal areas grazing near homesteads

Advantages of extensive management system

- The system is cheap to operate as animals find their food.
- Less labour is required.
- Less capital is needed to build kraals and animal buildings.

Disadvantages of extensive management system

- Animals can be eaten by predators or stolen by thieves.
- Large land is needed.
- Less profit is obtained.
- Growth rate of animals is poor because animals do not get balanced feed.

Housing system under intensive management

1. Deep litter housing system

A deep litter system is a house on which animals or poultry are kept. The house has wire mesh or net wire on one side or two sides of its walls. Wire mesh allows or promotes ventilation or circulation of air.

Chickens in a deep litter system

Animals or poultry are kept inside the house and are not allowed to go outside. On the floor of the house, a layer of dry grass which can be 10 to 20 cm thick is put to be bedding material.

Dry grass or wood shavings can be used as bedding material. Bedding material provide warmth to animals and also absorbs water from urine or droppings or water which can be spilled on the floor. Water troughs and food troughs are put on the floor.

The deep litter house can be used to keep poultry, goats, sheep, lambs, kids and pigs. The bedding material or litter is removed after some time and put on the compost. When keeping poultry, the bedding or litter should be removed and house disinfected before putting a new batch of chickens.

2. Battery cage house

The housing system consists of cages which are put one on top of another. The cages are stacked upwards. In between the cages, there are metal trays which collect droppings so that the droppings will not fall into cages below. Food troughs and water troughs are outside the cages. Animals or chickens put their heads between wire holes to eat food or drink water. Battery cage can be used to keep rabbits or layers chickens.

A battery cage with layers chickens

Activity 2

As a class visit local or nearby farms and see how animals are cared for. Also observe the animal management systems which are being practiced at the farms. Discuss your observations and then write a field tour report in your note book.

Exercise 2

1. Explain extensive management system.
2. State two advantages of extensive management system.

3. Rearing animals in confined place is _____.
4. State three advantages of intensive system.
5. What are the disadvantages of intensive management system?
6. Name two housing systems which are classified under intensive management system.
7. What type of management system is practiced by farmers who keep sheep and goats in communal areas?
8. Explain intensive management system.

Key points in this unit

- Care of animals include feeding them, giving them water, controlling parasites and diseases, protecting animals from predators, harsh weather and thieves.
- Farm animals can be fed with natural feeds such as grass, plant leaves, hay and commercial feeds bought from shops.
- Ruminant animals like cattle, sheep and goats are able to digest feeds with a lot of roughage or cellulose or fibre.
- Farm animals can drink water from water troughs, streams, rivers and dams.
- External parasites like ticks are controlled by dipping animals or spraying them.
- Internal parasites such as tapeworms, roundworms and liver flukes are controlled by dosing animals.
- Predators are wild or domestic animals which eat farm animals and poultry. Examples of predators are leopards, lions, cheetah, jackals, dogs, wild cats, squirrels and cats.
- Animal management systems are classified as extensive, semi-intensive and intensive.

Unit Revision Exercises

Multiple Choice Questions

1. Which of the following disease is a notifiable disease?
   A. Anthrax **B.** Red water **C.** Coccidiosis **D.** Heart water
2. Which is an internal parasite?
   A. Roundworms **B.** Ticks **C.** Tsetse flies **D.** Tampans
3. Internal parasites are controlled by _____.
   A. vaccinating **B.** dipping **C.** dosing **D.** culling
4. Rearing of animals in confined places or inside building is an _____.
   A. semi-intensive system **B.** extensive system
   C. intensive system **D.** Semi-extensive system
5. A farmer has small piece of land on which the farmer wants to keep animals, which gives quick income. Which animal should the farmer keep?
   A. Cattle. **B.** Rabbits. **C.** Sheep. **D.** Donkeys.
6. Which of the following disease is caused by a protozoa carried with parasites?
   A. Red water. **B.** Anthrax. **C.** Rabies. **D.** Foot and mouth.

Unit

23 ANIMAL NUTRITION

Unit Objectives

At the end of this unit, you should be able to:

(a) name deficiency diseases in farm animals.
(b) explain symptoms of deficiency diseases in animals.
(c) identify nutrition deficiency symptoms in animals.
(d) name nutrients that counter deficiency diseases in animals.

