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CROP PRODUCTION AND MANAGEMENT

INTRODUCTION

- Food is the main source of energy and nutrition for all organisms, including human beings.
- All living organisms require food for their growth, repair and functioning of body.
- The green plants synthesize their body by the process of photosynthesis while man and other animals directly or indirectly depend on plants for their food requirement.
- **Agriculture** : (Ager means field ; culture means cultivation). It is the applied biological science which deals with the production of plants and raising of animals useful to man, involving soil cultivation, breeding and management of crops and livestock.
- **Horticulture** is derived from two latin words : hortus : garden and culture : cultivation. It is the branch of biology that deals with growing and production of vegetables, fruits, ornamental plants and management of orchards.
- **Crop** : Plants of the same kind are grown and cultivated at one place on a large scale is called **crop**.

Crop	Example
Cereal crops	Wheat, Paddy, Millet, etc.
Pulses	Gram, Peas, Beans
Oil seeds	Mustard, Groundnut, Sunflower
Vegetable	Tomato, Cabbage, Spinach
Fruits	Banana, Mango, Orange etc.

TYPE OF CROPS

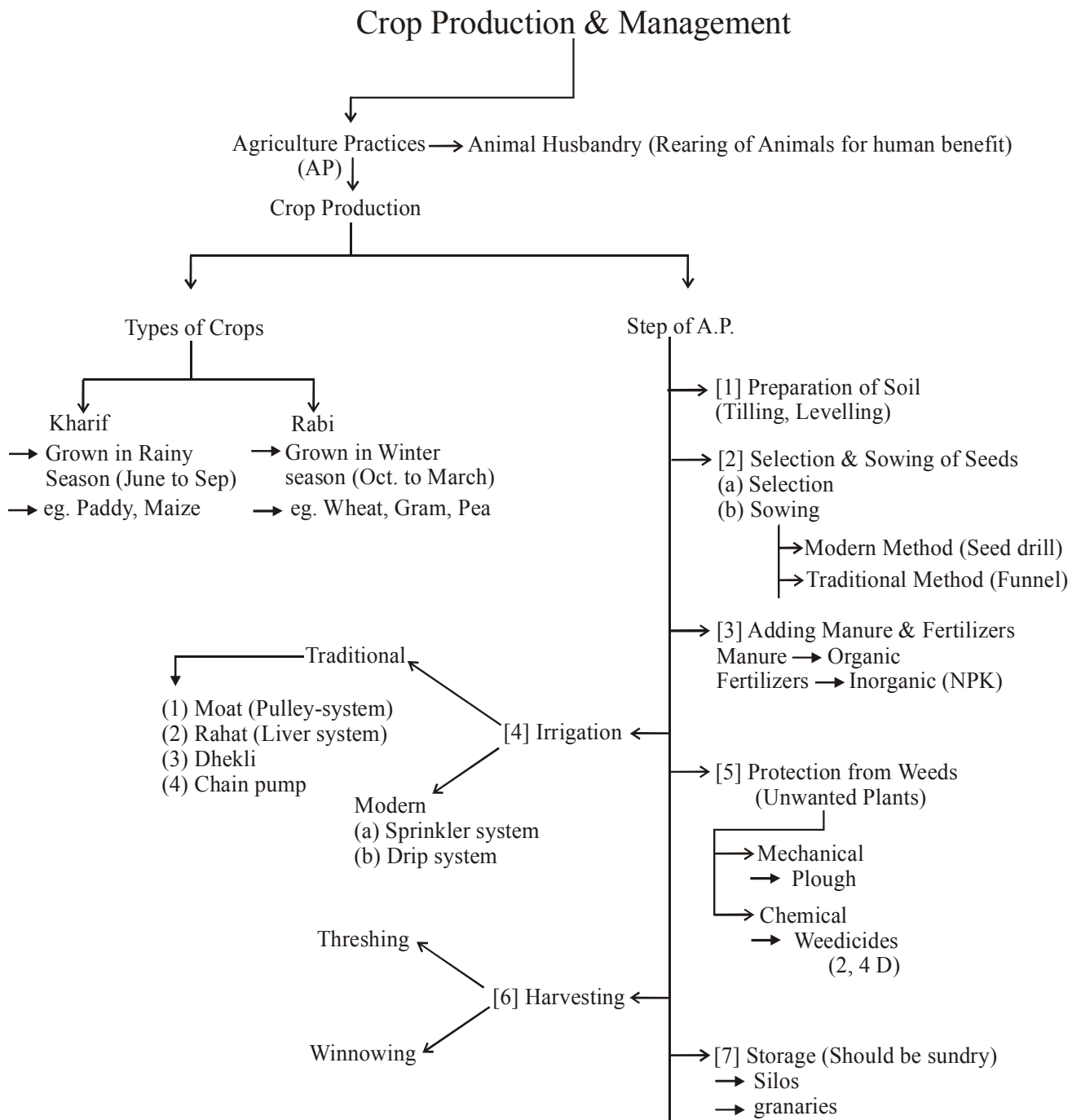
- Crops can be classified on the basis of the season in which they grow.
 - Kharif Crops**: The crops which are sown in the rainy season are called **kharif crops**. The rainy season in India is generally from June to September. Paddy, maize, soyabean, groundnut, cotton, etc., are kharif crops.
 - Rabi Crops**: The crops grown in the winter season are called **rabi crops**. **Their** time period is generally from October to March. Examples of rabi crops are wheat, gram, pea, mustard and linseed. Besides these, pulses and vegetables are grown during summer at many places.
 - Zaid / Zayad Crops** : These crops are mainly grown in summer season. They require warm day weather. They are sown in March and harvested in June. **Eg.** Seasonal Fruits and Vegetables.

