GRADE 6 TERM 1-3 COMPLETE NOTES AGRICULTURE.

CONSERVING OUR ENVIRONMENT
SOIL EROSION CONTROL

Meaning of soil erosion

- ***Soil erosion*** is the process by which topsoil is gradually removed from one place, transported and then deposited to another place by action of water, wind animals and human beings.

Types of soil erosion

1. Splash erosion
2. Rill erosion
3. Sheet erosion
4. **Gu**lly erosion

SPLASH EROSION

- Is the first stage in the soil erosion process by the action of water.
- When raindrops hit the bare ground, the soils broken into soil particles.
- The lighter soil particles are removed and splashed in various directions onto the soil surface by the force or energy of the raindrops.
- Therefore, small circular depressions can be seen where soil particles have been removed by splash erosion.
- Splash erosion occurs mainly during heavy rainfall that falls for short duration.
- Splash erosion causes more damage to soil on sloped land than flat land.
- The bigger Raindrops have more force or energy than smaller raindrops and therefore cause more splashing.
- Is also called **raindrop erosion** because it results from effect of raindrops on the soil.

Demonstrating splash erosion

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Identifying splash erosion in the environment
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SHEET EROSION

- Sheet flow refers to a thin and uniform layer of moving water.
- Sheet erosion occurs when a thin layer of soil is removed uniformly by surface runoff on a flat or gently sloping bare land.
- Sheet erosion occurs when there is heavy rainfall that falls for a short duration
- In such situations, soil is unable to absorb much of the rainwater which therefore flows as surface runoff.
- The heavy raindrops splash soil particles while the surface run off carries the fine soil particles, carrying most of the nutrients.
- It is not easy to notice sheet erosion because the topsoil is removed evenly. By the time this type of erosion is detected, most of the topsoil will have been lost.
- Most common on recently cultivated land situate on smooth gentle slopes
- Signs/indicators of sheet erosion are
    1. Stones below the topsoil are exposed.
    2. Roots of plants including crops, grass and trees are exposed.
    3. Eroded soil and crops remains are deposited at the lower areas of the slope.
    4. Crops yields reduce season after season because of declining soil fertility.

Identifying splash erosion in the environment
PUPILS ACTIVITY
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RILL EROSION

- Rill erosion occurs in places where continuous sheet erosion has taken place.
- In such places, the runoff carrying soil particles concentrates in small channels or rills down a slope.
- Several small rills join to form a large rill
- As runoff flows along the rill, soil is eroded on the sides and the bottom of the rills.
- The rills reach a depth of up to 30 cm.
- Rill erosion can be observed when a freshly cultivated land experiences heavy rainfall immediately after cultivation.
- Rills can easily be removed during normal cultivation of land tools such as hoes and jembes.
- Rills can also be observed on overgrazed land as well as on paths created due to frequent movements by humans.

Observing rill erosion in our environment

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GULLY EROSION

- Gullies are long deep ditches with steep sides
- They are mainly formed on steep slopes where rill erosion has taken place for a long time.
- As the run off flows down the slope, it widens and deepens the rills, thus creating deep ditches.
- Gullies are not easy to remove by means of normal cultivation using tools such as hoes because of their great depth.

Identifying gully erosion

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Observing gully erosion in our environment
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METHODS OF CONTROLLING SOIL EROSION

- **To** control soil erosion effectively, it is important that the soil surface is protected by suitable ground cover
- The ground cover controls splash by intercepting the rain drops before they hit the soil particles
- Ground cover also prevents sheet erosion by reducing the speed of runoff and therefore allowing most of the water to infiltrate into the soil.
- Ground covers include
    1. Cover crops
    2. Mulches
    3. Growing grass or vegetation on land and on drainage channels
- Trees also prevent the soil against erosion by wind in various areas especially in arid and semi arid areas.
- Gabions or check dams constructed across gullies to trap the soil but allow water to pass through

Identifying methods of controlling soil erosion

1. Cover crop
2. Contour ploughing
3. Strip cropping
4. Crop rotation
5. Conservation tillage
6. Avoid overgrazing
7. Reforestation
8. Improving drainage
9. Building terraces
10.

