St. Andrews Scots Sr. Sec. School

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Chapter 1 - Notes

Class: VIII **Subject: Science** **Topic: Crop Production and Management**

Crop Production and Management

(i) All the living organisms require food for their life processes like digestion, respiration, and excretion etc. Plants can make their own food by the process of photosynthesis and animals included humans cannot make their food so they are depended on the plants.

(ii) In order to provide food for a large population— regular production, proper management and distribution of food is necessary**.**

Agricultural Practices:

(i) When the same kinds of plants are grown at one place on a large scale, it is called a crop. Different type crops like cereals, vegetables and fruits etc, can be classified on the basis of the season in which they grow.

(ii) India is a vast country. Here climatic conditions like temperature, humidity and rainfall vary from one region to another. There is a rich variety of crops grown in different parts of the India. Despite this diversity, two broad cropping patterns can be identified. These are:

(a) Kharif crops:- The crops which are sown in the rainy season are called kharif crops. The rainy season in India is generally from June month to September month.Paddy, maize, soyabean, groundnut, cotton, etc., are the examples of kharif crops. Examples of kharif crops are:

Paddy Maize Cotton

2. Rabi Crops:-The crops which are grown in the winter season are called rabi crops. Their time period is generally from October month to March month. Wheat, gram, pea, mustard and linseed are the examples of rabi crops.
Besides these, pulses and vegetables are grown during summer at many places.
Examples of rabi crops are:

Wheat Pea Mustard

Basic Practices of Crop Production:
The several activities undertaken by the farmers for the cultivation of crops over a period of time are referred to as agricultural practices. These activities are:

1. Preparation of Soil: One of the most important tasks in agriculture is to turn the soil and loosen it. The loose soil allows the roots to penetrate and breathe easily even when they go deep into the soil. The loosened soil helps in the growth of earthworms and microbes present in the soil.
The process of loosening and turning of the soil is called tilling or ploughing. This is done by using a plough which is 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. The field is levelled by leveller for sowing as well as for irrigation purposes

Preparation of Soil

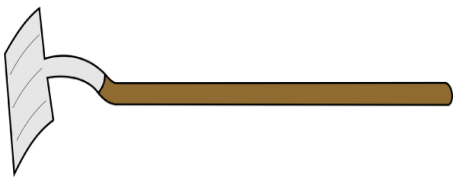
Plough

- A plough is a device that is used by farmers for different purposes such as adding of fertilizers, tilling and loosening of the soil.
- It is also used for adding fertilizers to the soil, removing weeds, scraping of soil, etc.
- The ploughshare is the triangular iron strip.
- A plough shaft is the main part of the plough, which is made using a log of wood.
- The other end of the shaft has a handle.
- The other end is attached to a beam which is placed on the bull's necks.
- A wooden, traditional plough can be operated by a pair of an ox and a man.
- Nowadays these wooden ploughs are being replaced by the iron ploughs.

A traditional wooden plough

Hoe

A hoe is a tool that used to dig up soil to remove weeds and also loosen up the soil before planting a sapling.



Hoe

Cultivator

- A cultivator is attached to the tractor and helps in loosening soil.
- Cultivators are used instead of ploughs since they are faster.

A modern-day cultivator

2. **Sowing:** Sowing is the most important part of crop production. Before sowing, good quality seeds are selected. These are clean and healthy seeds of a good variety. Farmers prefer to use seeds which give a high yield.
   Before sowing, one of the important tasks is to know about the tools used for sowing seeds.

   (i) ***Traditional Tool:*** It is the tool shaped liked funnel used traditionally for sowing seeds. 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.

   (ii) ***Seed Drill:*** Now days the seed drill is used for sowing with the help of tractors. With help of this tool sows the seeds uniformly at proper distances and depths. It ensures that seeds get covered by the soil after sowing and prevents damage caused bybirds. It saves time and labour.

Seed drill

3. Adding Manure and Fertilisers

(i) For the healthy growth of plants substances which are added to the soil in the form of nutrients are called manure and fertilisers.