BASIC AGRICULTURAL PRACTICES

Agricultural practices: The various steps performed by a farmer to raise a crop successfully are called **agricultural practices**. The various steps used in crop production are as follows

1. **Preparation of soil** : It involves loosening, turning and levelling the soil.
2. **Sowing**: Putting seeds of the crop into the soil.

3. **Application of manures and fertilizers**
4. **Irrigation:** To provide water necessary for the growth of plants
5. **Weeding:** Eradication of undesirable wild plants
6. **Harvesting:** The process of cutting and gathering of the mature crop.
7. **Threshing:** The process of beating out the grains from the harvested crop.
8. **Winnowing:** The process of separating grain from chaff and hay
9. **Storage**



1. PREPARATION OF SOIL

- The preparation of soil is the first step before growing a crop.
- Turning the soil and loosen it, allows the roots to penetrate deep into the soil it helps in the growth of earthworms and microbes present in the soil.
- The loose soil allows the roots to breathe easily even when they go deep into the soil.
- Various processes are included under preparation of soil these are as follows :

I. Tilling or Ploughing

- The process of loosening and turning of the soil is called **tilling** or **ploughing**.
- This is done by using a plough.
- Ploughs are made of wood or iron.
- If the soil is very dry, it may need watering before ploughing.
- The ploughed field may have big pieces of soil called **crumbs**.
- It is necessary to break these crumbs with a plank.

II. Levelling

- The field is levelled for sowing as well as for irrigation purposes.
- The levelling of soil is done with the help of a **leveller**.
- It breaks crumbs into smaller pieces.
- It protects the upper fertile layer of soil from erosion.
- It helps to retain moisture.

III. Manuring

- Mixing of soil with manure is called **manuring**.

Advantages :

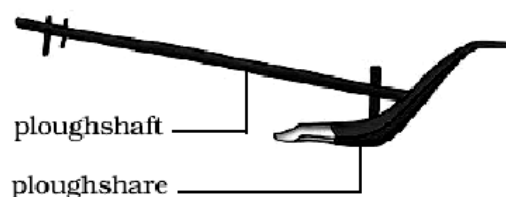
1. It permits easy and deeper penetration of roots.
2. It provides aeration to the roots.
3. It helps in uprooting weeds.
4. It promotes growth of useful micro-organisms in soil.
5. It helps in bringing nutrient rich soil to the top.

AGRICULTURAL IMPLEMENTS

- Tools used for agriculture are known as **implements**.
- The main tools used for this purpose are the plough, hoe and cultivator.

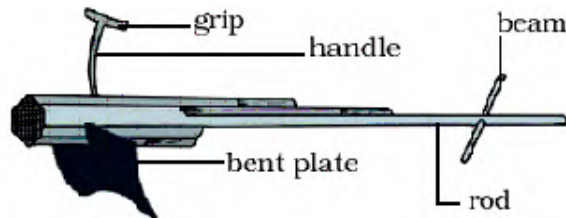
(i) Plough:

- Used for tilling the soil, adding fertilisers to the crop, removing the weeds, scraping of soil, etc.
- This implement is made of wood and is drawn by a pair of bulls or other animals (horses, camels, etc.).
- It contains a strong triangular iron strip called **ploughshare**.
- The main part of the plough is a long log of wood which is called a **ploughshaft**.
- There is a handle at one end of the shaft.
- The other end is attached to a beam which is placed on the bulls' necks.
- One pair of bulls and a man can easily operate the plough.
- Ploughing is done mainly for aeration of the soil.
- It also mixes nutrients and uproots weeds.



(ii) Hoe:

- It is a simple tool which is used for removing weeds and for loosening the soil.
- It has a long rod of wood or iron.
- A strong, broad and bent plate of iron is fixed to one of its ends and works like a blade.
- It is pulled by animals



(iii) Cultivator : Cultivator are driven by tractor. The use of cultivator saves labour and time

**(iv) Leveller:**

- The ploughed soil is quite loose so it is liable to be removed away by strong winds or washed away by rain.
- Levelling is the process by which the loose soil particles are pressed to stop the removal of upper fertile layer of the soil.
- It also helps in uniform irrigation.
- Levelling is done with the help of leveller.

**2. SOWING**

- Sowing is the most important part of crop production. Before sowing, good quality seeds are selected.
- The process of putting the seeds into the soil is called **sowing**.
- Good quality seeds should be clean, healthy and good variety.
- **Selection of Seed :** Good quality seeds are heavier than damaged seeds.
- Damaged seeds become hollow and are thus lighter. So they float on water.
- Seeds should be high yielding varieties, free from insects and pests.

