

FREE EBOOK



FISHERIES

Agriculture & Rural Development
(ARD) Notes



FOR NABARD GRADE A EXAM

Fisheries

ARD Notes for NABARD Gr. A Exam

A place where fish or shellfish are caught. the occupation or industry of catching, processing, or selling fish or shellfish.

Fisheries Resources

Fishery resources are those aquatic resources of value to fisheries, **Fishery Resource:** In general, refers to elements of a natural aquatic resource (e.g., strains, species, populations, stocks, assemblages) which can be legally caught by fishing, it may sometimes be taken as also including the habitat of such resources.

There are two main types of fisheries:

- Inland fisheries
- Marine fisheries

Inland or Freshwater Fisheries: Inland fishery deals with the fishery aspects of waters other than marine water, Potentially, the vast and varied inland fishery resources of India are one of the richest in the world.

The following brief descriptions provide an overview of capture fishery types:

- **Industrial fisheries** Capital-intensive fisheries using relatively large vessels with a high degree of mechanization and that normally have advanced fish finding and navigational equipment.
- **Small-scale fisheries** Labour-intensive fisheries using relatively small crafts (if any) and little capital and equipment per person-on-board.
- **Artisanal fisheries** Typically traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amounts of capital, relatively small fishing vessels, making short fishing trips close to shore, mainly for local consumption.
- **Recreational (sport) fisheries** Harvesting fish for personal use, leisure, and challenge (e.g., as opposed to profit or research). Recreational fishing does not include sale, barter or trade of all or part of the catch.
- **Commercial fisheries:** Fisheries undertaken for profit and with the objective to sell the harvest on the market, through auction halls, direct contracts, or other forms of trade.
- **Subsistence fisheries** Pure subsistence fisheries are rare as part of the products are often sold or exchanged for other goods or services.
- **Traditional fisheries** Traditional fisheries reflect cultural traits and attitudes and may be strongly influenced by religious practices or social customs.

Management and Exploitation of Freshwater, Brackish Water and Marine.

Freshwater is water that contains only minimal quantities of dissolved salts, thus distinguishing it from sea water or brackish water. All freshwater ultimately comes from precipitation of atmospheric water vapor, reaching inland lakes, rivers, and groundwater bodies directly, or after melting of snow or ice.

Brackish water is a broad term used to describe water that is more saline than freshwater but less saline than true marine environments. Often these are transitional areas between fresh and marine waters, an estuary, which is the part of a river that meets the sea, is the best-known example of brackish water.

Marine waters cover more than 70% of the surface of the Earth and account for more than 97% of Earth's water supply and 90% of habitable space on Earth, Marine ecosystems include nearshore systems, such as the salt marshes, mudflats, seagrass meadows, mangroves, rocky intertidal systems, and coral reef.

Water Management

On a human time, scale, the amount of water on the earth is fixed, for all practical purposes, there is little we can do to make more water. However, there are several ways to increase local supplies.

- **Seeding clouds** Seeding clouds with dry ice or potassium iodide particles sometimes can initiate rain if water laden clouds and conditions that favour precipitation are present.

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- **Desalination:** Desalination of ocean water is a technology that have great potential for increasing fresh water. The common methods of desalination are distillation (evaporation and recondensation) or reverse osmosis.
- **Dams, Reservoirs, Canals and Aqueducts** It is common to trap run off with dams and storage reservoirs and transfer water from areas of excess to areas of deficit using canals, tunnels, and underground pipes.
- **Watershed management** A series of small dams or tributary streams can hold back water before it becomes a great flood. Ponds formed by these dams provide useful wildlife habitat and stock-watering facilities. Small dams can be built with simple equipment and local labour, eliminating the need for massive construction projects and huge dams.
- **Rainwater harvesting** the activity of collecting rainwater directly or recharging it into ground to improve ground water storage in the aquifer is called rainwater harvesting.
- **Better agricultural practices** Sound farming and foresting practices can reduce runoff, retaining crop residues on fields reduces flooding. Minimizing ploughing and forest cutting on steep slopes protects watersheds, Wetland's conservation preserves natural water storage capacity and aquifer recharge zones.
- **Domestic conservation** We could save as much as half of the water we now use for domestic purposes without great sacrifice or serious changes in our lifestyles. The use of washing machines, dish washers and low volume shower heads can reduce water loss.
- **Industrial conservation** Nearly half of all industrial water use is for cooling of electric power plants and other industrial facilities.

Biotechnology

Biotechnology is a broad area of biology, involving the use of living systems and organisms to develop or make products. Depending on the tools and applications, it often overlaps with related scientific fields.

Biotech is helping to heal the world by harnessing nature's own toolbox and using our own genetic makeup to heal and guidelines of research by:

- Reducing rates of infectious disease.
- Saving millions of children's lives.
- Changing the odds of serious, life-threatening conditions affecting millions around the world.
- Tailoring treatments to individuals to minimize health risks and side effects.
- Creating more precise tools for disease detection.
- Combating serious illnesses and everyday threats confronting the developing world.