Controlling soil erosion in our environment
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Importance of soil conservation in our environment

1. It helps protect natural resources and water sheds, restores habitats for plants and wildlife, improves water quality and makes soil healthier.
2. Soil is one of the most valuable resources for any agricultural activity. We depend on it for food, employment and income. Some domestic animals also depend on soil for their pasture.

3. If soil is washed away, our land will be infertile, as a result water bodies will be destroyed and people can face hunger .
4. Take measures to prevent soil erosion by taking good care of the soil.
5. Apply appropriate soil erosion control measures if soil erosion has taken place. The measures will prevent further loss of soil and thus restore health and beauty of our environment

WATER CONSERVATION

- It is preservation, control and development of water.
- You can conserve water by practising mulching, shading and cover cropping, sunken bed, shallow pits

Sunken beds

- Sunken beds can be used in dry areas or during dry season.
- They can be used either as nursery beds or seedbeds.
- Because the base of the sunken bed is hidden away from strong sunlight and wind, the rate of heat loss is minimal.
- Sunken beds therefore conserve more moisture than flat or raised beds.

Preparing a sunken bed

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Shallow pits

- Also called planting pits or zai pits
- Planting pits are used as method to prevent water runoff and thereby increase infiltration and reduce erosion
- The pits trap runoff and thus increase water infiltration into the soil.
- Mostly practiced in dry regions

Preparing shallow pits

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Importance of conserving moisture in a seedbed

1. Leads to better and more reliable crop yields
2.
3.
4.
5.

LIVING BETTER WITH WILD ANIMALS

- Repellants such as smoke, noise and certain smelly substances can keep off wild animals from our crops and domestic animals.
- Deterrents methods are used to prevent wild animals from damaging our crops and domestic animals. E.g. use of fence, use of light,

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Using fences to keep away wild animals

- Wire mesh fence and thick thorny bushes fence helps to keep wild animals away from crops and domestic animals

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Using of innovative light to control wild animals

- Animals fear random sounds deflecting and blinking or flashing lights.
- These devices keep wild animals away at night from crops
- Light bulbs can be installed near cattle bomas or around the gardens

Planning how to make innovative deterrents

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Constructing innovative deterrents

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Making sound deterrents

- Using a device that can produce some loud noise can also help to scare the wild animals
-

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Making a bird feeding table

- Safe traps can be used to trap some wild animals which then be released back to the forest.
- During the day birds can be kept away by hanging shiny reflective CDs or reflective ribbons such as shiny party streamers near the garden.
- The light reflected from the shinny surfaces of such objects distracts the vision of birds.
- The birds are also scared by sound reflective ribbons make when it is windly.

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Importance of deterrents in conserving wild animals

- Wild animals are important because they support our tourism industry which earns revenue for our country. They should not be killed when they come to our farms.
- Using deterrents helps us to live better or coexist with the wild animals in our environment.

CREEPING CROPS

- **Creeping crops** are plants that naturally spread their weak stems horizontally on the ground rather than vertically.
- As stems of these plants spread, they produce new plants along the stem.
- Creeping crops can serve as good cover crops.

Identifying creeping crops

1. Sweet potatoes
2. Strawberries plant
3. Watermelon plant
4. Pumpkin plant
5. Cucumber plant
6. Calabash plant

Planting materials for creeping plants

Identifying planting materials

1. Seeds e.g. cucumbers, pumpkins, melons
    - The seeds are obtained from mature fruits of some creeping crops
    - Seeds can also be bought from reputable seed suppliers – agricultural research stations
2. Vegetative materials e.g. splits and vine cuttings

- Planting materials for some creeping crops are mainly obtained from living parts of the same plants.
- Vegetative planting materials can maybe obtained farmers, agricultural training centres

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Collecting planting materials
Slasher/panga/jembe/rake/a shovel/manure

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Planting creeping crops
- A planting site should be prepared before planting the crops.
- Before planting the creeping crops, we should also prepare the planting materials for better establishment.

