Chapter 12: "Improvement in food resources"

KEY CONCEPTS : *[*rating as per the significance of concept]*

CONCEPTS	**RATING**
Improvement in crop yield	***
Crop variety improvement	****
Crop production management	*****
Crop protection management	***
Animal Husbandry	****

1. **Food Resources**: Cereals (Wheat, rice, maize, millets and sorghum) provide us carbohydrates; Pulses (Grams, pea and lentil) provide us proteins; Oil seeds (Soya bean, ground nut, sesame, and castor) provide us fats; Vegetables, spices and fruits provide us a range of minerals, nucleic acids and vitamins. In addition to these food crops, fodder crops like *berseem, oats or sudan grass are raised as food for the livestock are called as* fodder crops.

2. *The **Kharif crops:*** The crops grown in rainy season are called as *Kharif crops (Paddy, Soya bean, pigeon pea and maize). They are* grown from June to October.

3. The ***Rabi crops:*** *The* crops grown in winter season are called ***Rabi crops*** (Wheat, gram, peas, and mustard). They are grown November to April.

Compare ***Kharif crops and Rabi crops:***

SN	Crop	Season	Example
1	***Kharif crops***	June to October (Rainy Season)	*Paddy, Soya bean, and maize*
2	***Rabi crops***	November to April (winter season)	Wheat, gram, peas, and mustard

4. **The Green Revolution**: Food supplies are generally as proteins, carbohydrates, fats, minerals, nucleic acids and vitamins in all living organisms. Indian population is growing enormously. Green Revolution is the need of the hour to increase food-grain production.

5. **Sustainable Practices**: For sustained livelihood, one should undertake mixed farming, intercropping, and integrated farming practices, for example, combining agriculture with livestock/ poultry/ fisheries/bee-keeping. The major group of activities for improving crop yield can be classified as: **Crop varietal improvement, Crop production improvement, Crop protection improvement**

6. **The Crop varietal improvement:**

a) Hybridization: It refers to crossing between genetically dissimilar plants**;**It is all to get higher yield, improved quality, biotic and abiotic resistance, change in maturity duration, wider adaptability and desirable agronomic characteristics.

SN	Type	Context
1	Intervarietal Hybridization	between different varieties
2	Interspecific Hybridization	between different species
3	Intergeneric Hybridization	between different genera
4	Genetically Modified Crops (GMC).	Another way of improving the crop is by introducing a gene that would provide the desired characteristic.

7. **The Crop production improvement:** They include" **no cost production"," low cost production" or "high cost production"** practices.

a) Nutrients(Sixteen elements are required for growth are called as essential elements Carbon, oxygen, hydrogen+ Macronutrients & Micronutrients. They increase the yield):

SN	Macronutrient	Micronutrient
1	Six elements are required in larger quantity	Other seven elements are required in small quantity
2	Ex.Nitrogen, phosphorus, calsium,Postasium, magnisium, sulphur	Ex. Iron, manganese, boron, zink, copper, molybdinum, chlorine

b)**Manure & Fertilizers:**

SN	Manure	Fertilizers
1	Manure is prepared by the decomposition of animal excreta and plant waste is called as Humus. It decides the texture of the soil. Compost: Farm waste, cow dung etc. Vermi compost: Compost prepared by using earthworms.	Fertilizers are commercially produced plant nutrients. Excess fertilizers destroy the soil fertility. Organic farming: No use of chemicals fertilizers, herbicides, pesticides etc.(Culturing blue green algae, neem leaves, healthy cropping systems.
2	It is cheap and prepared in rural homes and fields	It is costly and is prepared in factories
3	It is voluminous and bulky	It is compact and concentrated
4	It is inconvenient to store, transport, handle.	It is easy to store, transport, handle.
5.	It is not nutrient specific.	It is nuteient specific and can provide specifically nitrogen, phosphorus etc.
	Add great humus to the soil	Does not add humus to the soil.

3. **Irrigation:** India has variety of water resources: Wells, canals, river lift system, tanks, rainwater harvesting, water shedding management to increase in ground water levels and to check the water flowing away to the sea. Planning to reduce soil erosion.
4. **Cropping patterns:**

SN	Mixed cropping	Inter-cropping	Crop rotation
1	Two or more crops grown simultaneously on the same piece of land	Two or more crops grown simultaneously on the same piece of land in a definite pattern	Growing different crops on a piece of land in a pre-planned succession
2	Ex. Wheat+ Gram; Wheat+ Mustard; Wheat+ gram; Groundnut+ sunflower.	Soyabean + maize/bajra+Cowpea ((Please refer Fig. 15.2, NCERT Text Book Page- 208).	Two or three crops can be grown in a year depending upon the duration.

3	A type of insurance against failure of one of the crops.	A few rows of one crop alternate with a few rows of a second crop. Crops are selected such that their nutrient requirements are different. This ensures the maximum utilization of the nutrients supplied and prevents pests and diseases spreading in the crop field.	The availability of moisture and irrigation facilities decides the choice of the crop to be cultivated.