Post-harvest Technology

- Post-harvest technology is interdisciplinary "Science and Technique" applied to agricultural produce after harvest for its protection, conservation, processing, packaging, distribution, marketing, and utilization to meet the food and nutritional requirements of the people in relation to their needs.
- It has to develop in consonance with the needs of each society to stimulate agricultural production; prevent post-harvest losses, improve nutrition, and add value to the products.
- In this process, it must be able to generate employment, reduce poverty and stimulate growth of other related economic sectors.
- The process of developing of post-harvest technology and its purposeful use needs an interdisciplinary and multi-dimensional approach, which must include, scientific creativity, technological innovations, commercial entrepreneurship, and institutions capable of interdisciplinary research and development all of which must respond in an integrated manner to the developmental needs.

Importance

- Importance of Post-harvest technology lies in the fact that it has capability to meet food requirement of growing population by eliminating avoidable losses making more nutritive food items from low grade raw commodity by proper processing and fortification, diverting portion of food material being fed to cattle by way of processing and fortifying low grade food and organic wastes and by-products into nutritive animal feed.



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- Post-harvest technology has potential to create rural industries.
- In India, where 80 percent of people live in the villages and 70 percent depend on agriculture have experienced that the process of industrialization has shifted the food, feed, and fibre industries to urban areas.
- This process has resulted in capital drain from rural to urban areas, decreased employment opportunities in the rural areas, balance of trade in favour of the urban sector and mismatched growth in economy and standard of living including the gap between rural and urban people.
- It is possible to evolve appropriate technologies, which can establish agriculturally based rural industries.

Post-Harvest Losses

- Due to old and outdated methods of paddy milling, improper and inefficient methods of storage of paddy, rice, transport and handling we lose about nine percent of production.
- It is estimated that ten percent of food grains produced in India are lost in processing and storage.
- The traditional methods of storage are responsible for about six percent losses.
- Losses of food crops refer to many different kinds of loss produced by a variety of factors. These include weight loss, loss of food values, loss of economic value, loss of quality or acceptability and actual loss of seeds themselves.

Post-Harvest Industries

The post-harvest industry includes the following main components

- Harvesting and threshing
- Drying and storage
- Processing (conservation and / or transformation of the produce)
- Utilization by consumer including home processing.

Other components of the system include.

- Transportation and distribution.
- Marketing.
- Grading and quality control.
- Pest control.
- Packaging.
- Communication among all concerned

- Information, demonstration, and advisory systems.
- Manufacture and supply of essential equipment and machinery.
- Financial control.
- Price stabilization Management and integration of the total system.

Importance of Fisheries in India

Fisheries have an important place in the Indian economy as:

- It acts as a source of income and employment to many fishermen, particularly in coastal areas.
- Fish and other aquatic animals are an important source of food as it is rich in proteins, minerals, and vitamins.
- It has a role in the enhancement of food production.
- It supplements the availability of meat and eggs for meeting nutritional requirements.

Common Terms Pertaining to Fish Production

1. **Aquaculture** – also known as aquafarming, is the controlled growth of aquatic species.
2. **Pisciculture** – aquaculture practice involving finned fish.
3. **Extensive aquaculture** – managed aquaculture dependent on the local natural setting, such as a pond or coastal sea area.

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4. **Intensive aquaculture** – managed aquaculture controlled through human engineered means, such as managing water quality and sources of food.
5. **Fish farm** – locations used to grow populations of aquatic organisms, primarily fish.
6. **Fish Hatchery** – one form of a fish farm, managed with the intent of resupplying native wild populations in natural environments.
7. **Ornamental fish** – are small fish, such as koi, which are typically grown to be kept in aquariums or small landscape ponds.
8. **Game fish** – Fish, such as trout, raised to become replenishment stock for natural sport fisheries.
9. **Wild fishing harvest** – the commercial and personal fishing consumption in a specific area and over a specific time frame.
10. **Water Quality** – the characteristics of water, such as water temperature and contamination, which define its ability to sustain life and its purity from chemicals.
11. **Culture tanks** – Artificial holding areas used to rear fish farm stocks.
12. **Fish husbandry** – the breeding and rearing of fish for a variety of reasons.
13. **Anadromous fish** – migratory fish that live in salt water but breed in freshwater.
14. **Catadromous fish** – migratory fish that live in freshwater but breed in salt water.
15. **Amphidromous fish** – migratory fish that live in both fresh and saltwater, independent of breeding.
16. **Potamodromous fish** – migratory fish that move within freshwater only.
17. **Oceanodromous fish** – migratory fish that move within salt water only.
18. **Genotyping** – determining the genetic makeup of a fish or stock or the purpose of managing the efficiency of aquaculture production.
19. **In vitro fertilization** – artificially fertilizing fish eggs in a laboratory setting.
20. **Fish meal** – commercially processed food source used in fish farming as a source of protein for the fish stock.
21. **Fry** – Development stage of fish immediately after the larvae stage, at an age of less than a week.
22. **Fingerling** – Development stage of fish following the fry stage and continuing into the first three to four months of life.

23. **Yearling** – Development stage of fish following the fingerling stage and lasting until approximately one year of age.
24. **Broodstock** – fish of any particular species which are raised for reproduction purposes.
25. **Fish kill** – a description of the number of fish stock to die in a specific amount of time.
26. **Pond acreage** – area committed to extensive aquaculture holdings at a fish farm or company.
27. **Overfishing** – detrimental practice of removing more of a natural aquatic species than what natural reproduction can support.
28. **Contaminants** – Both natural and artificial materials not typically found or found in unusually high concentrations which can be detrimental to the health of wild or farmed aquatic species

Sources Referred:

- Live mint article
- Fisheries websites
- PIB

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