(ii) Nutrients are essential for the growth of plants. Soil supplies mineral nutrients tothe crop. In certain areas, farmers grow crop after crop in the same field. The field isnever left uncultivated or fallow.

(iii) Continuous growing of crops makes the soil poorer in certain nutrients. Therefore, farmers have to add manure to the fields to replenish the soil with nutrients. This process is called manuring.

(iv) Manure is an organic substance obtained from the decomposition of plant wastes or animal excreta. Farmers dump plant and animal waste in pits at open places and allow it to decompose. The decomposition is caused by some microorganisms. The decomposed matter is used as organic manure.

(v) Fertilisers are chemicals manufactured in factories. They are chemicals highly rich in nutrients like nitrogen, phosphorus and potassium.

Difference between Fertilisers and Manure:

S.no.	Manure	Fertiliser
1.	Easily made using animal and plant waste	Made in factories in well defined way
2.	No harmful effect as fully natural	Side effects as it is a chemicals
3.	Provides mainly organic matter	Provides mainly nutrients
4.	Good for long term soil fertility	Not good for long term soil fertility, If uses in excessive amount
5.	Not effect as fertilisers	Very effective in obtaining fast result.
6.	It is very cheap	It is very costly

Advantages of Manure:

(i) It provides lots of organic matter which makes soil porous.
(ii) It increases soil fertility in general.
(iii) It provide some nutrients in small amounts
(iv) As it made from waste products, so environment is cleaned.
(v) It increases the water holding capacity.

4. Irrigation:

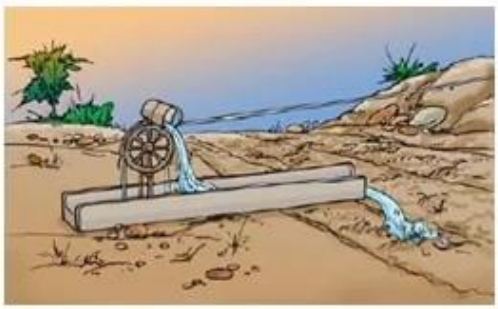
(i) Water is important for proper growth and development of plants.
(ii) Water is essential because germination of seeds does not take place under dry conditions. Nutrients dissolved in water get transported to each part of the plant.
(iii) Water also protects the crop from both frost and hot air currents. The supply of water to crops at different intervals is called irrigation.
(iv) It's not a good to depend on rain for water as it is not fully reliable. A proper irrigation system will ensure timely and adequate water to crops. This will lead tomore yield.

Sources of Irrigation: Wells, Tube wells, Ponds, Lakes, Rivers, Dams and Canals are the sources of Irrigation.

1. Traditional Methods of Irrigation:

The water available in wells, lakes and canals is lifted up by different methods indifferent regions, for taking it to the fields. Here various traditional methods are:

(i) Moat (pulley-system)



(ii) Chain pump

(iii) Dhekli

(iv) Rahat (Lever system)

2. Modern Methods of Irrigation:

(i) Sprinkler System:

In this system, 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 sprinkles from the rotating nozzles. It gets sprinkled on the crop as if it is raining.

Sprinkler System

(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.

Drip system

5. Protection from Weeds:

(i) Weeds are the undesirable plants which may grow naturally along with the crop in the field.

(ii) The removal of weeds is called weeding. Weeding is necessary because they affect the growth of the crop by compete with the crop plants for water, nutrients, space and light.

Weed Control:

Farmers use many ways to remove weeds and control their growth. Tilling before sowing of crops helps in uprooting and killing of weeds, which may then dry up and get mixed with the soil. The best time for the removal of weeds is before they produceflowers and seeds. The manual removal includes physical removal of weeds by uprooting or cutting them close to the ground, from time to time with the help of a khurpi. Weeds are also controlled by spraying certain chemicals called weedicides, in the fields to kill the weeds. They do not damage the crops.

6. Harvesting:

(i) The cutting of crop after it is mature is called harvesting. In harvesting, crops are pulled out or cut close to the ground. Harvesting is also done manually by sickle or by a machine.