Looking Back

Farm animals eat food every day for them to be alive and stay health. From the food which animals eat, they get different nutrients which are used for different uses in their bodies. Nutrients which farm animals get from grasses and feeds which they eat are carbohydrates, proteins, vitamins, minerals such as iron, calcium, phosphorus and iodine. Carbohydrates provide energy to animals, proteins are used for growth and repair worn out body tissues. Some minerals are useful in that they make animals to have strong bones and teeth. In this unit, you will learn about deficiency diseases and their symptoms in animals.

Key Words

Deficiency – means lacking or shortage of nutrients in animal bodies.
Symptoms – what is seen on animals which are lacking nutrients.
Deficiency symptoms – refers to signs which are seen in animals indicating the shortage of nutrients in animal bodies.
Deficiency disease – is a condition caused by lack of nutrients/minerals in food.

Nutrient deficiency symptoms in farm animals

Farm animals need nutrients such as carbohydrates, proteins, vitamins, fats, oils and minerals. Animals get these nutrients from feed which they eat such as grass, crop grains and processed stock feeds bought from retail outlets or stock feed shops.

When farm animals are not getting enough of the nutrients in their feed, they develop some deficiency symptoms as a result. These deficiency diseases are shown by some signs and

symptoms. Some of the deficiency symptoms which are going to be discussed are piglet anaemia, rickets, goitre, hair loss, soft and weak egg shells in poultry.

Nutrient/ mineral/ Element	Function	Deficiency symptom which occur in farm animals	Condition which develop in animals	Measures to counter deficiency in animals or correction of deficiency
Iodine	• It is needed for the well-functioning of thyroid gland which is in the neck of animals. • Makes animals to grow normal.	• Swelling of the thyroid gland • Swelling develops in the neck of an animal.	• Goitre develops in the neck of an animal.	• Give farm animals feeds with iodine. • Give animals iodised salt. • Green grasses which animals graze has some iodine.
Iron	• It is needed in the red blood cells in blood as haemoglobin. • Iron in blood is used to carry oxygen in the body. • Oxygen is carried to all parts of the body by the haemoglobin in the blood.	• Paleness of the membranes around eyes and paleness of gums. • Difficult breathing dues to lack of oxygen.	• Anaemia commonly occurs in piglets if they are born without enough iron in the liver and are kept on hard floors.	• Feed animals with feeds which have iron such as Cereal grains and Legume seeds. • Inject animals with iron to increase iron in animal bodies. • allow piglets to dig into the red soil • Give piglets red clay soils.
Sodium	• It makes nerves and cells to function well.	• Poor growth in animals. • Poor response impulse due to weak nervous system.		• Give mineral supplement in mineral blocks so that animals lick the blocks with salt.

Unit

25 APICULTURE

Unit Objectives

At the end of this unit, you should be able to:

(a) explain how to manage bees.
(b) explain how to harvest honey.
(c) explain the processing and marketing of honey and honey by-products.
(d) name the products and by-products of bees.

Looking Back

The keeping of honey bees is also known as apiculture. Bees can be kept successfully by people and earns the farmers who keep them some money through selling of honey. Bees are also important in that they help to cross pollinate some plants as they carry pollen grains from different flowers in plants of the same type. Bees live as a colony or family.

Key Words

Bee colony	– is a swarm of bees which live together as a family.
Drones	– are male bees which are hatched from unfertilised eggs and are not able to sting.
Honey	– is thick liquid sugarly syrup which is made by bees in combs.
Worker bees	– are undeveloped female bees which cannot reproduce whose use in the hive is to collect food outside and to feed the queen bee.
Queen bee	– is the only fully developed female bee in a hive which lay eggs in the hive.
Larvae	– are young bees found inside the combs.

Management of bees

Bees living in a hive need to be looked after in order for them to stay in the hive and to produce more honey. If bees are not managed well, they will desert or leave the hive and fly away.

Bees on a tree

Unit

26 FARM EQUIPMENT AND MACHINERY

Unit Objectives

At the end of this unit, you should be able to:

(a) describe ways of maintaining farm implements and machinery.
(b) list ways of storing farm implements and machinery.
(c) prepare an inventory of farm implements and machinery.
(d) design appropriate technology for use in agriculture.

