

1

Chapter

Crop Production and Management

We'll cover the following key points:

- Agriculture and crop production
- Basic Practices of Crop Production
- Animal Products as Food Sources



Hi, I'm EeeBee

Do you Remember:

Fundamental concept in previous class.

In class 5th we learnt

- Source of Food – Animals
- Kharif and Rabi Crops

Still curious?

Talk to me by scanning the QR code.



Learning Outcomes

By the end of this chapter, students will be able to:

- Understand the importance, practices, and challenges of agriculture.
- Develop foundational skills in agricultural methods.
- Analyze issues related to agriculture.
- Gain hands-on knowledge through farm visits and experiments.

Guidelines for Teachers

Teachers can begin by emphasizing agriculture's importance in daily life and engage students through thought-provoking questions. Using interactive tools, visual aids, and real-world examples can help students better understand and remember key concepts. Teachers can also incorporate real-world agricultural problems to promote problem-solving.

Organizing group projects, field trips to farms, or research tasks can enhance students' understanding and provide practical applications of the chapter's concepts.

NCF Curricular Goals and Competencies

This chapter aligns with the following goals and competencies: CG-6 (C 6.1 and 6.2): Encouraging scientific exploration by understanding natural processes, cultivating scientific knowledge, and practicing inquiry-based learning.



CROP PRODUCTION AND MANAGEMENT

Mind Map

Agricultural Practices

When plants of the same kind are cultivated at one place on a large scale. It is called crop.

Type of crops

i. **Kharif Crops:** The crops which are sown in the rainy season are called kharif crops. The rainy season in India is generally from June to September. Paddy, maize, soyabean, groundnut and cotton are kharif crops.

ii. **Rabi Crops:** The crops grown in the winter season (October to March) are called rabi crops. Examples of rabi crops are wheat, gram, pea, mustard and linseed.

Note :- Besides these, pulses and vegetables are grown during summer at many places.

Basic Practices of Crop Production

- Preparation of soil
- Sowing
- Adding manure and fertilizers
- Irrigation
- Protecting from weeds
- Harvesting
- Storage

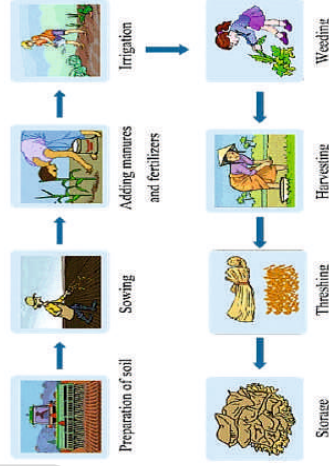
Preparation of Soil

- Preparation of soil**
 - Loosening
 - Turning of Soil
 - Tilling / Ploughing
 - Levelling of soil
- Sowing**
 - Traditional Tools
 - Manual Sowing
 - Seed
- Adding manure & fertilizer**
- Irrigation**
 - Traditional Method
 - Modern Method
- Protecting from weeds**
 - Using Weedicides
 - Protecting seeds
- Harvesting**
 - Cutting
 - Threshing
 - Winnowing
- Storage**
 - Silos
 - Granaries

Food from Animals

Food	Source
Milk	Cow, Buffalo, Sheep and Goat
Honey	Bee
Egg	Hen
Meat	Goat

Note :- Food is also obtained from animals for which animals are reared. This is called animal husbandry.



Agriculture and Crop Production

Chotu and Gudiya visit their grandparents in the village, where they meet Rajat, a farmer who is tending to his wheat fields.



Understanding Agriculture

Agriculture is the science that involves growing plants and raising livestock to fulfill human needs, such as food and materials.

Over the last century, population growth has driven significant progress in agriculture and **animal husbandry**. With increased demand, more effective ways of producing, managing, and distributing crops have been developed.

Crop Plants

Crop plants are plants grown in large quantities for **cultivation**, usually focusing on a single variety in a field. For

In History...

Wheat was one of the first crops cultivated by humans, beginning around 8000 BC in the Middle East. People began collecting and eating wild grains before domesticating them. The people of Jericho were the first known to have lived primarily from crop cultivation.

The earliest evidence of crop production has been found at the archaeological site of Kot Diji in Pakistan, which dates to around 3500 BCE.

The process of humans providing protection and ensuring the continuous propagation of cultivated plants is called domestication. Over time, humans and domesticated plants have become mutually dependent on each other.

KEYWORDS

Cultivation: Preparing land and growing crops.

Animal Husbandry: The practice of breeding and raising livestock, such as cows, goats, and poultry, to produce food, fiber, and other resources for human use.

instance, a rice crop represents the rice plants cultivated within the same field. The end product obtained from these crops is known as the yield.

Types of Plants Based on Growth Conditions:

Plants can be categorized into two types based on their growing environment:



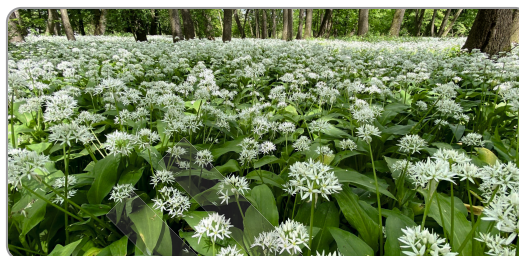
Rice crop

Cultivated Plants



These are plants grown by farmers in fields.

Wild Plants



These plants grow naturally without human assistance.