Preparing a seedbed
1. Clear any vegetation on selected site
2. Dig the land to loosen the soil and remove all weeds.
3. Break all the large soil clods to obtain fine soil
4. Spread well rotten manure over the surface of the land. Mix the manure with soil
5. Level the seedbed

Preparing planting materials from seeds
Knife/water/open container/mature fruit of a creeping crop
1. Cut a ripe fruit into two parts
2. Scoop out the seeds
3. Clean the seeds with cold water to remove pulp
4. Spread the seeds in an open container and dry them in the sun for a few days.
5. Select the good seeds for planting and store them in cool dry place.

NOTE : Seeds selected for planting should be clean, whole, free from insect damage, big in size and of uniform colour.

Preparing other planting materials
- To raise new strawberry plants, a strawberry with many crowns is lifted from the soil and then broken into several parts called splits
- Each split has some roots, stem and leaves. It grows into a new plant once it is planted in a hole.
- Young vines of sweet potatoes are cut into several pieces each measuring 30 cm.
- Each of the vine cuttings will develop roots when the bigger part of it is buried in the soil.

Planting
PUPILS ACTIVITY
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Care for young creeping crops

1. Watering or irrigating the crops.
    - Water the crops when the weather is dry
    - Best time for watering the crops is early in the morning or in the evening when it is cool
    - Ensure that the soil is most and not too wet
    - Avoid applying water directly on the leaves
    - Drip irrigation should be encouraged since it does not over wet the soil and leaves which can lead to fast spread of diseases.
2. Mulching the crops
    - Helps to conserve moisture as well as reduce weed growth
    - Also helps to obtain clean fruits since fruits do not touch the soil
3. Weeding
    - Remove weeds from time to time throughout the growing season.
    - When using tools to weed do not damage the roots, vines of the crop.
4. Protecting the crop from physical damage.
    - Make a structure to protect the creeping crops from damage by humans and animals.
5. Shading
    - Provide a shade in case it is very hot and dry during the growing season.
    - It helps to reduce wilting of crops due to too much evaporation an transpiration.
6. Top dressing with manures
    - Apply organic manure around each crop at the base from time to time
    - You can use compost manure from animals
    - Adequate nutrients help creeping crops to grow fast and produce big leaves and fruits
7. Training the crops
    - Build structure to support your vine crop to grow upwards.
    - You can also train the young crop by moving the tip of the trailing vines to the desired place.
    - Helps the plant to receive adequate sunlight and occupy small space within a given environment

Conservation project

Managing creeping crops
Pupils work
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Responsibilities and care for creeping crops

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Harvesting creeping crops

- Creeping crops should be harvested when the produce is mature and ready for consumption or marketing.
- Harvesting the crop at the right stage is important because harvesting leads to wastage of the produce.

How to identifying the right stage of harvesting crops

PUPILS ACTIVITY
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How to harvest creeping crops

- Produce from creeping crop should be harvested appropriately to avoid wastage
- Poor harvesting may lead to loses during harvesting

PUPILS ACTIVITY
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Harvesting and disposal of creeping crops produce

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PAGE 58-59

Value of creeping crops in our environment

- Creeping crops are important because they provide food for our communities
- Watermelons, strawberries provide vitamins which protect us against diseases
- They are good sources of fibre which improves digestion
- Creeping crops protect the soil against erosion due to their trailing growth habit
- Creeping crops can be grown any time of the year. Many of them have no seasons. They can provide food security for our community.
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  PAGE 59-60

DOMESTIC ANIMALS

Practices in rearing small domestic animals

- Domestic animals are the animals that are kept at home. They include cow, donkey, chicken, duck, horse, rabbit, cat, dog etc.
- Some of the domestic animals are large while others are small.
- For these animals to grow, produce healthy products and remain safe, they need care and attention.
- The small domestic animals require small pieces of land when compared to big domestic animals
- The small domestic animals can therefore be reared even in urban areas where space is limited
- The small domestic animals multiply very fast and thus provide a continuous source of income when they are sold.
- small domestic animals requires less labour

Pupil's activity
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Importance's of small domestic animals

Domestic animals are important to human life because:

- They provide, meat for food, milk, security, eggs,
- Some small domestic animals may be sold to generate income.
- Some animals like hens and rabbits produce wastes to make manure.