Looking Back

Farm implements are used to do different farm work. There are different implements which are used for different purposes. Farm implements can be used to plough or till crop fields, harrowing the ploughed fields and breaking soil lumps. Some of the implements are used for cultivating in crops to uproot weeds. Other implements can be used to plant seeds in fields. Farm machinery are used to pull the implements when there are being used. Some of machinery have engines mounted on wheels. They need proper maintenance and storage for them to work well and last longer. Farm implements and machinery are very expensive to buy therefore they need to be used properly.

Key Words

Farm machinery – are machines which are used to pull implements when doing work at a farm.

Inventory – is a record of all tools, implements and machinery at a farm.

Maintenance of farm implements and machinery

Farm implements refer to any equipment which is pulled with a tractor or animals when it is being used during the time of work. Some of the farm implements are planters, single furrow mouldboard ploughs, spike toothed harrows, disc ploughs, disc harrows, ridgers, rippers or chisel ploughs, boom sprayers and cultivators.

Farm machinery are machines which have engines or gears which make them move. Some of the machines have some wheels and can be powered with engines to move forward or

backwards. These machines are used to pull implements which are used to do work. Some of them can do the work while being operated by people. Examples of machinery which are used at farms are tractors, caterpillar tractors, combine harvesters, motorised graders, maize shellers, irrigation pumps, pedal powered shellers, dozers and wheel front loaders.

Maintenance of implements

The farmer should maintain his or her own farm implements. On large scale or big farm, mechanics are employed to service and repair farm implements and machinery.

1. Single furrow mouldboard plough

This is a plough designed to be pulled with harnessed animals such as oxen or donkeys.

Maintenance which are done to the single furrow mouldboard plough are:

- Remove and replace worn out share, wheel axil and landside.
- Tighten loose bolts and nuts on handle braces and other parts.
- Replace worn-out bolts and nuts.
- Remove any soil from the plough and clean it after ploughing.
- Apply grease on the wheel axil to reduce friction.
- Replace worn-out wheel and wheel arms.
- Re-paint the plough periodically to reduce and prevent rusting of the plough.

A single furrow mouldboard plough

2. Disc ploughs

Disc ploughs are used to plough in the field. Disc ploughs are heavy and designed to be pulled by a tractor. They have different designs. Some have one-disc others have two discs or three discs which penetrate or go into hard soil and turn the soil over making a furrow or furrows. Disc ploughs can break down if used in field with stumps. Discs will also get worn out fast if they are used to plough in fields with stones or gravel.

A disc plough with three discs

Maintenance to be done on disc ploughs are:

- Keep the discs sharp by grinding them regularly so that they penetrate and plough the soil easily.
- Removing soil which will be sticking on the discs after ploughing.
- Put grease or oil on the bearings which rotate on discs.
- When the plough is not being used, apply or smear used oil on the discs to prevent rusting of the discs.

- Replace worn out and loose bolts and nuts.
- Tighten bolts and nuts from time to time.
- Re-paint the plough after 4 to 5 years to reduce rusting of parts.

3. Disc harrows

Disc harrows have many discs which are joined together in rows. The disc harrows are fixed on wheels. They are pulled with a tractor. They are operated using a hydraulic system of a tractor. The disc harrows are used to plough the land so as to produce soil with fine tilth. The discs breaks the soil lumps and produce fine tilth.

A disc harrow

Maintenance to be done on disc harrows are:

- Bearings which rotate on discs should be applied with grease through nipples.
- All bolts and nuts should be tightened when they are loose.
- Replace worn out discs and other parts.
- Damaged parts should be replaced.
- Apply or smear grease or used oil on discs after the ploughing season.
- Re-paint the disc harrow once in 4 to 5 years.

4. Spike toothed harrow

Spike toothed harrows have some spikes on their frames. It is used to harrow the ploughed soil in order to break clods or soil lumps to produce a fine tilth. It is also used to level the soil after ploughing and to remove unburied or uncovered weeds, previous crop stalks and stones from the land that has been ploughed.

A spike toothed triangular harrow

Maintenance to be done on a spike toothed harrow are:

- Replace damaged pegs or spikes.
- Sharpen worn out spikes using a grinding machine.
- Tighten the spikes or pegs which are loose.
- Damaged parts should be replaced.
- Apply or smear grease or oil on spikes after the ploughing season or time.
- Re-paint the frame after 4 to 5 years to reduce rusting of the frame.

5. Cultivators

Cultivators are implements which are used to uproot weeds from crop fields. They have different tines on them which uproot and remove weeds between crop rows. A cultivator can be installed with reversible spear point share or duck foot point share or medium point share or broad point share.