Types of Crops by Season

Rabi Crops (Winter Crops)

Kharif Crops (Summer Crops)

Aspect	Kharif Crop	Rabi Crop
Sowing Season	Early May, usually at the start of the monsoon rains	Mid-November, ideally after the monsoon rains
Other Names	Monsoon crops / Autumn crops	Winter crops
Rainfall Impact	Sensitive to rainfall; too little or too much can damage crops	Generally unaffected, but winter rain may harm crops
Required Conditions	Warm weather and high water needs	Warm climate for seed germination, cold for growth
Harvesting Season	Typically October - November (varies by crop and region)	Generally April - May (varies by crop and region)
Examples	Cotton, groundnut, maize, rice	Barley, gram, peas, wheat
Etymology	"Kharif" means "autumn season" in Arabic	"Rabi" means "spring season" in Arabic



Did you know

Rabi and Kharif Crops: A Mythological Perspective

In Hindu mythology, Rabi and Kharif crops symbolize the divine balance of nature.

Rabi Crops (Winter's Blessing): Represented by **Lord Vishnu and Bhoomi Devi**, Rabi crops like wheat and mustard are sown after monsoon, nurtured by winter's calm. Harvest festivals like **Sankranti** honor **Surya**, the Sun God, for prosperity.

Kharif Crops (Monsoon's Gift): Governed by **Lord Indra and Varuna**, crops like rice and maize flourish with monsoon rains. This reflects the Earth (Prithvi) and Rain God's union. Harvest is celebrated during festivals like **Navaratri**, invoking Devi's abundance.

Let's recall what we know

Apply Concept in Real-Life Context

Apply

Imagine you're a farmer planning the crops for the upcoming season. Think about the factors that might influence your choice of crops for each season—Rabi and Kharif.

Skills Practiced: Critical and logical thinking, Identification, Application thinking

Further Analysis

Analyse

Examine how climate change affects crop production, especially in terms of the timing and yields of Kharif and Rabi crops.

Skills Practiced: Critical analysis, logical reasoning, brainstorming

Self-Assessment Questions

Evaluate

1. Define agriculture.
2. How does a crop differ from produce?
3. Name a few crops grown in October-November.
4. Why is large-scale crop cultivation necessary?

Creative Task

Create

Visit local farms to observe and categorize crops as Rabi or Kharif. Research online to create a list of nutrients provided by these crops. With your findings, design a poster or infographic that showcases the nutritional benefits of Rabi and Kharif crops.

Skills Practiced: Brainstorming, research, digital literacy, creativity

SCAN TO ACCESS



Take a Task



Watch Remedial

**Bloom's
Taxonomy**

Basic Practices of Crop Production

Rahul visits his uncle's farm and notices workers spreading something on the field.



Farmers carry out a series of essential tasks to ensure a successful crop yield. These tasks include preparing the soil, planting seeds, watering, applying fertilizers, harvesting the produce, and storing it safely. Together, these tasks are referred to as **agricultural practices**. Below are the seven fundamental agricultural practices that farmers follow to grow healthy crops:

- Preparation of Soil
- Sowing of Seeds
- Application of Manures and Fertilizers
- Irrigation
- Weeding
- Harvesting
- Storage

Types of Agricultural Implements

Farmers use various agricultural implements to streamline and improve crop production. These tools cater to different farming stages, encompassing both traditional and modern methods.

Irrigation Machinery

Irrigation machinery, like central pivot systems and pumps, ensures controlled water supply to crops, crucial for growth in low-rainfall areas. It helps maintain optimal soil moisture, preventing under or over watering.



Soil Cultivation Implements

Soil cultivation implements are used to prepare the soil for planting. This includes breaking up and loosening the soil, as well as removing weeds. Common tools in this category include disk harrows, spike harrows, and drag harrows. These tools make the soil more suitable for seed germination and nutrient absorption by plants.



Cultivator



Planting Machines

Planting machines are designed to efficiently plant seeds or **saplings** over large areas after soil cultivation. Examples include broadcast seeders, precision drills, air seeders, seed drills, and transplanting equipment.

Harvesting Implements

Harvesting implements are used to gather mature crops from the field. These machines reduce the time and labor required for harvest. Examples include trailers, diggers, and pickers, which can be used to collect a variety of crops. Efficient harvesting equipment ensures minimal crop damage and maximizes yield.



Agricultural Tools

Basic agricultural tools, like the sickle, plough, hoe, and drills, are essential for various farming tasks. These tools are often manually operated, but are indispensable for small-scale or traditional farming. They help farmers perform basic tasks such as tilling, **weeding**, and planting, making farming practices more effective and productive.

Soil Preparation for Crop Cultivation

Crop plants rely on the soil to absorb water and essential nutrients through their roots. The soil also houses beneficial organisms, such as the Rhizobium bacteria and earthworms, often referred to as the “farmer's friend,” which enhance soil fertility. The preparation of soil involves two main steps: ploughing and levelling.

KEYWORDS

Saplings: Young trees in their early growth stage.

Weeding: Removing unwanted plants to aid growth.

Ploughing

The first step in preparing soil is **ploughing** (or tilling), which involves loosening and turning over the soil. This process helps improve soil structure, allowing roots to grow more easily.