Seeds are sown in the field by the following methods :

- (i) **By hand (Broad casting)**- seeds are taken in hand and spread over the field. There is lot of wastage as there is no uniform spacing or proper depth.
- (ii) **By drilling** a driller is used for sowing the seeds.
 - **Traditional tool:** The tool used traditionally for sowing seeds is shaped like a funnel the seeds are filled into the funnel, passed down through two or three pipes having sharp ends. These ends pierce into the soil and place seeds there.
 - **Seed drill:** The seed drill is used for sowing with the help of tractors. Seeds are uniformly sown at proper distances and depths. It ensures that seeds get covered by the soil after sowing. This prevents damage caused by birds. Sowing by using a seed drill saves time and labour.
- (iii) **Transplantation :** Transplantation is the process of transferring the seedlings from the nursery to the regular field. It is used for crops like paddy, tomatoes and chillies etc.
 - The process of transplanting the seedlings is advantageous over direct sowing the seeds in the soil, as it enables us to select only the better and healthy seeding for the cultivation of crops.
 - The seedlings are planted at the right spacing so that the plants may get uniform light, water and nutrients.

3. APPLICATION OF MANURES AND FERTILISERS

- **Manure :** A manure is a mixture of various decomposed organic substances like dead leaves, garbage, agricultural wastes, animal dung, crop residue etc. through the action of microbes.
- Farmers have to add manure to the fields to replenish the soil with nutrients. This process is called **manuring**.
- Vermicompost is also used. The manure should be applied well ahead of sowing so that preliminary decomposition take place before the seeds germinate.

Advantages of Manure: The organic manure is considered better than fertilisers. This is because

- (i) it enhances the water holding capacity of the soil.
 - (ii) it makes the soil porous due to which exchange of gases becomes easy.
 - (iii) it increases the number of friendly microbes.
 - (iv) it improves the texture of the soil.
- **Fertiliser :** Fertilisers are chemical substances which are rich in a particular nutrient. Examples of fertilizers are- urea, ammonium sulphate, super phosphate, potash, NPK (Nitrogen, Phosphorus, Potassium).

Advantages of Fertilisers:

- (i) They are nutrient specific.
- (ii) Required in small quantities.
- (iii) They are water soluble so can be applied and absorbed by the plants easily.

Crop rotation

- It is the practice of growing two varieties of crops on the same land in sequential seasons.
- For example growing legumes as fodder in one season and wheat in the next season. *Rhizobium* bacteria present in the root nodules of leguminous plants fixes atmospheric nitrogen.

Advantages of Crop rotation:

- It improves the fertility of soil and hence brings about an increase in food production.
- It reduces the need of fertilisers.

Differences between Fertilizer and Manure

Fertilizer	Manure
1. A fertiliser is an inorganic salt.	Manure is a natural substance obtained by the decomposition of cattle dung, human waste and plant residues.
2. A fertilizer is prepared in factories	Manure can be prepared in the fields.
3. A fertilizer does not provide any humus to the soil.	Manure provides a lot of humus to the soil.
4. Fertilizers are very rich in plant nutrients like nitrogen, phosphorus and potassium.	Manure is relatively less rich in plant nutrients.
5. Fertilizer is non-biodegradable	Manure is biodegradable

4. IRRIGATION

- Water is essential for germination of seeds.
- Nutrients dissolved in soil water get transported to each part of the plant.
- Water also protects the crop from both frost and hot air currents.
- The supply of water to crops at different intervals is called **irrigation**.
- **Sources of irrigation** : The sources of irrigation are — wells, tubewells, ponds, lakes, rivers, dams and canals.

Traditional Methods of Irrigation:

Cheaper, but less efficient. Various traditional ways are:

(i) moat (pulley-system)

(ii) chain pump (Pumps are commonly used for lifting water. Diesel, biogas, electricity and solar energy is used to run these pumps.)

(iii) *dhekli*, and

(iv) *rahat* (Lever system)



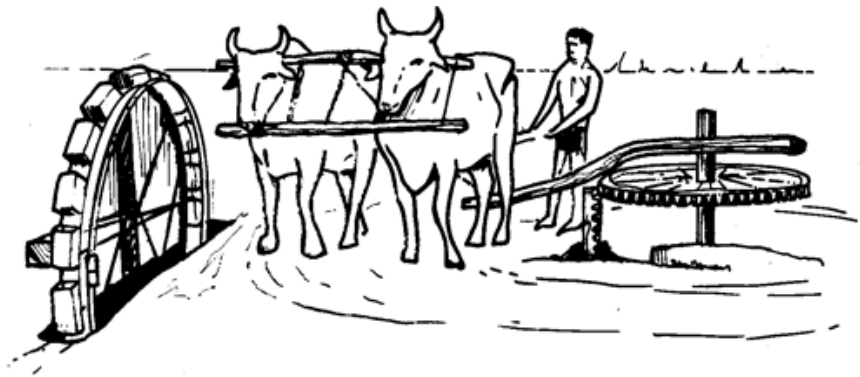
Moat



Chain Pump



Dhekli



Modern Methods of Irrigation

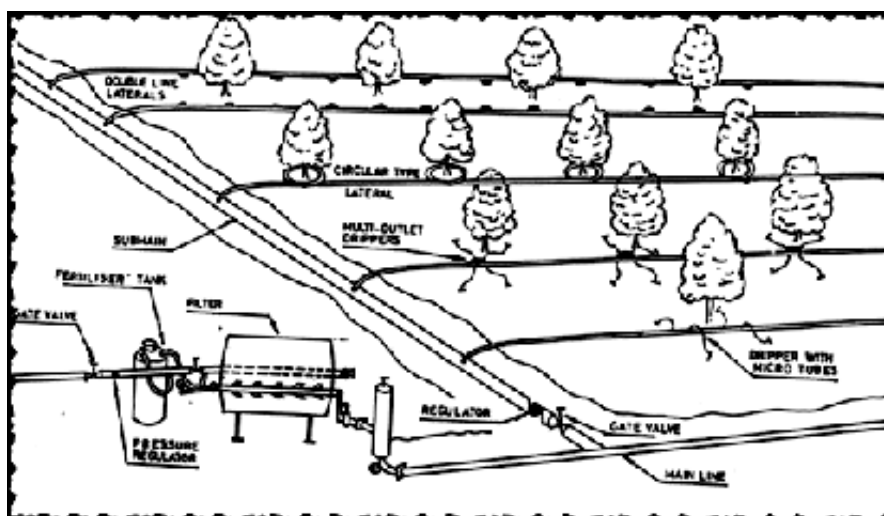
(i) Sprinkler System:

- This system is more useful on the uneven land where sufficient water is not available.
- The perpendicular pipes, having rotating nozzles on top are joined to the main pipeline at regular intervals.
- When water is allowed to flow through the main pipe under pressure with the help of a pump, it escapes from the rotating nozzles. It gets sprinkled on the crop as if it is raining.
- Sprinkler is very useful for sandy soil.



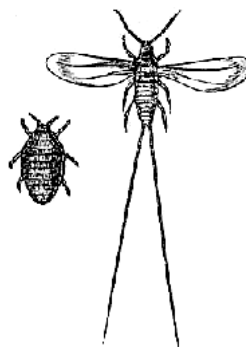
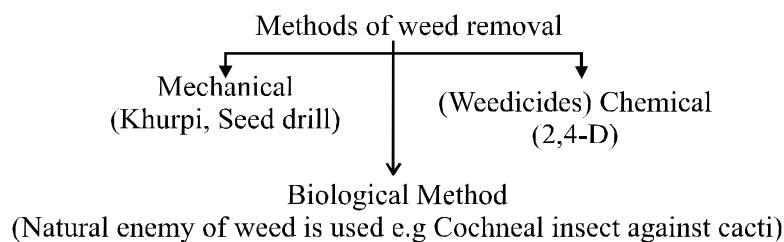
(ii) Drip system :

- In this system, the water falls drop by drop just at the position of the plant roots.
- Water is not wasted at all.
- It is a boon in regions where availability of water is poor.
- It is best technique for watering fruit - plants, gardens & trees.



5. WEEDING

- Undesirable plants are called **weeds**.
 - The removal of weeds is called weeding.
 - Weeding is necessary since weeds compete with the crop plants for water, nutrients, space and light.
 - Tilling before sowing of crops helps in uprooting and killing of weeds, which may then dry up and get mixed with the soil. *Khurpi* & seed drill are also used to uproot weeds.
 - It can be done by following ways :
 - Mechanical methods (By weeding) :**
 - Removing weeds from crop fields by harrow, interculture ploughing, burning and flooding.
 - Chemical method :**
 - Using chemicals called herbicides or weedicides e.g. 2,4 D, nitrofen, atrazine.
 - These are sprayed in the fields to kill the weeds.
 - Weedicides are sprayed during the vegetative growth of weeds before flowering and seed formation.
 - Biological method :**
 - Employing living organisms to destroy weeds.
 - Cassia plant prevent the growth of parthenium weed.
- Advantages of biological method :**
- It does not cause pollution.
 - Organisms are harmless to the main crop.



Female (left) and male (right) Cochineals

6. HARVESTING

- The cutting of crop after maturation is called **harvesting**. It is important that harvesting is done at correct time.
- If the crop is harvested early, the grains would be immature and moreover, they will contain high moisture contents.
- Similarly late harvesting results in shattering of grains.

- Harvesting is done manually by sickle or by a machine called **harvester**.
- Special festivals associated with the harvest season are Pongal, Baisakhi, Holi, Diwali, Nabanya and Bihu.

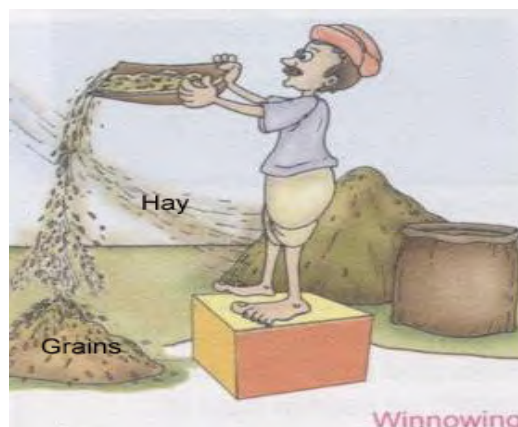
7. THRESHING

- The process of beating out the grains from the harvested crop.
- During threshing only appropriate pressure is applied so that the grain are separated but they are not injured or crushed.
- Threshing is usually done immediately after harvesting crop.
- Now a days, a motorised machine called thresher is used for threshing.



8. WINNOWING:

- The process of separating grain from chaff and hay is called **winnowing**.
- To separate the chaff from the grain, the threshed materials is put before a good natural breeze, and the grain is allowed to drop through gravity and be separated from the bhusa which being lighter, falls a little further away from the grain heap.



9. STORAGE

- The grains are properly dried in the sun to reduce the moisture in them.
- This prevents the attack by insects pests, bacteria and fungi.
- Grains are stored in jute bags or metallic bins.
- However, large scale storage of grains is done in **silos** and **granaries** to protect them from pests like rats and insects
- Dried neem leaves are used for storing food grains at home.
- Pesticides and rodenticides should be sprayed in the godowns before storage.

