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Integrated farming system fish cum duck

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Integrated fish farming system is the combination of livestock and fish production, where we get manure from ducks, chickens and pigs which directly adds into fish ponds as fertilizer resulting in growth promotion of natural fish food like phytoplankton and zooplankton, supporting fish production with minimal feed input. In fish –cum- duck farming, ducks also help in managing pests like tadpoles and dragonflies. Droppings of ducks enrich pond fertility with nitrogen (0.9%) and phosphorous (0.4%). About 300 ducks are enough to fertilize one hectare of pond area. This integration enhances fish yield providing eggs and meat, and also converting 40-50 kg of organic waste into 1 kg of fish, increasing both food production and farmer income.

In this integrated fish –poultry farming, poultry waste is recycled into ponds, increasing productivity and generating income with minimal environmental pollution (Singh *et al.,* 2014; Misra *et al.,* 2016). This practice is accepted worldwide, as it increases proficiency of both fish and duck farming by utilizing animal and feed waste. Since fish feed accounts for about 70% of production costs, using animal manure helps reduce expenses, making the system suitable for low-income farmers. Studies (Banerjee *et al*., 2014; Bhuiyan *et al*., 2014) support this method as a sustainable, biodiversity-friendly approach that improves the performance of small and marginal farms. The current study aims to evaluate integrated fish-poultry farming for promoting self-employment and nutritional security.

Advantages of Duck cum fish farming

- Ducks fertilize the pond with their droppings when allowed to roam freely on the pond surface.
- They are considered "manuring machines" due to their efficient, labor-saving pond manuring, eliminating the need for fertilizers and reducing fish feed costs by up to 60%.
- Ducks help control aquatic weeds and unwanted water plants.
- Their dabbling loosens pond soil, releasing nutrients and increasing productivity.
- While swimming, ducks aerate the water, earning them the title "biological aerators."

- Duck houses are built on pond dikes, so no extra land is needed.
- Ducks fulfill most of their feed requirements from the pond (aquatic weeds, insects, larvae, earthworms, etc.).
- Farmers typically supplement their diet with minimal feed like kitchen waste, molasses, and rice bran.

Selection of duck and their rearing

Khaki Campbell, Indian Runner or their cross with indigenous local ducks are usually preferred for fish duck integration farming. Disease free stock should be selected. Khaki Campbell under intensive system should be able to lay 300 eggs per year. 250 to 300 nos. of ducklings are stocked per hector area of pond. Manure production per year from duck excreta will be around 45-55 kg/duck/year. Usually, ducks tend to lay their eggs during night hours and hence some straw or hay may be provided in the corner of duck house.

Selection of fish

Promote the growth of protein-rich natural fish feed like phytoplankton, zooplankton, and microorganisms. *Fish selection criteria:*

- Efficient feeders on phytoplankton, zooplankton, and aquatic plants.
- Preferably species accepted and consumed by the local population.
- Commonly cultured species in integrated fish farming:

Surface Feeders (30–40%): Catla: 20–30%, Silver Carp: 10–15%

Column Feeders (25–35%): Rohu: 15–20%, Grass Carp: 5–10%

Bottom Feeders (40–45%): Mrigal: 20–25%, Common Carp: 15–20%

Duck Housing and Management

Ducks elaborately don't require house as most of the time they explore in pond. But proper care and management should be taken during duckling stage and protect them from predators. House can be made of bamboo, woods and constructed on pond dykes. Duck houses should be built at least 1 meter above the water surface. Duck house should be built at least 1 meter above the water surface and height of pond dykes can be designed highest water level during the rainy season to prevent flooding. Duck's house is built near the pond's water inlet to distribute nutrients evenly. Floor space provided to duck should be 2.5 -3 sq. ft with good ventilation.

Stocking density of duck and fish

Stock 200–300 ducklings per hectare. For fish, a stocking density of 20,000 fingerlings per hectare is considered sufficient to complement duck farming and maintain optimal pond productivity. Ducks should be stocked only when the fish seed attains size of 10 cm. Best time for stocking ducks is March-April. `

Feeding Strategy

For proper growth first 3 three weeks are vital. Ducks gets their natural food from pond but isn't enough for proper growth. A balanced feed with protein of 17% for ducklings and 15% protein for adults should be provided. Ducks are fed wet mash and should never fed without water. An adult duck consumes about 100 to 120 g feed/bird/day. The food is administered twice daily, once in the morning and again in the evening.

Health Management

Ducks are resistant to common avian diseases. However, duck plague is the most common viral disease which can be prevented by administering duck plague vaccine at 8-12 weeks of age. Other common diseases are duck plague, duck cholera, aflatoxicosis (acquire from feed those not properly stored). To prevent this viral disease timely vaccination is always recommended to prevent economic losses.

Production Potential

Fifty to sixty percent of cost of production is saved. The productivity of duck-fish integration has found to be 3000-4000 Kgs of fish/ha/year, 15,000-20,000 eggs/250 ducks/year and 250- 300 Kgs of duck meat/250 ducks/year.

Conclusion

Integrated fish farming is a growing practice that supports food security, livelihoods, and employment for the rising global population. Economically, it offers diverse and sustainable integration, making it one of the most reliable and successful farming systems. By utilizing farm waste, it promotes sustainable food production, increases yield per unit area, reduces costs, and maintains environmental cleanliness. This system significantly contributes to rural economic growth and empowers farmers to achieve year-round profitability and maximum productivity.

Reference

Banerjee S, Ruska N and Sudip B (2014). Study on the zooplankton production in ponds under different fish farming system in West Bengal. Krishi Vigyan 3(1):79- 83.

Bhuyial M S U, Karim M Mand Hossain S M A (2014). Study on Integrated system model development. BangladeshAgri Univ 12(2): 325-336.

Biswas, A. (2015). Fish duck integrated farming. *Kolkata, India: Central Institude of*

Fisheries Education.

Lal, J., Tameshwar, S., Kashyap, N., Debbarma, J. (2022). Integrated Fish Farming: Fish cum Duck Farming. *Krishijagran*.

Misra V K, Singh N D, Mishra B P and Tripathi A N (2016). Study on Integrated Horticulture cum Fish Farming in District West Kameng, Arunachal Pradesh.In:National Conference entilted "Horticulture in North Eastern Region", Organized by College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh 16th-18th January 2016, Arunachal Pradesh pp 225.

Saikia, P., Nath, K. D., Kalita, D. N., & Hussain, S. M. (2020). Integrated fish-cum-duck farming system: A tool for increasing Farmer's income. *Journal of Krishi Vigyan*, *9*(si), 162-167.

Singh U P, Bisht HC S and Pandey N N (2014). Poultry cum fish culture as an effective tool for environmentally sustainable and economically viable technology for the mid hills. *Int J Adv Res* 2(2): 854-860.