Wood ploughing

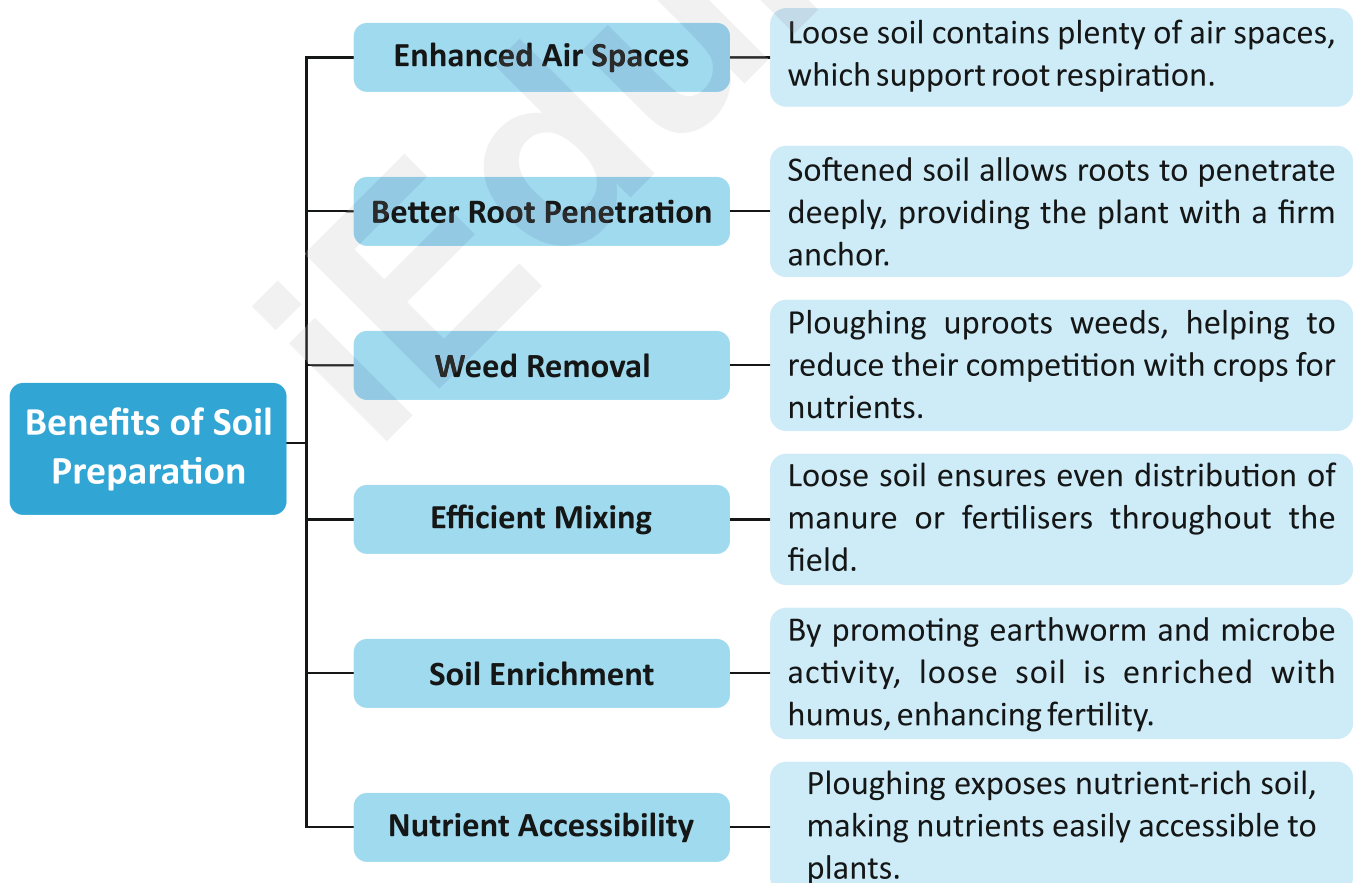


Iron ploughing

Before ploughing, it may be necessary to water dry soil to make it more manageable. In some cases, manure is also added before ploughing to allow for thorough mixing with the soil, enhancing its fertility.

Levelling

After ploughing, the field may have large clumps of soil. To create an even surface, the field is then **levelled** using a leveller. This process is crucial before sowing seeds, as it helps prevent soil erosion, maintains moisture, and ensures uniform seed distribution.



Sowing of Seeds

Sowing is the process of placing seeds into the prepared soil. Common crops sown this way include wheat, maize, bajra, jowar, oats, and mustard.

Guidelines for Effective Sowing

- **Seed Quality:** Only high-quality, disease-free seeds should be used to ensure healthy plant growth.
- **Optimal Depth:** Seeds should be planted at an appropriate depth. If seeds are placed too shallow, they may be eaten by birds; if planted too deep, they may struggle to germinate.
- **Spacing:** Adequate spacing between seeds is essential to avoid overcrowding, allowing each plant to access sufficient water, nutrients, and sunlight.



Sowing of seeds

Transplantation

For crops like rice, tomatoes, onions, and brinjals, seeds are germinated in a nursery, and healthy seedlings are later hand-transplanted to the main field.

Benefits of Transplantation

- **Selection of Healthy Seedlings:** Farmers can choose only the healthiest seedlings for transplantation.
- **Proper Spacing:** Seedlings can be planted at the ideal distance from one another to maximize growth potential.
- **Improved Crop Yield:** Transplanting strong seedlings at the right spacing often leads to higher productivity and better crop quality.

Methods of Sowing Seeds

Manual Sowing

- Involves planting seeds by hand, a technique also known as broadcasting.
- Seeds are scattered by hand across the field.
- This leads to an uneven spread of seeds.