Cultivator

Maintenance of farm machinery

Maintenance to be done on farm machinery are:

- clean farm machinery after using them.
- lubricate all moving parts or bearings or wheel axils using grease or oil to reduce friction.
- remove worn out parts and put new parts.
- tighten loose bolts and nuts on farm machinery.
- tyres on farm machinery should be inflated with correct pressure.
- replace oil filters, air filters and oil from the sump time and again from tractors and combine harvesters.

Activity 1

Visit nearby farms and see farm implements which are used at farms. Identify farm implements in groups which you see at the visited farms. Interview the farmers on how they maintain the farm implements and machinery at their farms.

Exercise 1

1. Name three implements used at a farm.
2. Name two farm machinery.
3. State three maintenance of a mouldboard plough.
4. Why is grease or oil put on wheel axils and bearings?
5. Explain why it is important to re-paint farm implements.
6. List three maintenance to be done on farm machinery.
7. Why are discs or spikes on harrows coated with used oil or grease when the implements are stored for long time?

Storage of farm implements and machinery

- Farm implements should be stored in sheds with concrete floors.
- Ox drawn implements like single furrow mouldboard ploughs, planters, ridgers cultivators can be stored in storerooms which can be locked.
- This will provide more security of farm implements. Farm implements and machinery can be kept in garages. A garage is a building where machinery like lorries, tractors, and combine harvesters are stored.
- Farm implements and machinery can be kept or stored in a workshop. A work shop is a place where farm implements and machinery are repaired.

Characteristics of buildings or storage facilities where implements and machinery are stored.

The building where implements and machinery are kept or stored should:

- be simple structures.

- have good lights.
- have good ventilation.
- have windows or wire mesh on top.
- have concrete floors so that cleaning is done easily.

Inventory of farm implements and machinery

An inventory is a record of farm tools, implements and machinery. All tools, implements and machinery should be recorded in a record book. This record book where tools, farm implements and machinery are recorded is known as an inventory.

Reasons for keeping an inventory record

- An inventory helps to detect or see theft or missing of tools, implements or machinery.
- Farmers will know total number of farm implements at the farm.
- An inventory helps to identify obsolete tools or implements or machinery which are no longer in use.
- An inventory helps the farmer to calculate loss of value (depreciation value) of implements and machinery over a period of time.
- It enables the farmer to determine or tell or come up with price to sell old implements and machinery.
- Implements and tools can be allocated to farm enterprises easily. The type of the implement or machinery, model or type, price of implement/machinery, quantity and condition should be written in the inventory.

The table below shows an example of farm implements inventory.

Farm implement inventory

Implement type description	Quantity number	Date bought	Price	Condition	Dates checked				
Disc ploughs	3	2/02/2020	$2 000.00	New					
Planter	1	10/05/2019	$500.00	New					
Sprayer	1	8/01/2018	$200.00	Good					
Ox drawn plough	1	19/04/2016	$100.00	Needs some repairs					
Spike toothed harrows	4	2/3/2017 16/7/2018 12/01/2019	$1 200	3 are in good condition 1 need to be repaired					

- Bearings, wheel axis and other moving parts should be lubricated with grease or oil to reduce friction.
- Friction cause wear and tear of bearings and wheel axils.
- Farm implements and machinery should be stored in sheds, storerooms, garages or workshop.
- Farm implements and machinery must be recorded in an inventory.
- An inventory record is where all tools, farm implements and machinery are recorded.

