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Eco- Friendly Feeding Strategies for Composite Fish Culture

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SUMMARY

Nutrients are resealed to the environment in fish culture procedures in a variety of ways, one of which is feed, which the most significant source of nutrient is loading to the environment in fish production. By feeding healthier, more environmentally friendly diets as well as using environmentally effective farm management, the impact of aquaculture feeds on the aquatic environment can be reduced. Feeding practices play an equally crucial role in reducing pollution. Optimal feeding strategies allow for the most efficient utilisation of these feeds, with the least amount of waste and nitrogen and phosphorus excretion feasible. Farmers often overfeed their stock to try to ensure they grow well, but usually only end up wasting money and polluting culture water. All this weakens the immune systems of farmed fish, increasing mortalities or reducing growth rates. By sticking with good feeding practices, excessive waste can be avoided, while water quality plus the health of farmed fish can be optimised.

INTRODUCTION

Feed is good but improper feeding levels and methods may enhance feed wastage which pollutes the environment and leading to decreased production with less economic return. Thus, optimum feeding rate and appropriate feeding methods and frequency are essential for making the aquaculture operations economic and eco- friendly.

Feeding Rate

Amount of feed on percent body weight given per day is considered as feeding rate.
Total amount of feed required per day can be calculated by the following formula:
Amount of feed per day (Kg) = Nos. of fish x Average body weight x feeding rate/100

For composite carp culture in grow- out pond feeding rate usually various from 3% to 1% body weight. However, following feeding schedule can be used in composite fish culture system. Amount of feed on 5% of body weight for first 2 months of culture, 4% of body weight for next 2 months of culture, 3 % of body weight for next 2 months of culture, 2% of body weight for 2 months of culture, 1% of body weight for last 2-4 months of culture.

Feeding Frequency

Feeding frequency is the number of times of feeding per day with a part amount of total ration. For example. if total ration is 2 kg and feeding frequency is 2 means the fish are fed twice daily by dividing the ration in two parts. It is important to maintain the optimal frequency of feeding to attain the best growth, FCR and uniform size of fish.

Feeding Methods

Eco- Friendly feeding of fish indicates the offering of right type of feed through appropriate feeding methods for minimizing the feed waste with economic production. Different low-cost feeding methods are employed in composite fish culture depending on type of feed used.

1) Broadcasting
2) Bag feeding
3) Tray or basket feeding

Broadcasting

- Broadcasting is the hand dispersing of a known quantity of feed in to the culture system
- Broadcasting of the feeds carried out from the bank of small ponds (<0.5 ha)
- In large ponds (> 0.5 ha) distribution of feed is done by using small boats.
- Mash feed should never be broadcasting in composite fish culture pond.

Bag feeding

The bag feeding is one of the low-cost feeding methods, in which daily required quantity of feed are given to the fish in perforated cloth bags hanged from the bamboo poles. Fertilize or cement bags are suitable for this purpose.Hungry fish hit at the side of perforation/ holes of bag as a result small amount of feed comes out. Fish then consumed that feed. This process continues until the fish are satiated. Through this method feed wastage can be minimized considerably. Bag feeding system is considered as low-cost indigenous type of demand feeder which is alternative to costly mechanical demand feeder.

This method is suitable for feeding of mash feed and sinking pellets.

1. Mash feed

2. Bag feeding

Two different methods of bag feeding

In this feeding methods, daily required feed are divided in polythene or nylon or plastic fertilizer or cement bags of 20 kg capacity.

One tier bag feeding methods

The bags are tied with help of threads either to bamboo poles or to the nylon rope fixed with the bamboo poles and suspended at specific depth (1.5-2.5 ft for carp composite culture) at various locations in the pond (8-10 ft away from the pond side). About 14 to 16 bags per hectare are installed at different places of pond.

Three tier bag feeding methods

In this feeding method, arrangement of bags are same as one tier method but instead of one depth, bags are suspended either from bamboo poles or nylon rope at different depth (1.5 ft, 3.5 ft and 5.5 ft for composite fish culture) at various location in the pond (8-10 ft away from the pond side) Such arrangement is deployed in 14-16 places per hectare i.e 42-48 bags are required per hectare.

Tray or Basket Feeding

This is one kind of low-cost feeding methods, in which daily required quantity of feed are placed in a tray (Plastic or aluminum) or basket (Bamboo) to feed the fish. One or three tire tray or basket feeding methods may be employed in grow-out composite fish culture pond.Installation of tray is same as bags feeding methods. Sometimes trays can be hanged from the pond bank using a fixed bamboo pole.Moist ball, sinking pellet, cooked paste or cooked ball can be fed to the fish through this method.

Feed type	Feeding rate (% of body weight)	Feeding frequency (Time per day)	Feeding Methods
Mash feed	5-1	1	Bag feeding
Combination of sinking and floating pellets (1:1)	5-1	2-3	Broadcasting
Sinking pellets feeding	5-1	1	Bag/ Tray/ Basket
Wet ball	5-1	1	Tray/ Basket
Cooked paste	5-1	1	Tray/ Basket
Cooked ball	5-1	1	Tray/ Basket

CONCLUSION

Feed is an important factor to consider when carrying out an environmental audit for an aquaculture operation. In order to healthily promote the development of fisheries, fish feeding should be in the above-mentioned methods to reduce the risk of contamination of water and the environment. Fish farming has a great capacity of making more food available thus enhancing food security and creating more jobs for the teeming unemployed masses in the country. By feeding healthier, more environmentally friendly diets as well as using environmentally effective farm management, the impact of aquaculture feeds on the aquatic environment can be

reduced. Feeding practices play an equally crucial role in reducing pollution. By sticking with good feeding practices, excessive waste can be avoided, while water quality plus the health of farmed fish can be optimised.

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