Seed Drill

- Seeds are placed in a funnel-like container attached to a plow, which is pulled by a tractor.
- This approach provides even seed distribution and the correct depth for planting, which saves time and labor.

Application of Manures and Fertilizers

Crop plants depend on the soil for vital nutrients essential to their growth. Repeated cultivation depletes these nutrients, leading to lower crop yields. Here are methods for maintaining soil nutrient levels:

Fallowing

Fallowing is the practice of leaving a field uncultivated for one or more seasons to allow microbial decomposition to restore nutrients naturally. However, it can be challenging for farmers to leave fields unused due to the need for continuous income.



Crop Rotation

Crop rotation involves alternating crops like leguminous (peas, beans) and non-leguminous (wheat, rice) to maintain soil fertility. Leguminous plants host Rhizobium bacteria in their roots, which convert atmospheric nitrogen into usable forms, enriching the soil and restoring nutrients.

Adding Fertilizers and Manures

Fertilizers and manures are nutrient-rich materials frequently used to improve soil fertility. The table below explains their definitions, examples, advantages, and disadvantages.

Features	Manures	Fertilizers
Definition	The addition of manure to soil is known as manuring. Manure is an organic substance made from decomposed plant and animal waste, typically applied to soil before sowing seeds.	Fertilizers are chemical compounds with specific nutrients, usually produced in factories. Common types, such as NPK fertilizers, supply nitrogen (N), phosphorus (P), and potassium (K) to plants.
Examples	<ul style="list-style-type: none">• Farmyard manure: Made up of animal dung, straw, leaves, urine, and other farm wastes.• Green manure: Derived from green plants, often leguminous.• Compost: Created through the decomposition of dead plants and animals.	<ul style="list-style-type: none">• Urea: Provides nitrogen.• CAN (Calcium ammonium nitrate): Provides calcium and nitrogen.• Diammonium phosphate: Supplies nitrogen and phosphorus.
Advantages	<ul style="list-style-type: none">• Improves soil texture.• Increases soil's water-holding capacity.• Makes soil porous, allowing gas exchange.• Boosts the number of beneficial soil microbes.	<ul style="list-style-type: none">• Easy to handle, store, and transport.• Less bulky compared to manures.• Supplies specific nutrients to soil.• Acts as a concentrated source of nutrients.
Disadvantages	<ul style="list-style-type: none">• Works slowly and can be affected by seasonal changes.• Lacks specific nutrient targeting, making it less effective for crops with particular needs.• Has low levels of nitrogen, phosphorus, and potassium, so larger quantities are required.	<ul style="list-style-type: none">• Can reduce soil fertility over time.• Contributes to soil and water pollution.

Irrigation

Water is crucial for the healthy growth and development of crops. It supports seed germination, root growth, **nutrient transport** within the plant, and **shields plants** from extreme environmental conditions.

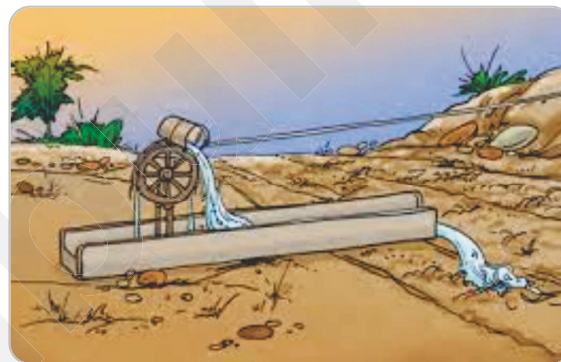
Regularly supplying water to crops at specific intervals is called irrigation. The irrigation needs of crops vary; for instance, wheat requires watering at different stages of growth, while rice needs consistent standing water. In summer, irrigation demands are higher due to increased **evaporation**. Water sources for irrigation include ponds, lakes, canals, wells, tube wells, rivers, and dams. There are two main types of irrigation methods: traditional methods and modern methods.

Traditional Methods

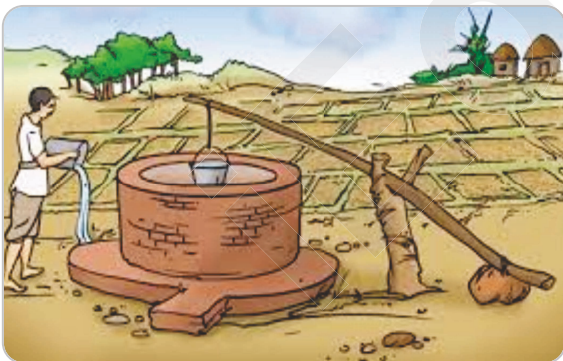
Traditional irrigation relies on animal or human labor and is generally less costly but also less efficient. Common traditional techniques include the chain pump, rahat, and dhekli.



Moat



Chain pump



Dhekli



Rahat

Modern Methods

Modern irrigation techniques help conserve water and distribute it evenly across the field. Common modern methods include the sprinkler system and the drip system.

KEYWORDS

Evaporation: The process where water changes from liquid to vapor, mainly due to heat.

Shields Plants: A phenomenon where water evaporation from plant surfaces (transpiration) helps cool the plant and prevent overheating.

Sprinkler System

The sprinkler irrigation system uses rotating nozzles connected to pipelines to distribute water as droplets, mimicking rainfall for uniform field coverage. It is effective on uneven terrains, sandy soils, and irregular landscapes, ensuring consistent crop moisture. Key benefits include adaptability and efficient water distribution.