- Factors responsible for loss of grains during storage :
(A) Biotic (living) factors : Insect, rodents, birds, mites etc.
(B) Abiotic (nonliving) factors : Temperature, moisture, humidity, material of container in which grains are stored.

ANIMAL HUSBANDRY

- Animal husbandry is the practice of feeding, breeding and raising the livestock on large scale.
- It includes animals like cattle, goat, sheep, poultry and fish.
Objectives of animals husbandry are –
- (i) To improve the breeds of domestic animals.
- (ii) To provide better nutrition and atmosphere to animals so that the yield of their product (like meat, eggs, milk etc.) can be increased.

GREEN REVOLUTION

- The great increase in the yield of wheat crop during the 1970s is called green revolution.
- Dr. N. E. Borlaug was the scientist behind the green revolution. he developed high yielding triple dwarf Maxican wheat varieties.
- Father of green revolution in India is Dr. M.S. Swaminathan.
Important :
- (i) It increased the buffer stocks of food grains.
- (ii) It improved the economic conditions of farmers.
- (iii) It provided employment opportunities to large number of people.

TRY YOURSELF

- Q.1 The practice of raising plants & animals is :
 (A) Agriculture (B) Horticulture (C) Agronomy (D) Silviculture
- Q.2 Green revolution concerns with
 (A) Green fodder (B) Milk
 (C) Algae that makes water green (D) Agriculture
- Q.3 Father of Indian green revolution is
 (A) M.S. Swaminathan (B) G.S. Khush (C) N.I. Vavilov (D) N.E. Borlaug
- Q.4 Crops generally grown from October to March-
 (A) Rabi crop (B) Kharif (C) Rainy (D) None of them
- Q.5 Example of Kharif crop is :
 (A) Gram (B) Pea (C) Mustard (D) Paddy
- Q.6 Linseed & groundnut are respectively :
 (A) Rabi crop (B) Kharif Crops (C) Rabi & Kharif (D) Kharif & Rabi
- Q.7 Plants grown & cultivated at one place on a large scale:-
 (A) Weeds (B) Mushroom (C) Crops (D) None
- Q.8 The process of loosening & turning of soil is called :
 (A) Harvesting (B) Crop rotation (C) Tilling (D) Rhizobium
- Q.9 Which of them is/are not a part of a hoe :
 (A) beam (B) grip (C) bent plate (D) All of these are part of hoe

- Q.10 Mechanical device used in ploughing that save labour & time -
(A) hoe (B) iron ploughs (C) Cultivator (D) All of them
- Q.11 The fertility of soil is reduced by:
(A) Ammonifying bacteria (B) Denitrifying bacteria
(C) Nitrifying bacteria (D) Nitrogen fixing bacteria
- Q.12 Decomposers helps in :
(A) Storage of grain. (B) Prevent from rodents.
(C) Release of nutrients (D) All of these.
- Q.13 Manure are :
(A) Man power used in agriculture (B) N, P, K rich
(C) Nutrient for soil (D) Both (B) & (C)
- Q.14 Seeds are put in a beaker having water before sowing:
(A) It helps in cleaning soil from seed. (B) It helps in selecting good quality seed.
(C) It increases moisture in seed (D) All of them
- Q.15 Traditional method of sowing is the use of :
(A) Funnel like structure .
(B) Computer for determining time of sowing
(C) Animal that are trained to sow without humans.
(D) None of them
- Q.16 To prevent seed from getting damaged by birds, they are :
(A) Soaked with poison so that birds do not eat them.
(B) electrically charged.
(C) Sown at proper depth.
(D) Sown after germination.
- Q.17 Vermicomposting refers to :
(A) Seed production (B) Manure production with help of earthworms
(C) Storage of grain. (D) Removal of weeds.
- Q.18 Excessive use of fertilizer results in:
(A) excessive growth of plants.
(B) Over enrichment of soil making it best for the plant to grow
(C) deterioration of soil quality.
(D) Both (B) and (C)
- Q.19 During crop rotation :
(A) Crops are grown in different field alternately
(B) Manure & Fertilizer are alternately used
(C) Legume & wheat are grown alternately
(D) Farming & forest development take place alternately
- Q.20 Which of the statement is incorrect :
(A) Manure improve texture of soil. (B) Fertiliser if used properly can increase humus of soil.
(C) Manure is less rich in nutrients than fertilizer (D) Fertiliser is an inorganic salt
- Q.21 Irrigation facilitates :
(A) Absorption of mineral & fertilisers. (B) Pond formation.
(C) Easy harvesting (D) Crop rotation.