(ii) In the harvested crop, the grain seeds need to be separated from the chaff with the help of machine called 'combined'. It is in fact a combined harvester and thresher. This process is called threshing.

Methods of Harvesting

- Harvesting is done by 2 methods.
- First is the manual method where a sickle is used.
- Second is the mechanical method where a huge machine called harvester is used.

Threshing

- Threshing is the process of loosening the grains from the chaff.
- While it can be done manually, these days a machine is used that separates all the grain seeds.

Manual Threshing of Crops

Winnowing

- Winnowing is the process of separation of grain seeds from the chaff using the help of the wind.

- Due to the wind, the lighter chaff flies away and the heavier grains fall down.

Winnowing of Rice

Combine

7. Storage:

If the crop grains are to be kept for longer time, they should be safe from moisture, insects, rats and microorganisms. The fresh crop has more moisture. If freshly harvested grains (seeds) are stored without drying, they may get spoilt or attacked by organisms, losing their germination capacity.

Food is a basic need for all living entities as food supplies with all the nutrients required by our body to grow, develop and repair our body in case of any damage. We

obtain our food resources from plants and animals through agriculture and animal husbandry.

Importance Of Food Storage

It is necessary to store food, listed below are a few points highlighting the same:

- Storing food is economical to the consequences that can be caused otherwise.
- Food Corporation of India(FCI) buys grains from farmers and stores in warehouses to be able to supply food hence meeting the ever-growing demand
- Increases the shelf-life of a food item. There are different ways of storing various food items. For example, food item such as meat requires to be stored in the refrigerator as they tend to decay quickly because of its high moisture content
- Proper storage enables uniform distribution of produce throughout the year
- Useful in case of emergencies such as famines.

Green Revolution

Indian agriculture was going through a difficult phase during the 1960s with a steady growth in population, Failed monsoons and low agricultural output feared agricultural department that food crisis would soon occur.Then the adviser to the Indian Minister of Agriculture,Dr. M. S. Swaminathan invited American agriculturist Dr. Norman E. Borlaug to develop high yielding seeds in India. With Dr. Borlaug's help, the agricultural produce in India doubled and this led to the "Green Revolution."

The Impact of Green Revolution in India :

Green Revolution refers to an extra-ordinary increase in agricultural produce. The Green Revolution has been possible due to the adoption of new technologies and using high yielding varieties of seeds.

The High Yielding Varieties of seeds was the reason for the success of the Green Revolution.Rice, wheat and jowar were among the first crops to be grown with these seeds. Wheat gave the best results. Due to this, the Green Revolution is also called the "**Wheat Revolution.**"

Along with High Yielding Varieties of seeds chemical fertilizers also were largely responsible for the success of the Green Revolution. Development of irrigation facilities was another contributor to the success of the Green Revolution. Many areas

have been brought under irrigation throughout the country which reduced the dependence on monsoons.

The use of modern agricultural equipment and machinery like tube wells, tractors, crushers and diesel engines have reduced the toil and time required for farming and improved agricultural productivity. Increased Credit facilities to farmers, through co-operative societies and rural banks, also helped the success of the Green Revolution.

Positive changes of Green Revolution:

- **Production of food**

Increase in production of food crops due to the Green Revolution has solved the problem of food shortage in the country. Increase in production has also resulted in a reduction in the import of essential food grains from foreign countries.

- **Industrial sector**

Increase in agricultural production has resulted in greater demand for fertilizers. The number of industries manufacturing agricultural equipment have also increased.

- **Economical growth**

An improved productivity has led to increase in the prosperity and standard of living of the farmers. The Green Revolution has convinced rural people to use modern equipment in agriculture to attain prosperity.

Negative changes of Green Revolution:

- The Green Revolution increased the production of selected crops and there was no significant change in the production of other crops.

- Excess use of chemical fertilizers made the land unfertile and also affected the environment adversely.

- The rich farmers who can afford to buy high yielding seeds, fertilizers and equipment were benefitted but the poor farmers remained poor.