Small domestic animals and their uses

Domestic animals	Uses of the domestic animal
Rabbit	
Cat	
Poultry	
Guinea pig	
Dog	

Routine practices in rearing of small domestic animals

- Routine means something that is done often or on regular basis
- The small domestic animals should be fed with adequate and nutritious feeds every day
- They should also be provided with clean water to drink.
- The drinking equipment should be cleaned daily before putting fresh drink.
- This prevents contamination which can cleaned regularly and disinfected to ensure they do not get parasites and diseases
- The tools and equipments used in cleaning the animals houses and watering equipment should also be cleaned.
- To reduce overcrowding, the excess animals can be sold so as to earn some income.
- Some animals such as chicken can be eaten.
- If the animal get sick, they should be treated immediately by a veterinarian or animal health specialist

Domestic animal	Main routine rearing practices
Rabbit	
Chicken	

Dog	
Cat	
Guinea pig	

Safe handling of small domestic animals

Pupil's activity
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1. Restrain animals when doing routine practices
2.
3.
4.
5.
6.

GARDENING PRACTICES

Organic Gardening of legumes

Gardening is the practice of growing and cultivating plants/crops.

Identifying legumes

Pupil's activity
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Legumes- are the fruit or seed of plants which are used as food
Examples of legumes
Beans • Peas • Black beans • Green grams • Groundnuts • Cow peas • Soya beans

- The roots of legumes have small swelling root nodules where some very tiny things called nitrogen fixing bacteria live.
- These bacteria take up nitrogen gas from atmosphere and convert it into useful nutrients
- The nutrients are then absorbed by the legume crops to make proteins.
- Therefore legumes are important source of proteins in our diet

Meaning of organic gardening

Pupil's activity
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- **Organic gardening** refers to a system of growing crops using natural farming techniques and materials instead of artificial chemicals
- In organic gardening, compost manure and animal manure are used instead of artificial fertilizers
- The organic manures feed the soil which in turn feeds the crops with nutrients leading to strong and healthy crops
- Healthy crops are able to tolerate the effects of drought, pests and disease which are the main causes of low yields.
- The manure also adds organic matter which supplies nutrients to useful living things such as earthworms and some bacteria in the soil.
- In addition, organic manure enables the soil to hold enough moisture for crop growth
- In organic gardening, artificial chemicals such as pesticides are not used.
- This is because some of the chemicals remain in the crops for a long time.
- When people consume food which contains residues of chemicals, they can become sick.
- Chemicals also cause harm to animals including beneficial insects that feed on pests or pollinate our crops
- Crops require a good environment for them to grow healthy
- Such environment is achieved by use of various gardening practices which are referred to as cultural practices.

Establishing a legume crop
How can we grow legumes using cultural practices?

Pupil's activity
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Selecting legume seeds for planting

Pupil's activity
Page 77-80

1. Identify the legume crop that is best suited to grow in your environment
2. Look for seeds of the legume crop that you have identified for planting and bring them in class
3. Sort out the good legume seeds and discard the bed seeds

Preparing a seedbed
Why do we prepare a seedbed for planting our legume seeds?

Pupil's activity
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1. Choose the type of seedbed you want to use to plant the legume seeds
2. Identify a suitable planting site before planting crops
3. Discuss and agree on the seedbed to prepare for growing your legume
4. Ensure you assemble enough manure near the selected site
5. Write down the tools and equipment as well as other materials that you will require for preparing your seedbed
6. Use the tools and equipment that you have identified to prepare a suitable seedbed for raising your legume crop
   Ensure you mix the soil with adequate, well rotten manure such as compost or manure from sheep, goats
7. Clean your tools and equipment after preparing your seedbed