Unit Revision Exercises

Multiple Choice Questions

1. Which of the following is a farm implement?
   A. Tractor **B.** Maize sheller **C.** Planter **D.** Combine harvester
2. A _____ is a farm machinery.
   A. cultivator **B.** planter **C.** tractor **D.** disc plough.
3. Farm machinery is needed on a farm because _____.
   A. they reduce labour **B.** they reduce yields
   C. they increase weeds at the farm **D.** they increase labour
4. Friction on wheel axils and bearings on implements is reduced by _____.
   A. putting grease on them **B.** putting water on the axils
   C. putting paraffin and diesel **D.** putting juice on them.
5. Discs on ploughs are coated with used oil so that they do not _____.
   A. break **B.** rust **C.** wear fast **D.** get stolen
6. A record book where farm tools, implements and machinery are recorded is known as _____.
   A. farm diary **B.** inventory **C.** budget **D.** cash book
7. The process of keeping implements and machinery in good working condition is called _____.
   A. precaution **B.** recording **C.** maintenance **D.** inventory
8. Which of the following is not a maintenance of farm implements and machinery?
   A. Tighten loose bolts and nuts.
   B. Put grease on bearings and axil.
   C. Leaving implements and machinery in the fields.
   D. Repaint implements periodically.
9. What is the best place for storing implements and machinery?
   A. House **B.** Outside **C.** Shed **D.** Bridge
10. How is rusting of farm implements prevented?
    A. By painting farm implements.
    B. By applying water on farm implements.
    C. By leaving implements outside.
    D. By driving them fast.

Unit

27 AGRI-BUSINESS

Unit Objectives

At the end of this unit, you should be able to:

(a) define a budget.
(b) list items and quantities required for an enterprise budget.
(c) prepare an enterprise budget.
(d) explain the reasons for calculating a profit and loss account.
(e) calculate a profit and loss account for a specific enterprise.

Looking Back

In previous grades you studied local agricultural products, local markets and retail markets. You also studied the financial records and production records. Financial records are those records which deals with money at the farm. Production records are those records which deals with materials at farm and assets or inventory of tools. You also learnt about national markets such as Grain Marketing Board, Tobacco Auction Floors, Cotton Company of Zimbabwe, Cold Storage Company and many more. In this unit, you are going to study enterprise budget and profit and loss account for specific farm enterprises.

Key Words

Budget – is an estimate of expected income (money) earned and expected expenditure (money to be used).
Enterprise – is a single (one) business unit of a farm.
Income – is the money obtained by the farmer after selling agricultural produce from a specific enterprise.
Expenditure – is the money which is used by the farmer to buy inputs for a specific enterprise such as seed, fertilisers and herbicides.
Inputs – refers to the materials which are used by the farmer in order to produce an agricultural product for example, seed, fertiliser, pesticides and labour.

- Field beans production enterprise.
- Groundnuts production enterprise.
- Pig keeping enterprise.
- Goats enterprise.
- Layer chicken enterprise.
- Bee-keeping enterprise.

Enterprise budget

Enterprise budget is a budget for one farm enterprise only. An enterprise budget is an estimation of the quantities of inputs to be used on a given size of land and their cost as well as the estimate of the total money the farmers expect to get after selling the produce. Therefore, an enterprise budget can be explained as an estimate of expected expenditure of inputs and estimate of expected income of one farm enterprise.

Inputs needed in crop production

Inputs are materials which are needed to grow a specific crop. Inputs needed in crop production are as follows.

- Seed.
- Lime.
- Fertilizers - compound fertilisers and top-dressing fertiliser.
- Pesticides.
- Herbicides.
- Labour costs of people who will work at particular enterprise.
- Packing material such as bags.

Output/Income

Output is the money which you get after selling what is harvested. For example, money you get after selling maize grain.

Example 1

Table below shows an example of an enterprise budget of maize grown from 1 hectare of land (10 000m²).

Enterprise: Maize: Size of land – hectare.

Expected expenditure			**Expected income**	
Inputs	Quantity	Amount	Out put	Price
Seed	25kg	$15.00	20 × 50kg bags of maize at $100.00 per bag.	$2 000.00
Fertilizer compound	6 × 50kg at $50 per bag.	$300.00		
Top dressing	5 × 50kg at $50 per bag.	$250.00		
Herbicides	5 litres	$25.00		

Pesticides	10 litres	$15.00		
Labour	5 workers at $5.00 per day for 30 days	$750.00		
Packing bags	20 bags	$10.00		
TOTAL		**$1 365.00**		**$2 000.00**

Expected profit = Expected income – Expected expenditure.

Expected expenditure = $1 365.00

Expected income = $2 000.00

Expected profit = $635.00.

The maize enterprise is expected to get a profit of $635.00

Example 2

Another way of presenting the enterprise budget is shown below:

Table 8.2 Enterprise budget

Enterprise: Maize: Size of land – 1 hectare.