- Q.22 Which of them is **NOT** a modern irrigation method :
- (A) Moat (B) Dhekli (C) Rahat (D) All of them are traditional
- Q.23 Sprinkler system is having advantage over other system of irrigation by :
- (A) Having a pump installed in it. (B) irrigation on the uneven land.
(C) prevent wastage of water (D) Both (B) and (C).
- Q.24 A herbaceous legume crop ploughed into the soil produces.
- (A) Green manure (B) Farmyard manure
(C) Compositated manure (D) Flit
- Q.25 Part of the plant producing seed is :
- (A) Stem (B) Leaf (C) Branches (D) Flower & Fruit.
- Q.26 Cryopreservation is:
- (A) Preservation of living beings in chemicals (B) Preservation at very low temperature
(C) Preservation through radiation. (D) Preservation through use of gases.
- Q.27 Weeds are
- (A) Unwanted plants (B) Ecological ruderals (C) Valuable plants (D) Both (A) and (B)
- Q.28 Weeds compete with main crop for :
- (A) Light (B) Space (C) Nutrient (D) All
- Q.29 2, 4-D helps in :
- (A) Killing of weeds (B) Leveling of land (C) Better irrigation (D) Making of manure.
- Q.30 Weeding is done:
- (A) Before flowering (B) After flowering. (C) Anytime (D) During rainy season
- Q.31 Harvesting is done before :
- (A) Sowing (B) Storage
(C) Pollen grains are released in air (D) none of them.
- Q.32 Part of the harvesting grain winnowed is called :
- (A) Thresher (B) Combine (C) Chaff (D) None
- Q.33 Most important abiotic factor affecting storage is :
- (A) Rat (B) Insects (C) Microbes (D) Moisture
- Q.34 Fungus grow well in :
- (A) grains harvested in summer. (B) grains harvested in winter.
(C) grain harvested in rainy season. (D) grain harvested during flood.
- Q.35 What are silos?
- (A) Sacs having grain (B) jute bags for storing grain
(C) By product of farming. (D) large scale storage container.
- Q.36 Animal husbandry is :
- (A) Slaughtering animals (B) rearing animals
(C) leaving animals in forest (D) none of them.



POINTS TO REMEMBER

- Agriculture is the practice of growing crops. Livestock farming or animal husbandry refers to the rearing of animals. Horticulture is the science of cultivating fruit, vegetables and ornamental plants.
- Food crops are grown for the production of food, while cash crops are grown for commercial purposes. Kharif crops are sown during the monsoon, while rabi crops are sown in October.
- The soil has to be prepared by ploughing, levelling and manuring before seeds are sown.
- Seeds must be sown at the right depth and with the right spaces between them. Some seedlings are transplanted.
- Among the practices adopted for improving fertility are leaving the field fallow and following a crop rotation pattern.
- Legumes are often used in crop rotation because the nitrogen-fixing bacteria living in their roots improve soil fertility.
- Nitrogen fixation is a part of the nitrogen cycle, which is a continued cycling of nitrogen from the air to the soil and to living organisms.
- Biofertilisers are microorganisms used to improve soil fertility. Manure is produced by the decomposition of organic waste. Plants grown specially to be ploughed back into the soil are called green manure.
- Chemical fertilisers are plant nutrients synthesised in factories.
- Irrigation is the process of supplying water to crops. By and large, canals are used for irrigation in the north tanks in the south and wells in the south and west. Groundwater accounts for over 50% of the water used for irrigation.
- In surface irrigation, water is allowed to flow over the field. In sprinkler irrigation, it is sprayed over the crop by sprinklers fitted to pipes. In drip irrigation, emitters release a slow trickle of water near the roots of plants.
- Crops can be protected from pests and diseases with the help of pesticides and weeds can be controlled by using weedicides.
- Harvesting is the gathering of crops. Threshing is the separation of the grain from the crop plant. Winnowing is the separation of the chaff from the grain.
- Grains can be stored much longer than fruit and vegetables, which have a higher water content. Grains are dried and stored in godowns, while fruit and vegetables are stored in cold storages.
- Animals give us milk, meat and eggs. Animal products are an excellent source of protein. Egg white contains the protein albumen. Animal proteins are superior to plant proteins.

CONCEPT APPLICATION LEVEL - I [NCERT Questions]

Q.1 Match items in column A with those in column B.

Column A		Column B	
(i)	Kharif crops	(a)	Food for cattle
(ii)	Rabi crops	(b)	Urea and super phosphate
(iii)	Chemical fertilizers	(c)	Animal excreta, cow dung urine and plant waste
(iv)	Organic manure	(d)	Wheat, gram, pea
		(e)	Paddy and maize

Ans.	Column A	Column B
(i)	Kharif crops	(a) Paddy and maize
(ii)	Rabi crops	(b) Wheat, gram, pea
(iii)	Chemical fertilizers	(c) Urea and super phosphate
(iv)	Organic manure	(d) Animal excreta, cow dung urine and plant waste

Q.2 Explain how fertilizers are different from manure.

Ans.	Fertilizers	Manure
1.	Fertilizers are chemicals which are rich in a particular nutrients like Nitrogen, phosphorus and potassium.	1. Manures are decomposed organic matter obtained from plant or animal.
2.	Excessive use of fertilizers destroys soil fertility.	2. The use of manures improves soil texture as well as its water holding capacity.

Q.3 What are important conditions for ensuring better yield of crops ?

Ans. Good and right kind of soil, seeds, water and protection from weeds and pests and use of proper modern implements and particles are important for good crop yield.

Q.4 Why is soil turned and loosened before seeds are sown ?

Ans. It is necessary to turn and loosen the soil because only loose soil allows the roots to penetrate freely deeper into soil. The roots can breathe easily in loose soil. The deep roots hold the plants more firmly. The water also can reach easily up to more depth in loose soils. Microbes and worms can also grow in loose soil.

Q.5 Why does a farmer rotate crops in a field ?

Ans. Repeated growing of the same crops depletes the soil of specific nutrients. But growing different crops in the same piece of land in same year replenishes the soil naturally. Generally, the leguminous crops are alternated with other crops because the legumes have nitrogen fixing bacteria in their roots which converts atmospheric nitrogen into nitrates thus increasing nitrogen strength in the soil.