Sowing legume seeds

Pupil's activity
Page 77-80

- Proper seedbed preparation helps to remove weeds and loosen the soil for easy sowing of the seeds
- It also aerates the soil and allows water to percolate
- In organic gardening, well rotten organic manure should be incorporated into soil during seedbed
- Sees for planting should be healthy, whole, dry and clean.
- The selected seeds should be suited to the climate and soil of a a given place for better survival and high yields
- Growing crops that are not well adapted to the environment will also lead to high chances of attack by insects and diseases thus low yields
- To ensure seeds germinate with ease, it is important to sow seeds at proper planting depth
- Planting depth of legumes ranges from 2.5 centimetres to 10 centimetres.
  Two to three seeds can be planted per hole using the correct spacing
- Proper spacing ensures that the crops receive adequate nutrients, water sunlight and air for proper growth.

Caring for growing legume crops
Legume plants do best in unshaded areas, arranged so that they don't block each other from receiving sunlight. Keep the soil moist. Most plants in the legume family do well in moderately moist soil with average soil fertility.

Identifying cultural practices for growing legume crops

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Taking care of the growing legume crops

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- If there is no rainfall, irrigation should be done to ensure soil is moist during the growing season
- Waterlogged seedbeds and application of water directly on the leaves should be avoided to reduce spread f diseases on legume crops
- **Mulching** should be done when legume seedlings are well established to conserve soil moisture
- **Gapping** should be done to replace the seedlings which fail to germinate so that high yields are obtained.
- **Thinning** is done by removing excess seedlings so as to leave only one or two strong seedlings in each hole
- Allowing the correct number of plants per hole reduces completion among the crops for nutrients, water and light
- If the pests are few, they can be removed by handpicking or by brushing them aside. Crops infected by diseases should be uprooted and then destroyed by burning to prevent spread of diseases to other crops
- Weeding during rainy season or when legume crops are wet should be avoided to prevent rapid spread of diseases
- Clean tools should be used during weeding to prevent spread of diseases
- Climbing legume crops require some support structures to grow upright

Right stage of harvesting legume crops
Determining the right stage of harvesting legume crops

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- The stage of harvesting of legumes depend on when the legume is consumed

-For example fresh pods of various types of beans or peas can be picked when green and eaten as vegetables
-The seeds from such pods have high moisture content and are soft when pressed between the fingers

- if beans or peas are intended for consumption as grains, they should be harvested when most of the pods lose their green colour.

- Most legumes pods turn brown and dry when manure
- The seeds from mature pods are hard when pressed between the fingers because they have low moisture content
- Legume like groundnut are difficult to determine if they are mature because the pods develop underground
- To determine when groundnuts are fully mature, a few plants are lifted to observed the pods before harvesting all the groundnuts
- When they are mature, the seeds should be big enough to fill the pods.
- When the mature pods are pressed with fingers, the pods are difficult to split unlike pods which split easily
- Harvesting of dry pods is done during dry weather conditions
- If harvesting is done when the weather is wet, it can lead to rotting of the seeds and hence low quality crops
- Groundnuts, unlike other legumes are shelled by hand or using special machines and not by beating the pods with sticks or trampling the pods with feet.

Harvesting legume crops

Pupil's activity

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1. Check when your crop is ready for harvesting
2. Harvest your legume crops once you have confirmed that they are ready for harvesting. Harvesting can be:

- Picking dry pods by hands
- Uprooting mature bean seeds
- Using a sickle

3. Lay a material with clean flat surfaces as a mat or a large sack on the ground
4. Spread the harvested crop or the pods in a thin layer on the mat and let them dry in the sun for a few days
5. keep turning the harvested crop produce to ensure sufficient drying
6. separate the seeds from the pods by threshing or shelling
7. clean the seeds by winnowing to remove chaff
8. dry the seeds for a few days. Ensure that the seeds are protected against destruction by animals
9. sort the seeds by removing by removing any foreign materials, broken and rotten seeds
10. weigh the dry produce using a weighing scale
11. put the dry clean seeds in a sisal bag or in a dry, tightly closed container for storage
12. store the produce in a cool, dry place if they are not going to be consumed or sold immediately