- Suitability for Sandy and Rough Terrain
- Versatility in Application
- Temperature Regulation for Crops
- Soil Conservation



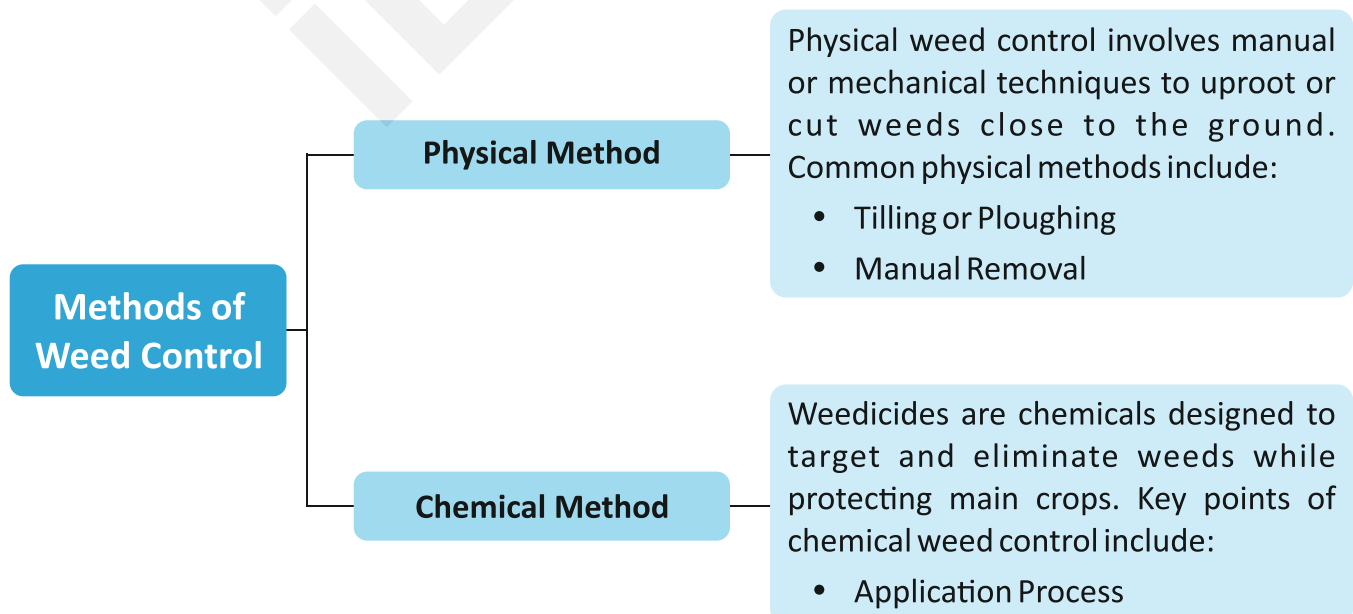
Drip System

In a drip irrigation system, water is delivered directly to plant roots through underground pipelines with emitters, minimizing water loss through evaporation, runoff, or wind. This efficient method conserves water, maintains optimal soil moisture, and ensures targeted watering for healthy plant growth. This targeted watering approach offers several benefits:

- Efficient Soil Moisture Management
- Reduced Weed Growth
- Promotes Healthy Plant Growth
- Limits Bacterial Growth

Weeding – The Process of Removing Weeds

Weeds are unwanted plants that compete with crops for resources, hindering their growth. Weeding, the process of removing weeds, is vital for improving crop productivity. It should be done before weeds produce flowers and seeds to prevent their spread.



Side Effects of Weedicides

Although weedicides are effective in controlling weeds, they come with certain health and environmental risks:

- Residues in Crops
- Health Risks for Farmers
- Regulation and Bans

Weeding is crucial in agriculture for improving crop yield by removing unwanted plants. Farmers use both physical and chemical methods to control weeds while taking precautions to minimize health and environmental risks from **weedicides**.



Trowel (khurpi)



Harrow



Spraying Weedicide

Harvesting

Harvesting is the process of collecting mature crops at the end of the growing season, often requiring significant manual labor, especially on smaller farms with limited equipment. In grain and pulse farming, harvesting begins with reaping, the cutting of crops using tools like a **scythe**, sickle, or reaper, which is crucial for ensuring crop quality.

The harvesting process generally involves four main steps



Reaping

The act of cutting the mature crop. This can be done by hand or with the help of mechanical equipment on larger farms.



Threshing

Threshing follows reaping to separate the edible grains from the plant's stalks and other material.

KEYWORDS

Weedicides: Chemicals used to kill or control unwanted plants (weeds).

Scythe: A tool with a long curved blade and a handle, used for cutting grass or crops manually.



Cleaning

Cleaning grains involves removing debris and contaminants through manual or machine methods, followed by rinsing, cleaning agents, and sanitizing to ensure a safe, high-quality yield.



Transporting

Once the grains are prepared, they are transported from farms to marketplaces and distribution centers across regions and countries, ensuring that agricultural products reach consumers worldwide.

Modern harvesting practices use advanced technologies to enhance the efficiency and quality of the harvest. By employing these technologies, farmers can reduce grain loss, increase productivity, and improve the overall quality of their yield. This is essential for meeting high agricultural standards and minimizing waste.

Storage of Crops

Proper crop storage is vital, especially for large-scale farmers who grow crops for market sale. Without adequate storage, significant grain losses can occur, impacting farmers economically. Common threats include pests, rodents, microorganisms, and environmental factors like moisture and temperature changes, which can spoil grains. To mitigate these risks, grains must be treated appropriately before storage.

