

Integrated fish farming

- It refers to the simultaneous culture of fish along with other culture systems.
- Culture of two or more farming practices in fish culture is major component it is called as integrated fish farming.
- Fish culture can be integrated with several other production systems for complete and efficient utilisation of available resources.

Paddy cum fish culture

Advantages of paddy cum fish culture

1. Economical utilization of land
2. Little extra labour is required
3. Saving on labour cost
4. Enhanced rice yield by 5 -15 %,
5. Production of fish from paddy field
6. Additional income
7. Diversified harvest such as fish and rice from water and onion, bean cultivation on bunds
8. Control of unwanted filamentous algae by fishes which may otherwise compete for the nutrients
9. Control of unwanted weeds by some species of fishes like tilapia and common carp. These weeds may otherwise reduce rice yield up to 50 %
10. Insect pests of rice like stem borers are controlled by fish feeding on them by certain fish species like murrels and catfishes
11. Fishes can also control water born disease by feeding on the aquatic intermediate host such as malaria causing mosquito larvae.

Types of paddy fields for integrated system:

1. **Perimeter type:** The paddy growing area may be placed at the middle with moderate elevation and ground sloping on all sides into perimeter trenches to facilitate easy drainage.
2. **Central pond type:** Paddy growing area is on the fringe with slopes towards the middle.
3. **Lateral trench type:** Trenches are prepared on one or both lateral sides of the moderately sloping paddy field.

Rice varieties used for integrated system: PLA-2 (Andhra Pradesh) , IB-1, IB-2 , AR-1, 353-146 (Assam) , BR-14, Jisurya (Punjab) , AR 61-25B, PTB-16 (Kerala) , TNR-1, TNR (Tamil nadu), Jalamagan (Uttar Pradesh), Jaladhi-1, Jaladhi-2 (West Bengal) and Thoddabi (Manipur).

Culturable species of fish in rice fields

The fish species which could be cultured in rice fields must be capable of tolerating certain adverse conditions like shallow water (>15 cm depth), high temperature (up to 35⁰ C), low dissolved oxygen and high turbidity.

Species used in paddy cum fish culture - *Labeo rohita*, *Catla catla*, *Anabas testudineus*, *Clarias batrachus*, , *Channa striatus*, *Channa punctatus*, *Channa marulius*, *Heteropneustes fossilis*, and *Mugil sp*

Types of fish culture in rice fields:

Simultaneous culture:

- Rice and fish are cultivated together in rice plots.
- Rice fields of 0.1ha area are considered good with four rice plots of 250 m² (25 X 10 m) each may.
- In each plot, a ditch of 0.75 m width and 0.5 m depth is dug and dykes enclosing rice plots may be 0.3 m high and 0.3 m wide.
- Water depth of the rice plot may vary from 5 - 25 cm depending on the type of rice and fish species to be cultured.
- Fish fry are stocked at the rate of 5000/ha or fingerlings at the rate of 2000/ha after the five days of rice transplantation.

Rotational culture of rice and fish:

- In this system fish and rice are cultivated alternately.
- The rice fields are converted into temporary fish pond after the harvest.
- Sometimes rotational practice is favoured over the simultaneous culture practice because insecticides and herbicides can be used for rice production and yield is more.
- A greater water depth up to 60 cm can be maintained during fish culture period.
- Stocking densities - 20,000/ha for fries and 6,000/ha for fingerlings.

Questions for practice:

1. Integrated fish farming may be defined as:
 - a. Cultivating more than two species of in a pond
 - b. Running some other production technology like agriculture along with fish farming
 - c. Cultivating fishes of different age of the same species simultaneously
 - d. Cultivating fishes of different size of the same species simultaneously
2. The size of paddy plots regarded ideal for paddy cum pisciculture is.....

3. Stocking densities in rotational type of paddy cum fish culture is generally.....
/ha for fries and/ha for fingerlings.
4. Advantages of paddy cum fish culture is:
 - a. Economical utilization of land
 - b. Little extra labour is required
 - c. Saving on labour cost
 - d. All of the above
5. Paddy growing area is on the fringe with slopes towards the middle in:
 - a. Perimeter type of paddy cum fish culture
 - b. Central pond type of paddy cum fish culture
 - c. Lateral trench type of paddy cum fish culture
 - d. All of the above