Importance of organic gardening of legumes to our health

Pupil's activity

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- organically grown legumes are safe and healthy to eat
- Legumes are rich in plant protein, fibre and minerals
- Most of them are also low in fat
- Eating legumes as part of a healthy diet can help maintain a healthy body

Educating our community on benefit of organic gardening
Pupil's activity
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1. Organic gardening benefits the larger ecosystem.
2. It produces the most healthful vegetables in the world.
3. It's truly sustainable
4. It's inexpensive and self-regenerating (if you compost)
5. Soil health is maintained and improved.
6. It does not pollute the environment
7. Organic vegetables are free of poisons
8. Organic gardening benefits the larger ecosystem.

<u>Innovative ornamental gardening</u>

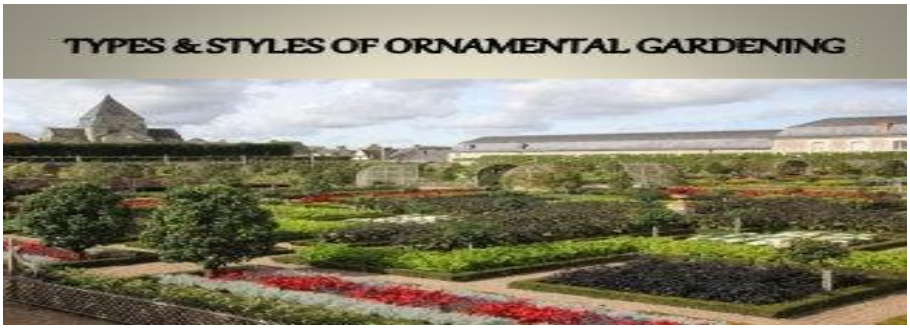
Pupil's activity
Page 100-101

Meaning of ornamental gardening

- Ornamental gardening refers to cultivation of plants with the aim of enhancing beauty of a place or landscape
- In ornamental gardening flowers, trees and shrubs are the main plants that grown
- Some crops can also be grown in a pattern that can make our surrounding beautiful
- Ornamental cropping can be done in learning institutions, hospitals, hotels, public parks, homes and sport fields

<u>Observing ornamental cropping patterns</u>

Pupil's activity
Page 101-102



Exploring innovative ornamental gardens

Pupil's activity
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- Innovative ornamental patterns could be made by using plants in containers or on the ground
- The plants used could be flowers, trees, shrubs or food crops such as sugarcane, bananas, fruit crops or vegetables.
- When food crops are used for ornamental gardening, they bring beauty and also contribute to food security

Designing an innovative cropping pattern

Pupil's activity
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<u>Growing media for ornamental crops</u>

- Ornamental plants can be established in two ways

1. Using soil as a base to support the roots of the ornamental plants
2. Using soilless media as a base to support the roots of the ornamental plants

Establishing ornamental plants In soil media

Pupil's activity
Page 104-105

- The surface on which plants is called growing medium
- Soil is a natural growing medium for plants
- It provides nutrients, moisture, air and mechanical support to the plants
- Plants can also be grown in a soilless medium such as peat moss, coco peat and pebbles
- A soilless medium requires regular supply of nutrients for proper growth of the plants
- The nutrients can be supplied from liquid manure
- The liquid manure also called compost tea, is a mixture of organic manure that has been soaked in water in a closed container for a few days

Establishing ornamental plants in soilless media

Pupil’s activity
Page 106-107

1. Identify a soilless medium to use in a container garden
2. Measure the quantity of soilless medium that can fill about three quarter of each available container
3. Put the identified soilless medium in a container
4. Ad some water to moisten the soilless medium
5. Plant an ornamental plant or crop of your choice in the container garden
   You may plant seeds, seedlings of plants transplanted from nursery or cuttings of certain plants in the container gardens
6. Select a suitable site and place your containr gardens in a pattern of your choice

Preparing compost tea

Pupil’s activity
Page 107-109

Requirements
Two 20 litre bucket
Clean fresh water
Organic manure
Stick for stirring manure
Water