Small-scale Storage

On a small scale, food grains are typically stored in jute bags or small metallic bins, often with dried neem leaves added to repel worms and insects.



Large-scale Storage

On a large scale, food grains are usually stored in silos or large godowns, often treated with fumigants or protective chemicals to prevent infestations by pests and insects.

Let's recall what we know

Apply Concept in Real-Life Context

Apply

1. Imagine you are a farmer who has just harvested a large amount of wheat. You plan to store it for a few months before selling it in the market. What storage method will you choose to keep your grains safe from pests and moisture? Explain the storage method in detail.
2. Make a checklist of steps for preparing harvested grains to ensure they remain free from pests and moisture before storing them.

Skills Practiced: Critical and logical thinking, Identification, Application thinking

Further Analysis

Analyse

1. India's diverse natural landscape supports various ecosystems vital for biodiversity. Explore the types of forests across India, highlighting their unique flora and fauna. Identify key environmental factors sustaining each forest type and explain their role in maintaining ecological balance. Summarize the findings in a detailed report.
2. Discuss traditional and modern agricultural methods for conserving soil fertility in India, their scientific principles, and effectiveness in maintaining soil health and preventing erosion.

Skills Practiced: Critical analysis, logical reasoning, brainstorming

Self-Assessment Questions

Evaluate

1. Is recycling paper more effective than plastic for waste reduction? Why?
2. Which is more sustainable: rainwater harvesting or water-efficient appliances for conserving water? Provide your reasoning.

Creative Task

Create

How can you distinguish between fresh and old seeds, which are more likely to germinate successfully?

Perform the following experiment to test your hypothesis.

Take a container, water, and some seeds of your choice .

- Fill the container with water up to three-fourths.
- Add the seeds to the water and let them remain still for 24 hours.
- Observe and record which seeds float and which sink.
- After 24 hours, check for sprouting or visible changes.

Write your observations and conclusion based on whether the seeds floated or sank, and how many of the seeds sprouted or showed signs of life.

Skills Practiced: Brainstorming, research, digital literacy, creativity

SCAN TO ACCESS



Take a Task

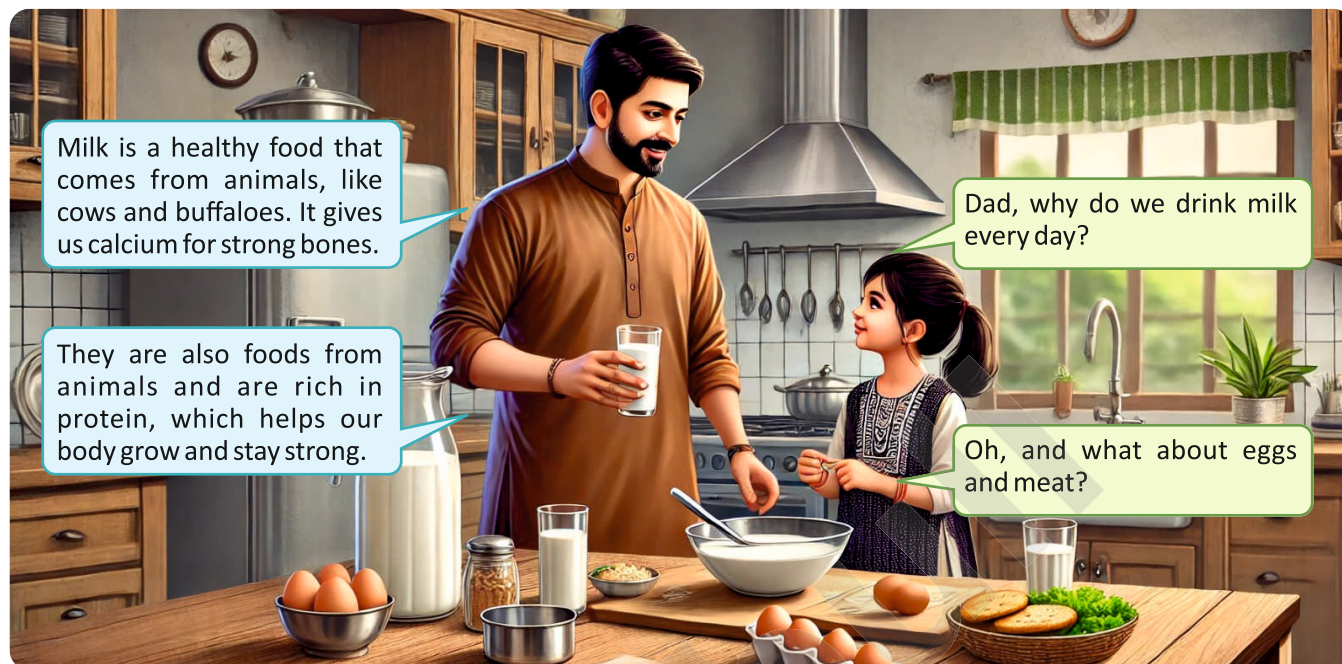


Watch Remedial

**Bloom's
Taxonomy**

Animal Products as Food Sources

Riya and her father, Sanjay, are preparing breakfast together.



Food from animals includes various products that humans obtain from domestic animals, mainly for nutrition and sustenance. These products are rich in proteins, vitamins, and essential fats.