Q.6 Define fertilisers.

Ans. Fertilisers are chemical substance rich in soil nutrients, such as potassium, nitrogen and phosphorus. It is used to improve the production of crops and the soil fertility.

Q.7 Why do we need to add manure to the soil ?

Ans. Manures help in conserving and enriching the fertility of the soil. By growing plants again and again on the same soil with these nutrients, manures are used in conserving and enriching the fertility of the soil.

Q.8 How do fertilisers pollute water ?

Ans. Excess of fertilisers are washed away into the surrounding water bodies. Thus, concentration of nitrates and phosphates in the ground and surface water increases making it unfit for use.

Q.9 What is a manure ?

Ans. Manure is a material formed by the decomposition of waste products of plants and animals such as excreta, cow dung, urine, plant wastes and other organic material. This is added to the soil to enrich the soil in nutrients, and to improve the production.

Q.10 Why should we use organic manure ?

Ans. Since, organic manure is obtained from organisms, it is simple recycling of nutrients through soil. As such characteristics and texture of soil is not disturbed. Further, vegetables and fruits grown by using organic manure are safer to eat.

Q.11 How has the uses of fertilisers improve crop production ?

Ans. Use of fertilizers compensate for replenishing soil nutrients. The nutrients may be depleted by continuous use of the land for growing crops. Thus, to maintain soil fertility the amount or dose of nutrients in the form of chemical fertilizer is necessary. They increase the yields of the crops.

Q.12 Why is it necessary to remove weeds from our fields ?

Ans. If weeds are not removed from our fields they will take the nutrients from the soil besides air and sunlight. Thus, our crop may fall short of nutrients and sunlight.

CONCEPT APPLICATION LEVEL - II

SECTION - A

- **Fill in the blanks**
- Q.1 If a chemical is used to kill locusts and termites it is called an _____.
- Q.2 Grains are separated from the chaff and hay by a method called _____.
- Q.3 _____ loosens up the soil, to prevent the soil from being eroded it is _____.
- Q.4 _____ are prepared by decomposition of organic matter. Where as _____ are mineral salts made by human.
- Q.5 The first pesticide to be used commercially was _____.

SECTION - B

- **Multiple choice questions with one correct answer**
- Q.1 Which one of the following is not true about ploughing?
 (A) Loosens the soil (B) Aerates the soil
 (C) Makes the soil hard (D) Allows easy penetration of roots into the soil.
- Q.2 Organic substances obtained from the decomposition of dead plants & animal wastes are called :
 (A) Fertiliser (B) NPK (C) Herbicide (D) Manure
- Q.3 Which one of the following can be used to prevent the disease called rust in wheat?
 (A) An insecticide (B) A rodenticide (C) A fungicide (D) A herbicide
- Q.4 Before storage, Excess must be removed from food grain :
 (A) Soil (B) Moisture (C) Air (D) Seed
- Q.5 Organism referred as farmer's friend :
 (A) Buffalo (B) Cow (C) Earthworm (D) none
- Q.6 An important rabi crop is :
 (A) Maize (B) Soyabean (C) Cotton (D) Wheat
- Q.7 Paddy are transplanted. It means :
 (A) Their seeds are directly put into soil.
 (B) They are grown on barren land.
 (C) They are first grown in nursery & then moved to the field.
 (D) They produce flower.
- Q.8 Ammonium sulphate is a :
 (A) Weedicide (B) Herbicide (C) Fertiliser (D) None
- Q.9 Early human civilisation was based on:
 (A) Development of fibre crops (B) Fire
 (C) Agriculture (D) Fire & Agriculture
- Q.10 A plant with multiple uses is :
 (A) Cotton (B) Coconut (C) Jute (D) Sunflower
- Q.11 Best method to increase crop yield is
 (A) using tractors (B) Sowing seeds of improved varieties
 (C) Eradication of weeds (D) Reduce ration holder

- Q.12 Father of world green revolution is :
(A) M.S. Swaminathan (B) G.S. Khush (C) N.I. Vavilov (D) N.E. Borlaug
- Q.13 Best source of dietary protein for a vegetarian is :
(A) Soyabean (B) Gram (C) Groundnut (D) Milk
- Q.14 Those plants which competes with the crop plants
(A) Ornamental plants (B) Weeds (C) Oil yielding plants (D) Pulses
- Q.15 Which among them is not a climatic condition but affect crop growth :
(A) Temperature of soil. (B) Rainfall (C) Humidity (D) Photosynthetic ability
- Q.16 Cod liver oil from fish is rich in vitamin-
(A) A (B) B (C) C (D) K
- Q.17 Sea food are rich in -
(A) Na (B) K (C) I (D) Mg
- Q.18 Which of the following is a spice?
(A) Tomato (B) Pepper (C) Tea (D) Paddy
- Q.19 Rabi crop is harvested in
(A) January (B) March (C) October (D) December
- Q.20 Ploughing is done for
(A) Softening of the soil (B) to uproot the weeds
(C) to expose the soil pests (D) All of these
- Q.21 Agriculture is
(A) Growing crop plants (B) Rearing animals
(C) Both (A) and (B) (D) None of these
- Q.22 Compost is a
(A) Manure (B) Weedicide (C) Fertilizer (D) None of these
- Q.23 Which of the following is used for removing weeds?
(A) Seed drill (B) Plough (C) Harrow (D) Sickle
- Q.24 Broad casting is employed in
(A) Harvesting (B) Ploughing (C) Sowing (D) Irrigation
- Q.25 Which of the following is Biodegradable?
(A) Fertilizer (B) Insecticide (C) Malathion (D) Manure
- Q.26 Transplantation of seedlings is done in
(A) Coffee (B) Rice (C) Grass (D) Mango