Revenue Income/return(money into farm)	**Quantity per hectare kg**	**Unit price**	**Total**
Maize	200kg	$15	$3 000
Input/ Expenditure/ Variable costs (money to be used)			
Seed(kg)	25kg	$3/kg	$75
Fertilizer (compound)	300kg	$20 per 50kg	$120
Fertilizer (top dressing)	250kg	$20 per 50kg	$100
Herbicides	5 litres	$6 per litre	$30
Pesticides	10 litres	$2 per litre	$20
Land preparation	-	$50	$50
Planting	-	$30	$30
Weeding	-	$25	$25
Spraying	-	$10	$10
Harvesting	-	$15	$15
Transport cost	-	$40	$40
Total Expenditure			$515

Expected profit = expected income – expected expenditure

Expected income = $3 000

Activity 1

Prepare a budget for your school's broiler enterprise taking into consideration that the deep litter house was built last month.

Exercise 1

1. What is a farm budget?
2. State three importance of a farm budget.
3. Name two types of budgets.
4. List inputs required for a groundnuts enterprise.
5. List three sources of information which is needed to prepare a budget.
6. State three examples of enterprises.

Profit and loss account or income and expenditure

A profit and loss account is also known as income and expenditure account. The information or entries which are recorded in the profit and loss account is obtained from receipts of purchased or bought goods and receipts for products sold.

Entries made in the cash book can also be transferred into income and expenditure account. Date when material was bought, quantity and cost must be recorded as well as income or money got after selling farm produce. The profit and loss account for each enterprise or whole farm should be balanced at the end of each month or year.

Purpose of profit and loss account

- It shows the actual total amount of money spent by the farmer and actual total amount of money obtained by the farmer as payments are done based on receipts of payment.
- It shows whether a particular enterprise made a profit or a loss after balancing it.
- It helps to see enterprises which will be making loss.
- It helps the farmer to make managerial decisions on enterprises.
- It's a planning tool to test new ideas as changes are made on enterprises.

The following is an example of a profit and loss account or income and expenditure account of 50 layers chickens.

Table below shows the income and expenditure account for layers chicken.

Expenditure (costs)			**Income (sales)**		
Date	**Expenditure**	**Amount**	**Date**	**Income**	**Amount**
04/02/19	50 layers at laying point(pullets) at $10-00 each	$500-00	25/02/19	15 bags of manure at $5-00 per bag	$75-00

5. The table below is a profit and loss record of a farmer in Mutare.

Enterprise	Input	Output
Tomato crop	$250-00	$460
Rabbits	$250-00	$150
Chickens	$250-00	$600

(a) Calculate the total profit or loss for each of the enterprise.
(b) Calculate the total profit or loss for three enterprises.

6. The table below shows an income and expenditure account for layers chickens. Fill in the table below.

Date	Expenditure	Amount	Date	Income	Amount
10/01/19	2 bags starter mash at $30-00 each.	_____	30/05/19	100 crates of eggs at $7-00 per crate.	_____
14/03/19	2 bags starter mash at $25-00 each.	_____			
25/03/19	Chemicals (drugs).	$20-00			
Total		_____			_____

(a) Fill in the table in the blank spaces.
(b) Calculate the profit or loss for the layers project.

Key points in this unit

- A budget is an estimate of expected income and expected expenditure for one enterprise or many enterprises.
- Types of budgets are enterprise budget, partial budget and whole farm budget.
- A budget is important to farmers because it prevents unplanned use of money, it helps farmers to know financial needs of different enterprises or the whole farm and it also enables farmers to know whether the farmer will get profit or loss from specific enterprises.
- Examples of enterprises are maize growing, beef cattle production, goat's production, soya beans production, groundnuts production, broiler chicken production, pig production and rabbit production.
- An enterprise budget is an estimate of expected income and expected expenditure of one enterprise only.
- Inputs are materials used to produce agricultural products. Examples are seed, fertilisers, lime, herbicides, stock feeds and chemicals.
- A profit and loss account enables a farmer to calculate whether a profit or loss was made from a particular enterprise.