Types of Food from Animals

- Milk and Dairy Products
- Meat
- Eggs
- Honey



Milk: Cow, buffaloes and goat



Egg: chicken, duck, and turkey



Honey: Honeybee

Nutritional Value of Animal Food Products

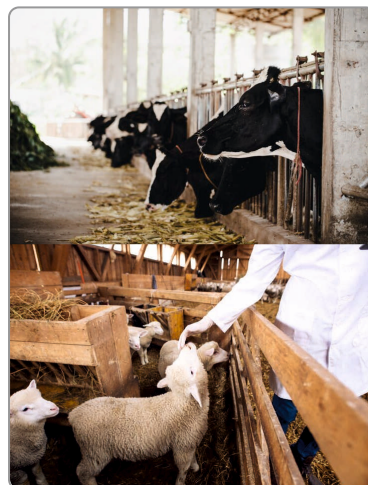
- **Proteins:** Meat, milk, and eggs are rich sources of high-quality protein.
- **Fats:** Animal fats, found in meat and dairy products, provide energy and essential fatty acids.
- **Vitamins and Minerals:** Animal-based foods are rich in B-vitamins, vitamin A, iron, calcium, and zinc.
- **Energy:** Animal products provide calories through fats and carbohydrates.

Animal Husbandry

Animal husbandry refers to the practice of **breeding** and caring for animals to obtain products such as milk, eggs, meat, wool, and leather. It involves various scientific techniques to ensure the health, productivity, and welfare of the animals.

Key Components of Animal Husbandry

- Breeding of Animals
- Feeding
- Housing
- Health Care
- Management of Waste
- Economic Importance



Let's recall what we know

Apply Concept in Context

Apply

What are the key steps involved in ensuring the quality of eggs produced in poultry farming?

Skills Covered: Critical thinking, Problem-solving, Applicative thinking

Examine Further

Analyse

What are the environmental impacts of large-scale dairy farming, and how can they be mitigated?

Skills Covered: Critical thinking, Brainstorming, Environmental awareness

Self-Assessment Questions

Evaluate

1. What is the importance of animal husbandry in ensuring food security?
2. Define selective breeding and explain its role in improving livestock quality.

Creative Insight

Create

Create a list of food items in which plant-based ingredients are used. Name some dishes that are made with these plant ingredients.

Skills Covered: Brainstorming, Critical, Analytical and Applicative thinking

SCAN TO ACCESS



Take a Task



Watch Remedial

**Bloom's
Taxonomy**

KEYWORDS

Breeding: The process of mating and producing offspring in plants or animals.

SUMMARY



"Crop Production and Management" explores agricultural practices, including soil preparation, sowing, irrigation, weeding, harvesting, and storage. It highlights crop types, sustainable methods, and animal husbandry to ensure food security and efficient resource utilization.

1. Agriculture and Crop Production

- Agriculture refers to the cultivation of soil and the rearing of animals to produce food, fiber, and other products essential for human life.
- Crop Production involves growing plants on a large scale to meet the food and industrial demands of a population.
- Crops are classified into categories based on seasons (e.g., Kharif crops like rice, maize grown in monsoon, and Rabi crops like wheat, mustard grown in winter) or use (food crops, cash crops, etc.).

2. Basic Practices of Crop Production

The key steps in crop production include:

- **Preparation of Soil:** Plowing, leveling, and adding organic matter to improve soil fertility.
- **Sowing:** Using quality seeds and ensuring proper spacing for growth.
- **Adding Manure and Fertilizers:** Supplying nutrients to enhance crop yield.
- **Irrigation:** Providing adequate water using canals, sprinklers, or drip systems.

- **Weeding:** Removing unwanted plants (weeds) to prevent competition for nutrients.
- **Crop Protection:** Using pesticides and herbicides to protect from pests and diseases.
- **Harvesting:** Collecting mature crops, either manually or using machines.
- **Storage:** Preserving harvested crops in dry, pest-free environments to prevent spoilage.

3. Food from Animals

- **Dairy Farming:** Cows and buffaloes are reared for milk production.
- **Poultry Farming:** Chickens, ducks, and other birds are raised for eggs and meat.
- **Fisheries:** Both marine (saltwater) and inland (freshwater) fish are harvested for consumption.
- **Apiculture:** Bees are reared to produce honey and beeswax.
- **Animal Husbandry:** The systematic care, breeding, and management of livestock for enhanced productivity.

EeeBee: Your AI Buddy

Explore! **Crop Production & Management** with EeeBee AI Buddy.

Hi Friend! Use prompts to ask me questions about the chapter we just finished! eeee, lets go!

Start by
Scanning this
QR Code:





Gap Analyzer™
Take a Test



EXERCISE

That turn curiosity into confidence—let's begin!



A. Choose the correct answer.

- Which of the following is a kharif crop?
(a) Wheat ☐ (b) Rice ☐
(c) Mustard ☐ (d) Gram ☐
- What is the process of loosening and turning the soil called?
(a) Harvesting ☐ (b) Threshing ☐
(c) Ploughing ☐ (d) Irrigation ☐
- Which tool is traditionally used for sowing seeds?
(a) Hoe ☐ (b) Seed drill ☐
(c) Trowel ☐ (d) Sprinkler ☐
- Which of the following animals is primarily raised for wool production?
(a) Cow ☐ (b) Sheep ☐
(c) Hen ☐ (d) Goat ☐
- What is the main source of nitrogen for plants?
(a) Air ☐ (b) Water ☐
(c) Soil ☐ (d) Fertilizers ☐

B. Fill in the blanks.

- The rearing of animals on a large scale for food and other products is called _____.
- The removal of weeds is essential because they _____ with the crops for nutrients.
- _____ is the first step in the preparation of soil.
- The process of separating grains from chaff is called _____.
- _____ crops are grown in the winter season.