1. Put some organic manure in an empty 20 litre bucket
   Manure should fill about a third of the bucket
2. Add clean water to fill the bucket and stir thoroughly with a stick
3. Put a lid on the bucket and place it in a well sheltered place for a few days
4. Pour the liquid through a piece of cloth into another bucket to remove the solid waste
5. Add fresh clean water to the liquid manure collected in the bucket to dilute it.
   The volume of water should be twice that of the liquid manure. Your compost tea is now ready for use in your ornamental plants growing in the soilless media

Importance of innovative ornamental cropping
Pupil’s activity
Page 109-110

1. They add beauty to a particular environment
2. They can be placed at shopping malls or offices in small gardens
3. They are very good plants to be used for landscaping
4. Since they don't have a deep rooted system they are not hard to maintain because they don't need much water
5. They serve as a habitat for other animals like birds
6. The plants can also provide shade from the rays of the sun

<u>Moisture bed gardening</u>
Pupil's activity
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- Another innovative method of conserving soil moisture is by use of moisture beds or moist beds
- Raised-bed gardening is a form of gardening in which the soil is raised above ground level and usually enclosed in some way. Raised bed structures can be made of wood, rock, concrete or other materials, and can be of any size or shape.
- The soil is usually enriched with compost

How to prepare a sunken moisture bed
Pupil's activity
Page 112-114

Raised moisture beds

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- raised moisture beds can be used to grow vegetables crops, spices and fruits
- the beds are able to retain water for a longer time than ordinary seedbeds
- raised seedbeds bottom and sides are lined with a thick polythene sheet

How to prepare a raised moisture bed
Pupil's activity
Page 115-119

- To make a raised moisture bed you need
  Topsoil
  Compost manure or farmyard manure
  Dry grass
  Kitchen waste

Hardcore or gravel
A fork jembe
A wheelbarrow
A shovel
Binding wire
A pair of pliers
Wooden pegs
Ten 90 centimetre long fittos (stakes)
A panga
A claw hammer
Thick polythene sheet

1. Select a suitable site for your garden and clear any vegetation on it. The site should be away from shade
2. Measure land on the ground so that it is 1 metre wide and any desired length
3. Fix 90 centimetres long wooden stakes about 30 cm below the ground along the edges of the marked area. Ensure all stakes are on the same depth and that they are at the same height above the ground to ensure a uniform seedbed
   The stakes will create a framework or structure for holding the raised seedbed.
4. Inside the framework created by the stakes, lay a thick polythene sheet on the ground and on the sides of the structures
   Ensure the polythene sheet is secured firmly onto the stakes using pieces of binding wire or string
5. Lay a 30 cm layer of hardcore or gravel carefully at the bottom.
   Start with large stones followed with a thin layer of small stones.
   Ensure that the hardcore does not tear the polythene sheet.
6. Place a 10 centimetre layer of dry grass or kitchen waste such as fruit and vegetable peels on top of the hardcore.
   This layer will hold the soil and prevent it from sinking in the spaces between the hardcore
7. Add a 20cm layer of topsoil mixed with compost manure.
   For one wheelbarrow of topsoil, add one wheelbarrow of manure
   Ensure the mixture of top soil and well rotten manure is uniformly spread
8. Your raised seedbed is now ready for crop establishment

Preparing a moisture bed
Pupil’s activity
Page 119-

1. Discuss with your teacher the type of moisture bed which is bst suited to your environment
2. Using the knowledge that you have acquired so far prepare one type of moisture bed, either a sunken bed or a raised moisture bed

Establishing a crop on a moisture bed
Pupil’s activity
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Taking care of the crop on a moisture bed

Pupil's activity
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<u>Importance of moisture bed cropping</u>

1. It is possible to produce crops throughout the year
2. Soil is well enriched with organic manure and this improves its water retention ability
3. Many crop plants can be planted on a small area leading to high yield
4. It is possible to grow crops which would not normally do well in a given environment due to shortage of water

For example: in dry areas, arrowroots can be grown as long as other factors such as warm temperature favour their growth.