8. Crop protection improvement/ management: Field crops are infested by large number of weeds, insects pests, diseases & storage of grains

SN	Weeds	Insect pests	Diseases	Storage of grains
1	Weeds are unwanted plants in the crop field	Insect pest is nuisance in the crop field	Disease is caused by pathogens in the field	Different factors are responsible.
2	Weeds take up nutrients and reduce the growth	Insect pest affect the health of crop and reduce the yield.	Diseases alter the physiology of crops and reduce the yield	Different factors reduce the quality of stored grains
3	Ex. Xanthium, Parthenium	Ex. Caterpillars, dragonfly	Ex. Bacteria, Virus	Biotic factors: insects, rodents, fungi Abiotic factors: moisture & temperature
4	Removal of weeds at an early stage is recommended. Spray weedicides	Spread of chemicals such as pesticides	Spread of chemicals to kill pathogens	Systematic management of ware house.

9. Animal Husbandry: It is a scientific management of animal livestock, includes feeding, breeding and diseases control. Animal-based farming includes cattle farming, Poultry farming, fish farming, and bee Keeping.

SN	Content	Cattle farming	Poultry farming	Fish farming	Bee Keeping.
1	Purpose	Milk (milch animals) and	Meat, chicken, egg	Cheep source of animal protein.	Honey, wax, medicinal

		draught labor (draught animals) in agriculture.	production	Fish production is aquaculture. Growing of marine fishes is called mariculture.	preparations. Additional income to the farmer.
2	Cross breeding: To get desired qualities	Exotic- quality of lactation Indigenous breeds- quality of disease resistance	Exotic & Indigenous breeds	Both Exotic & Indigenous fishes are used	Exotic- high honey collection capacity &stingless. Indigenous bees- are used
3	Desirable maintenance	Good ventilation in sheds Roughage/ concentrates Protection from parasites & skin diseases Vaccination	Good ventilation in sheds Roughage/ concentrates Protection from parasites & skin diseases Vaccination	Fish farming/ locating large schools of fish/ use of satellites and echo-sounds In Composite fish culture seed is wild, mixed with other species. Hormonal stimulation to bring desired quality in fish production.	Value or quality depends upon the pasturage or the flowers available for the taste of honey.
4	Example	Exotic or foreign breeds (Jercy, brown Swiss) Local breeds (Red sindhi, Sahiwal)	Exotic- Leghorn Indigenous breeds- Aseel	Fresh water (Macrobrachium) & Marine(Peneaus) prawns Fresh water fishes Marine fishes(Bombay duck, sardines) Common	Apisceranaindica dorsata A.florae

QUESTION BANK

1. Give two examples of Cereals (Wheat, rice)
2. *Define the Kharif crop and give two examples (*The crops grown in rainy season are called as *Kharif crops Ex. Paddy, Soya bean).*
3. Write about the importance of Green Revolution (Indian population is growing enormously. Green Revolution is the need of the hour to increase food-grain production.
4. Define the term Hybridization(Crossing between genetically dissimilar plants**)**
5. What is the importance of Genetically Modified Crops? (It is another way of improving the crop is by introducing a gene that would provide the desired characteristic.)
6. Define the term mixed cropping and give two examples. (Two or more crops grown simultaneously on the same piece of landEx. Wheat+ Gram; Wheat+ Mustard)
7. Distinguish between weeds, insects pests(Weeds are unwanted plants in the crop field Insect pest is nuisance in the crop field)
8. What is Animal Husbandry**?** It is a scientific management of animal livestock, includes feeding, breeding and diseases control. Animal-based farming includes cattle farming, Poultry farming, fish farming, and bee keeping.
9. Distinguish between aquaculture and mariculture. (Fish production is aquaculture. Growing of marine fishes is called mariculture.)
10. What is the importance of Bee Culture? (It is useful for honey, wax, medicinal preparations. And also for additional income to the farmer.)

QUESTION PAPER:FORMATIVE ASSESSMENT – I (For Practice)

Marks- 40 Time: 90 minutes

* General Instructions

1. Questions 1-5 (1 Mark each) 2. Questions 6-10 (2 Mark each)

3. Questions 11-15 (3Mark each) 4. . Questions 16-17 (5Mark each)

Q.1 Maize and Millets are Pulses. Mention True/False……

Q.2 What is the Scientific name of Honey Bee…….

Q.2 What led us to improve food grain production?

Q.3 Which revolution led to the availability of milk for efficient use?

Q.4 What is the process of injecting semen of desired bull into the vagina of cows is called?

Q.5 Name any one exotic breed usually used for variety of improvement programmes.

Q.6 What is the significance of GMC

Q.7 Mention the significance of Irrigation in developing agriculture.

Q.8. What is Pest and give one example.

Q.9 What is Weed and give one example.

Q.10 Give two examples for Inter-cropping.

Q.11 Distinguish between Kharif and Rabi Crops

Q.12 What is called Sustainable Practice in improvement in food resources.

Q.13. Mention three techniques of Hybridization used to achieve desirable agronomic characteristics.

Q.14.Distinguish between Macro Nutrients and Micro Nutrients

Q.15 Distinguish between Compost and Vermi Compost.

Q.16 Distinguish between Cattle farming and Poultry farming.

Q.17 Distinguish between Fish farming and Bee keeping.

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