Revision Notes

Class 9 Science

Chapter 15 - Improvements in Food Resources

All living species require food to survive. Plants and animals provide us with food. Food demand has risen dramatically as the world's population has grown. It is critical that we expand food production without harming our ecosystem or disrupting the delicate balances that keep it in check. As a result, sustainable agricultural and animal husbandry practises are required.

1. Improvement in crop yields:
For their growth and completion of their life cycle, different crops require different climatic conditions, temperatures, and photoperiods. Some crops are planted during the rainy season, known as kharif crops, which last from June through October. Paddy, soya bean, maize, cotton, green gramme, and black gramme are among the Kharif crops. Rabi crops are planted from November through April during the winter season. Wheat, gramme, peas, and linseed are among the Rabi crops. Crop variety improvement, crop production improvement, and crop protection management are the three key groups of efforts for increasing crop yields.

2. Crop variety improvement:
Crop variety enhancement can be accomplished through the selecting process. Higher yield, increased quality, biotic and abiotic resistance, change in maturity duration, wider adaptability, desirable agronomic traits, and so on are some of the factors that lead to variety improvement. A cross between two different varieties, known as inter-varietal crossing, or between two different genera, known as inter-generic crossing, or between two different species, known as inter-specific crossing, results in hybridization. Crop output can also be boosted by inserting beneficial genes into the crop plant. As a result, genetically engineered crops are produced.

3. Crop production management:
It refers to the safeguarding of crops that are either growing or have been harvested. Crop output can be improved by nutrient management, irrigation, and cropping patterns.
Agricultural practises refer to a variety of actions carried out by farmers in order to produce crops. Agricultural methods include the following activities:
➢ Preparing the soil
➢ Sowing
➢ Adding fertilisers and manure

➢ Irrigation
➢ Defending against weeds
➢ Harvesting
➢ Storage

The overall strength of the end result — the crops that are growing — will be determined by the quality of the soil, seeds, and planting procedures. Corn benefits from the use of strong hybrid seed that can withstand harsh circumstances and maximise yields. Although seed science has advanced significantly, there are still approaches and methods that can be used to improve farm efficiency.
These nutrients can be added to the soil in the form of manure and fertilisers.

4. Nutrient management:
Air, water, and soil are all sources of nutrients for plants. Macronutrients and micronutrients are the two types of nutrients found in plants. Carbon and oxygen are both supplied by air. Hydrogen and oxygen are both found in water. Plants get the remaining 13 nutrients from the soil. Plants' physiological activities, such as reproduction, growth, and disease susceptibility, are affected by nutritional deficiencies. The soil can be improved by adding these nutrients in the form of manure and fertilisers to increase output.

5. Manure:
Manure is created naturally when animal excreta and plant waste decompose. It contains organic matter, which promotes water retention in sandy soils and avoids water logging in clayey soils. Compost is made by decomposing farm waste, vegetable waste, household garbage, and sewage waste in pits using the composting process. Vermicompost is made by utilising earthworms to speed up the decomposition of plant and animal waste through the vermi-composting process. Plowing nitrogen and phosphorus-rich plants into the soil before sowing seeds provides green manure to the plants.

6. Fertilizers:
Fertilizers provide nitrogen, phosphorus and potassium to plants. They're utilised to promote healthy plant growth by ensuring good vegetative growth. Fertilizers play a role in high-cost farming's better yields. Organic farming is a farming technique that uses organic manures, recycled farm wastes, and bio agents with little or no usage of chemicals such as fertilisers, herbicides, insecticides, and other pesticides.

7. Irrigation:
During the growth season, ensuring that the crops receive water at the appropriate times can boost the predicted yields of any crop. Irrigation is carried out using both

old and modern ways. Depending on the types of water resources available, irrigation systems are used to supply water to agricultural regions. Rivers, canals, ponds, lakes, tanks, dams, and groundwater are all examples of ground water sources.

8. Cropping pattern:

Mixed cropping, intercropping, and crop rotation are examples of different cropping patterns. Growing two or more crops on the same piece of land is known as mixed cropping. Wheat and gramme, for example, or peanut and sunflower. Intercropping is the practise of growing two or more crops on the same field at the same time, with certain rows of one crop alternating with rows of the other, such as soya bean and maize. Crop rotation is the practise of cultivating two or three different crops on the same piece of land over the course of a year. Cereals and legumes, for example.

9. Crop protection management:

Weeds are undesired plants that compete for food, space, and light with crop plants, reducing crop development. Herbicides or mechanical weed removal can be used to get rid of weeds. e.g. Xanthium.