C. Write True or False.

- Irrigation should always be done during the daytime. _____
- Pulses are an important source of proteins. _____
- Crop rotation helps in improving soil fertility. _____
- Fertilizers are naturally obtained from plant and animal wastes. _____
- Animals like poultry provide milk and eggs. _____

D. Define the following terms.

1. Agriculture
2. Irrigation
3. Harvesting
4. Weeding
5. Crop rotation

E. Match the columns.

Column A

1. Plough
2. Paddy
3. Mustard
4. Pulses
5. Sprinkler system

Column B

- (a) Protein-rich food
- (b) Winter crop
- (c) Soil preparation
- (d) Kharif crop
- (e) Water-efficient irrigation

F. Give reasons for the following statements.

1. Crop rotation is important for maintaining soil fertility.
2. Farmers use manure and fertilizers in the field.
3. Weeds need to be removed from crop fields.
4. Ploughing improves soil aeration.
5. Animals are an essential part of agricultural practices.

G. Answer in brief.

1. Why is irrigation necessary for crop production?
2. What are the advantages of using a seed drill over traditional sowing methods?
3. Explain the importance of threshing and winnowing after harvesting.
4. Discuss the role of animals in providing food and other agricultural products.
5. What precautions should be taken while storing harvested crops?

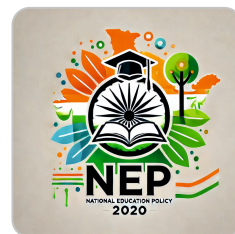
H. Answer in detail.

1. List and explain the basic practices of crop production.
2. Describe the different types of irrigation methods and their benefits.
3. How does proper soil preparation affect crop yield? Explain with examples.
4. What are the main food products obtained from animals, and how are they beneficial to humans?
5. Explain the importance of agriculture in human life and the economy.



**No More Rote Learning!**

NEP 2020 emphasizes understanding and creativity over memorization. Your projects, activities, and practical knowledge matter more than cramming for exams.



Skill-based Activity

**Activity Time****STEM**

Perform the following activity at home.

Take some rice or wheat grains and observe how they germinate under different conditions. Choose three groups of seeds of the same type. Gather three separate containers (like small pots, bowls, or trays) and label them as 1, 2, and 3.

1. **Container 1:** Add 200 grams of soil mixed with 50 grams of compost or organic fertilizer.
2. **Container 2:** Add 200 grams of soil mixed with 10 grams of chemical fertilizer.
3. **Container 3:** Add 200 grams of soil without any fertilizer.

Now, plant the same number of seeds in each container. Ensure each container receives the same amount of water every day. Place all three containers in a well-lit area and monitor the germination and growth over the next 10-14 days.

Questions to Answer:

1. What differences do you observe in the germination and growth of seeds in each of the containers?
2. How does compost, chemical fertilizer, and no fertilizer impact the seed growth?

Skills Covered: Creativity, Observation, Critical Thinking, Data Analysis, Responsibility, Research

Cultivating Creativity**Art**

Design a nature-inspired sculpture using materials found in your surroundings, such as twigs, stones, pinecones, or flowers. Choose a theme related to nature, such as trees, animals, or a landscape, and build your sculpture in a way that highlights the beauty and forms of these natural objects. Once your sculpture is complete, take a photo of it and write a brief description of the inspiration behind your creation.

Skills Covered: Creativity, Imagination, Problem-solving, Environmental Awareness

Farm-to-Table Project: From Garden to Plate

Group Activity

Farmers take great care in choosing the right crops, deciding the best planting season, and ensuring that the plants are well taken care of throughout their growth. They also make sure the harvest is done at the right time, followed by proper storage to preserve the produce for consumption.

Similarly, plan and execute a "Farm-to-Table" project at your school. In groups, choose a vegetable or fruit to grow in a school garden. Each member should contribute by taking responsibility for different stages of the process, such as:

1. **Seed Selection:** Choose the right seeds for the crop.
2. **Planting:** Plant the seeds in the garden.
3. **Caring for the Plants:** Regularly water, monitor, and protect the plants from pests.
4. **Harvesting:** Determine the best time to harvest the crop.
5. **Storage:** Learn how to store the harvested produce properly to prevent spoilage.
6. **Cooking/Serving:** Prepare a dish using the harvested produce and share it with the class.

Once your crop is ready, organize a small event to present your findings, share the journey of growing the plant, and enjoy the food you've made with the class.

Skills Covered: Critical thinking, Planning, Collaboration, Communication, Creativity, Teamwork, Problem-solving, Responsibility

Field Study

Case to Investigate

How do the given environmental factors influence the health and growth of animals? Create an experiment or visit a local farm, zoo, or animal shelter to investigate all the given factors and collect information to examine how they affect animal health and growth.

Factors:

- **Variable Manipulated:**

Type of food	Housing conditions	Exercise
Social interactions	Medical care	

- **Variable Measured:**

Weight gain	Activity level	Signs of illness
Reproductive health	Growth rate	

- **Data Collection Method:**

Observations (Physical condition of animals)	Surveys (Health records)
Measurement (Weight and growth)	Interviews with caretakers or veterinarians

Compile the data collected and create a detailed report on how each factor influences the health and growth of the animals.

Skills Covered: Observation, Critical thinking, Research, Analytical skills, Communication