Unit Revision Exercises

Multiple Choice Questions

1. An estimate of expected income and expenditure is known as _____.
   A. interest **B.** inventory **C.** budget **D.** inputs
2. Which of the following is not an input when growing maize?
   A. Seed **B.** Fertilisers **C.** Herbicides **D.** Stock feed
3. Expenditure in farming business is the money _____.
   A. spent on running the farm business
   B. that is obtained from the sales
   C. needed to start a farming business
   D. borrowed for the farming business
4. When does a farmer make a profit?
   A. When expenditure is greater than income.
   B. When income is greater than expenditure.
   C. When income is equal to expenditure.
   D. When one harvest during drought.
5. $350-00 was used to produce 3 tonnes of maize. Each tonne was sold at $225-00. Calculate the profit which was made by the farmer.
   A. $575-00 **B.** $125-00 **C.** $325-00 **D.** $675-00
6. A profit and loss account is also known as _____.
   A. income and expenditure account **B.** budget
   C. inventory **D.** outcome
7. The table below shows a financial record.

Costs	Sales
$135	$85

   What was the loss made from this enterprise?
   A. $220-00 **B.** $50-00 **C.** $85-00 **D.** $135-00
8. A source of information needed for budgeting is _____.
   A. newspapers **B.** wedding **C.** foreign currency **D.** weeding
9. A small-scale farmer made the following expenses on a tomato crop.
   Seed $15-00
   Fertiliser $150-00
   Labour $120-00

   What was the farmer's total expenses?
   A. $285 **B.** $270 **C.** $135 **D.** $15
10. A farmer in natural farming region 2 harvested four tonnes of maize and sold them at $250 per tonne. Calculate the amount of money received from the four tonnes.
    A. $800-00 **B.** $250-00 **C.** $1 000-00 **D.** $2 000-00

TEST 3

Paper 1: Multiple Choice Questions

This paper consists of 50 questions. You are expected to answer all the questions in this paper.

1. Which nutrient is responsible for growth in young animals?
   A. Vitamins B. Fats C. Proteins D. Carbohydrates
2. Rearing animals in confined places is _____.
   A. extensive system B. semi-extensive system
   C. intensive system D. semi-intensive system
3. A balanced diet is food _____.
   A. given to poultry B. which contains all nutrients
   C. which gives energy to animals D. given to farm animals
4. Which animals should a farmer keep if there is a small piece of land and a quick income is needed?
   A. Cattle. B. Rabbits. C. Pigs. D. Sheep.
5. What is the function of carbohydrates in animal's body?
   A. To give energy and warmth. B. To build body tissues.
   C. To prevent diseases. D. To repair worn out body tissues and cells.
6. Farm implements are coated with used oil so that they do not _____.
   A. rust B. break C. injure workers. D. look dirty
7. Which implement is used for breaking the soil lumps after ploughing into small particles to have fine filth using a span of oxen?
   A. Cultivator. B. Tractor. C. Harrow. D. Mould board plough.
8. A system of keeping few farm animals on a large piece of land allowing them to look for their own food is _____.
   A. semi-intensive system B. an extensive system
   C. an intensive system D. mixed farming
9. Which of the following provides carbohydrates in animal diet?
   A. Sunflower. B. Soya beans. C. Groundnuts. D. Maize.
10. At what stage are broiler chicks transferred from brooder house to deep litter house?
    A. 4 weeks. B. 6 weeks. C. 8 weeks. D. 15 weeks.
11. Select a commercial rabbit feed from the following.
    A. Lucerne. B. Rabbit pellets. C. Black jack. D. Vegetable leaves.
12. The following are animal products except _____.
    A. meat B. milk C. eggs D. fruit
13. _____ is not an animal product.
    A. Milk B. Butter C. Manure D. Meat
14. Chicks are kept for the first 4 weeks in a _____.
    A nest B. cage C. brooder D. fowl run
15. Which of the following is poisonous food which should not be fed to rabbits?
    A. Lucerne. B. Tomato leaves. C. Pellets. D. Hay.

49. A single unit of a farm business is called an _____.
    A. budget
    B. enterprise
    C. profit
    D. profit and loss account.
50. _____ is a predator of chickens.
    A. Tick
    B. Dog
    C. Round worm
    D. Rabbit

Paper 2: Structured Questions

This paper consists of two sections, section A and B.

Section A

Answer all questions in this section. There are six (6) questions in this section.