Pathogens such as bacteria, fungus, and viruses cause diseases in plants. Herbicides, fungicides, insecticides, and other pesticides can be used to control pathogens.

Weed management can also be achieved by preventative measures such as good seed bed preparation, timely crop sowing, intercropping, and crop rotation.

10. Storage of grains:

Abiotic factors such as insects, rodents, fungi, mites, and bacteria cause agricultural storage losses. Crops are also harmed by abiotic factors such as insufficient moisture and temperature in the storage area. These factors can be controlled through proper warehouse treatment and management.

Before grains are kept for future use, preventive and control procedures are taken. They include thorough cleaning of the product prior to storage, proper drying of the produce in the sun and subsequently in the shade, and pesticide fumigation.

11. Animal Husbandry:

Animal husbandry refers to the scientific management of livestock animals. It covers a wide range of topics, including feeding, breeding, and disease control. Cattle, goat, sheep, poultry, and fish farming are examples of animal-based farming.

12. Cattle farming:

Cattle farming serves two purposes: milk production and draught labour for agricultural tasks including tiling, irrigation, and hauling. Draught animals are

utilised for farm labour while milk animals provide milk. Bos Indicus, or cows, and Bosbubalis, or buffaloes, are the two most common Indian cattle species.
Cleaning, sheltering, and feeding are all part of cow management. Cleaning entails washing on a regular basis to remove dirt and loose hair. Shelter facilities include well-ventilated roof sheds that keep cattle dry, warm, and protected from the sun. Roughage feed, which is mostly fibre, and concentrate feed, which is low in fibre but high in proteins and other nutrients, are two types of animal feed.
A variety of diseases affect cattle. In addition to causing death, the illnesses limit milk output. External and internal parasites both cause disease in cattle. External parasites are parasites that dwell on the surface of the skin and cause skin disorders. Internal parasites wreak havoc on the stomach and intestines. Farm animals are vaccinated against a variety of viral and bacterial infections.

13. Poultry farming:

Poultry farming is the activity of keeping chickens for the purpose of producing eggs and meat. Broilers are used to produce meat and layers are used to produce eggs. In order to generate new types with desirable features, cross-breeding is prevalent in poultry. For example, the Indian breed Aseel has been crossed with the foreign breed Leghorn.
Cross-breeding is a technique for producing offspring with desirable characteristics. Dwarf broilers that may be utilised as meat in a short amount of time, a higher number and higher quality of chicks, and resistance to high temperatures throughout the summer are all desired qualities.
Good management methods are essential for good poultry bird production. These include temperature and hygienic conditions in housing and chicken feed, as well as disease and pest prevention and management.

14. Fish production:

Tinned real fish, as well as shellfish such as prawns and mollusks, are all produced. Fish can be obtained in two ways. The first is catch fishing, which is based on natural resources. Fish farming, often known as culture fishery, is another option.

15. Marine fisheries:

Popular marine fish include mullets, pomfret, mackerel, tuna, sardines, pearl spots, shellfish like prawns, mussels, and oysters, and Bombay duck. A number of high-value marine fish are also cultivated in seawater. Sea weeds like guso, elkhorn sea moss, Gracilaria, Wakame, etc are all examples. Oysters are also cultivated for their pearls.
As marine fish stocks become lower, only culture fisheries, also known as mariculture, can meet the need for additional fish.

16. Inland fisheries:

Fish culture is occasionally done in conjunction with a rice crop, allowing fish to grow in the paddy field's water. In a composite fish culture system, more extensive fish farming is possible. In this arrangement, a single fishpond contains a mix of five or six different fish species.

Catlas feed on the surface, Rohus feed in the middle of the pond, Mrigals and common carps feed on the bottom, and grass carps graze on the pond's weeds.

A hormone stimulation strategy is used to solve the problem of poor seed quality in fish farming. This has assured that pure fish seed is available in the amounts required.

17. Bee keeping:

Beekeeping, also known as apiculture, is the activity of keeping honey bee colonies in hives. It doesn't require a lot of money. Apiaries, often known as bee farms, are used to produce honey for commercial purposes. Beehives produce wax, which is utilised in a variety of therapeutic formulations in addition to honey.

Commercial honey is produced by Apis cercana indica (Indian bee), Apis dorsata (Rock bee), Apis florea (little bee), and Apis mellifera (Italian bee).

The pasturage or flowers available to bees for nectar and pollen gathering define the worth or quality of honey, and the type of flowers available determines the honey's taste.