SECTION-C• **VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)****Q.1 Which is the first step in the cultivation of a crop ?****Ans.** Soil preparation.**Q.2 What is tilling ?****Ans.** Turning and loosening of soil.**Q.3 Name the implement used for ploughing the fields ?****Ans.** Plough/ Hoe**Q.4 What is sowing?****Ans.** Process of placing seed in the ground soil for growth of crop plants.**Q.5 Name the implement used in sowing?****Ans.** Seed drill.**Q.6 Name two substances that are added to fields by farmers to maintain the fertility of soil.****Ans.** Manure and fertilizers.**Q.7 Name two fertilizers ?****Ans.** Urea, Ammonium sulphate.**Q.8 Give two examples of Rabi crops.****Ans.** Pea, mustard.**Q.9 Give two examples of Kharif crops.****Ans.** Paddy, Maize**Q.10 Give two examples of crop grown from June to October.****Ans.** Groundnut, Maize (Kharif crops)• **SHORT ANSWER TYPE QUESTIONS (2 MARKS)****Q.1 How Kharif crop is different from Rabi crop ?**

Ans.	Rabi Crop	Kharif Crop
(a)	Grown in winter season	(a) Grown in rainy season
(b)	Seeds are sown in October and harvested in march.	(b) Seeds are sown in June and harvested in September.
(c)	E.g. pea, mustard, wheat, gram etc.	(c) E.g. paddy, maize, groundnut etc.

Q.2 Give four importance of soil loosening ?

Ans. Roots penetrate deep into the soil and breathe easily, water holding capacity of soil increases. Helps in the growth of microbes and earthworm which help in turning the soil and humus in soil. The nutrient rich soil comes up and nutrient are absorbed by plants. Proper mixing of manure in the soil.

Q.3 Write down differences between fertilisers and manure ?

Ans.	Manure	Fertilizer
(a)	Obtained by the decomposition of plant and animal waste	(a) Obtained from inorganic salt.
(b)	Prepared in fields	(b) Prepared in factories
(c)	Provides humus to soil	(c) Does not provide humus
(d)	Rich in plant nutrient	(d) Less rich in plant nutrient

Q.4 Why is manure better than fertiliser ?

Ans. Enhances water holding capacity of soil.
 Makes soil porous due to which exchange of gases become easy.
 Increase number of friendly microbes.
 Improves texture of soil.

• **SHORT ANSWER TYPE QUESTIONS (3 MARKS)**

Q.1 Define the terms –

(i) Harvesting (ii) Threshing (iii) Winnowing

Ans. (i) **Harvesting** : Cutting of crop plants after maturation is called harvesting. It is done by cutting the crop plants close to the ground or pulling the crop plants.
 (ii) **Threshing** : Separation of grains from chaff is called threshing.
 (iii) **Winnowing** : Separation of grains from chaff by the help of wind is called winnowing.

Q.2 How manure is prepared.

Ans. Manure is obtained from the decomposition of plant or animal wastes.
 Plant and animal wastes are dumped in pits at open places and allow it to decompose by microbes.
 The decomposition product is manure.

Q.3 Write the difference between manure and fertiliser.

Ans. Differences between fertilisers and manure.

Fertiliser	Manure
They are prepared in chemical factories.	Manure is prepared in nature by the action of microbes on dead organic matter.
A fertiliser is an inorganic salt.	Manure is a natural substance obtained by the decomposition of cattle dung, human waste and plant residues.
A fertiliser is prepared in factories.	Manure can be prepared in the fields.
A fertiliser does not provide any humus to the soil.	Manure provide a lot of humus to the soil.
Fertiliser is very rich in plant nutrients like nitrogen, phosphorus and potassium.	Manure is relatively less rich in plant nutrients.

• **LONG ANSWER TYPE QUESTIONS (5 MARKS)**

Q.1 Write the advantages of manure.

Sol. The organic manure is considered better than the fertilizer. This is because :

- (i) Manure enhances the water holding capacity of the soil.
- (ii) It makes the soil porous due to which exchange of gases becomes easy.
- (iii) It increases the number of friendly microbes in the soil.
- (iv) It improves the texture of the soil
- (v) It does not create any pollution in the soil.
- (vi) It provides all the nutrients.

Q.2 Explain modern methods of the irrigation.

Ans. The main modern methods of irrigation are as follows :

- (i) **Sprinkler System :** This system is more useful on the uneven land where sufficient water is not available. The perpendicular pipes having rotating nozzles on top are joined to the main pipeline at regular intervals. When water is allowed to flow through the main pipe under pressure with the help of a pump, it escapes from rotating nozzles. It gets sprinkled on the crop as if it is raining. It is very useful for sandy soil.
- (ii) **Drip system :** In this system the water falls drop by drop just at the position of the roots. So it is called drip system. It is the best technique for watering fruit plants, gardens and trees. The system provides water to plants drop by drop. Water is not wasted at all. It is a boon in regions where availability of water is poor.