1. (a) Name any one internal and one external parasite which attack cattle.
   (i) Internal parasite. [1]
   (ii) External parasite. [1]
   (b) Give one effect of external parasites on farm animals. [1]
   (c) State one by-product of each of the following besides manure.
   (i) Poultry. [1]
   (ii) Rabbits. [1]

2. (a) List two advantages of using farm tools and machinery in a farm. [2]
   (b) Name one farm implement. [1]
   (c) State two maintenance measures which can be taken on farm implements. [2]

3. (a) What is a budget?
   (b) Name any two types of farm budgets.
   (c) Give two reasons why farm budgets are important. [2]

4. (a) A rabbit weighed 5 kg before it was slaughtered. After slaughtering and dressing it, the carcass weighed 3kg.
   Calculate the dressing percent of the rabbit. [2]
   (b) Name two products of poultry. [2]

REVISION TEST

Paper 1: Multiple Choice Questions

In this paper, you must answer all the questions.

1. The science of growing crops and rearing of animals is called _____.
   A. geography B. history C. agriculture D. design
2. Which of the following is an importance of agriculture to the family?
   A. It provides tools used for hunting.
   B. Agriculture provides food to people.
   C. Agriculture helps in dam construction.
   D. It is hunting and gathering.
3. The crop which earns Zimbabwe a lot of foreign currency is _____.
   A. rape B. sugar beans C. tobacco D. rice
4. Which of the following is not a branch of agriculture?
   A. Soil science. B. Horticulture. C. Crop production. D. Land reform.
5. A branch of agriculture that supports paper making industry is _____.
   A. agronomy B. Forestry C. horticulture D. wildlife
6. Which tool is used for pruning and cutting flowers?
   A. Axe. B. Secateurs. C. Shovel. D. Spade.
7. A type of agriculture whereby the farmer grows crops and keeps animals at the same farm is known as _____.
   A. cattle ranching B. mixed farming C. forestry D. specialised farming
8. Special crops which are grown in natural farming region 1 are _____.
   A. tobacco and rice B. sugarcane and oranges
   C. tea and coffee D. millet and sugarcane
9. Where, in a storeroom should a shovel be placed?
   A. On rafters B. On racks C. On the floor D. In the corner
10. What type of irrigation system is used to water sugarcane in the sugarcane plantations in Triangle and Chiredzi?
    A. Drip irrigation B. Flood irrigation C. Centre pivot D. Sprinkler irrigation
11. The average weather conditions recorded over many years is _____.
    A. weather B. humidity C. temperature D. climate
12. Which of the following is not a reason for land reform programme in Zimbabwe?
    A. To de-congest overpopulated people in rural areas.
    B. To give land to landless white farmers.
    C. To give land to landless Zimbabwean people.
    D. To create employment in farms.
13. In which farming region is sugarcane mainly grown in Zimbabwe?
    A. Region 1 B. Region 2 C. Region 3 D. Region 4
14. The tool used for cultivating in vegetable beds is _____.
    A. garden trowel B. hand fork C. garden fork D. spade
15. The process whereby rocks break down to form soil is _____.
    A. soil texture B. structure C. profile D. weathering

Paper 2: Structured Questions

Section A (30 Marks)

Answer all questions in this section. There are six questions in this section.

1. (a) Name any two branches of agriculture. [2]
   (b) How many natural farming regions are in Zimbabwe? [1]
   (c) Identify the regions in which the following places are found.
   (i) Harare. [1]
   (ii) Chipinge. [1]

2. (a) State two maintenance of farm tools. [2]
   (b) In a storeroom where are garden forks placed? [1]
   (c) (i) Where are farm implements kept at a farm? [1]
   (ii) A _____ is used for stumping. [1]

3. (a) The table below shows weather elements and instruments used to measure them. Fill in the table below. [3]

Weather element	Instrument used to measure it
---------	Rain gauge
Temperature	_____
Humidity	_____

   (b) (i) What is weathering? [1]
   (ii) Name one type of weathering? [1]

4. (a) State two causes of soil erosion. [2]
   (b) (i) Give two materials used by farmers that cause water pollution. [2]
   (ii) What is monoculture? [1]

5. (a) Why are animals important in agriculture? [1]
   (b) State two importance of bees. [2]
   (c) Bees which gather food and feed the queen bee in a colony are known as _____. [2]
   (d) Name one product obtained from bees keeping. [1]

6. (a) An A1 farmer used $330 to produce 2 tonnes of wheat. The farmer sold each tonne at $250.
   Calculate profit made by the farmer. [2]
   (b) The table below is a profit and loss account record of an A2 farmer in Bindura.

Item	Input	Output
Maize	$150	$350
Field beans	$250	$630
Layers chickens	$320	$700

   Calculate the total profit or loss for the enterprises. [2]