Fish feed management by farmers in Thanjavur district, Tamil Nadu

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ABSTRACT

Fish feed is an important input in aquaculture and contributes 50-60 per cent to total production cost. Feed management is the profit determining factor in aquaculture. The present study was conducted to determine the feed managment and constraints in availability of feed, feeding methods and feed management in Thanjavur district in 50 farms with semi-structured questionnaire. The farms were selected based on the random sampling method. The study revealed that 50 per cent of fish farmers used farm made feed along with commercial manufactured feed and it was found that the use of commercial feed was gradually increasing. However the small farmers (40%) still used farm made feed due to high cost of the commercial feed. High price and low availability were found to be big constraints in use of commercial feed. The number of farmers using only commercial feed was very low (10%). It is recommended that farmer associations should establish and manage fish feed manufacturing units through public-private partnership mode with technical guidance from research institutions so as to get quality commercial feed at affordable price.

Keywords: Fish farmers; fish feed; subsidy; aquaculture; constraints

INTRODUCTION

Tamil Nadu is blessed with inland water spread area of 3.83 million ha including rivers, lakes, reservoirs, ponds and tanks and the fish production here is 1.97 lakh tonnes (Anon 2017). It is evident from the Fig 1 that inland fish production of Thanjavur has been continuously increasing with annual average growth rate of 63 per cent and the production was 25,875 kg in 2017. The fish production of Thanjavur has doubled from 7 to 14 per cent (Anon 2016) due to the better water availability as it is located in Cauvery basin. Hence the fish production has improved substantially.

Thanjavur ranks second in inland fish production (25,875 kg) of Tamil Nadu next to Theni (69,026 kg) with huge gap (Anon 2016). Generally there are some common constraints which restrict the improvement of fish production such as land and water resources. Feed has an important role in fish production as it alone contributes about 50-60 per cent in aquaculture production cost (Anon 2008). Therefore use of feed is needed to manage carefully in fish farming practices. Hence the present study discussed about the feed management and constraints in feed used, nutrients composition, feeding method and management in freshwater aquaculture aiming fish farmers of Thanjavur district of Tamil Nadu.

METHODOLOGY

The present study was attempted to analyse the status and constraints of using different types of feed, feeding methods and feed management in carp farming during 2017-18 in Orathanadu, Peravurani, Ammapet and Thittai villages of Thanjavur, Tamil Nadu. A total 50 farms were selected by random sampling method throughout the district. The primary data were collected by using semi-structured questionnaire with required questions.

RESULTS and DISCUSSION

Thanjavur fish farmers had been commonly using three types of feed such as conventional feed, farm made feed and manufactured feed.

Conventional feed

Conventional feed was prepared by equally mixing groundnut oil cake with rice bran. By the use of conventional feed India achieved 3.0 million tonnes of aquaculture production during 2000 (Anon 2006). It was observed that fish farmers used 1/3 ratio of groundnut oil cake and remaining low protein feed ingredients such as rice bran and maize flour were used for feed preparation. Recently the use of conventional feed has decreased because of the increased awareness about the limitations of conventional feed. There were some limitations of using conventional feed. Fish farmers did not have good infrastructure facilities to store large quantity of raw materials. Feeding fishes with conventional farm made feeds may deteriorate the water quality of the ponds which leads to disease occurrence. Most of the fish farmers had been using low price and easily available feed ingredients for feed preparation which had less and imbalanced nutritional composition that could not supply required nutrients for cultured fishes. The nutritional composition of feed was not analysed before feeding the fishes which is not suitable to all types of species and for different stages of fish. The cost of raw materials such as oil cake and rice bran was much higher which was not affordable by fish farmers. Fish farmers had observed a very low FCR by using conventional feed (3:1 to 4:1). Raw materials for conventional feed preparation were not available throughout the culture period. Due to high labour cost in conventional feed preparation and feeding practices most of the fish farmers were not able to follow the conventional feeding practices.

However the conventional feed was used during emergent situation when there was unavailability of other types of feed.

Farm made feed

The present study showed that farm made feed was commonly used by most of the fish farmers in Thanjavur. This feed was prepared by mixing of six or more locally available feed ingredients including GNOC, rice bran, wheat flour, corn flour, soya flour, vitamin and mineral mix and fish meal. As Thanjavur is rice bowl of Tamil Nadu, rice bran is a major source of feed ingredients and contributes 30-60 per cent in feed composition. Fishmeal was rarely used feed ingredient due to the unavailability and high price in market. The quality of farm made feed depends on quality of feed ingredients, composition and preparation method. De Silva and Hasan (2007) reported that India has enough fish feed ingredients to prepare the farm made feed as it is one of the agricultural countries.

The farmers had been using locally abundantly available and low-priced feed ingredients in feed composition to prepare the farm made feed. As a result farm made feed was low in quality and lacked required nutrients for culture fishes that led to great loss to fish farmers. However the farmers reported that farm made feed reduced the cost of feed input and improved the taste of fishes grown by farm made feed. Some farmers had been getting feed ingredients from their own farm such as maize, rice bran, GNOC and corn flour which reduced the cost of feed further.

Farm made feed was produced into pellets or feed balls with and without extrusion respectively. Mash feed was fed by using feed bags. Sinking pellet feed was fed by hand broadcast method. In some places of Thanjavur the farmers fed the fishes by feed platform which was fixed into the pond by the help of bamboo poles and it was submerged in the water. Through this method farmers could visually see the fish feeding.

Manufactured feed

Farmers knew about the constraints in the use of conventional farm made feed with their experience in fish culture and as a result the use of manufactured feed was gradually increasing in Thanjavur district. The farmers were getting feed through the intermediaries such as wholesale dealers and retailers. So the huge amount of feed was being imported from Andhra Pradesh. The transport cost and middleman involvement escalated the feed cost. It was the big constraint with manufactured feed.

It is observed from Table 1 that the high percentage of farmers (50%) used manufactured feed along with farm made feed followed by combined use of farm made and conventional feed (40%). The use of commercial pellet feed was gradually increasing therefore several farmers continued to prepare on-farm feed mixtures (20%) to reduce the cost of production. Percentage of manufactured feed alone using farmers was very less (10%) in the district.

Benefit in use of manufactured feed

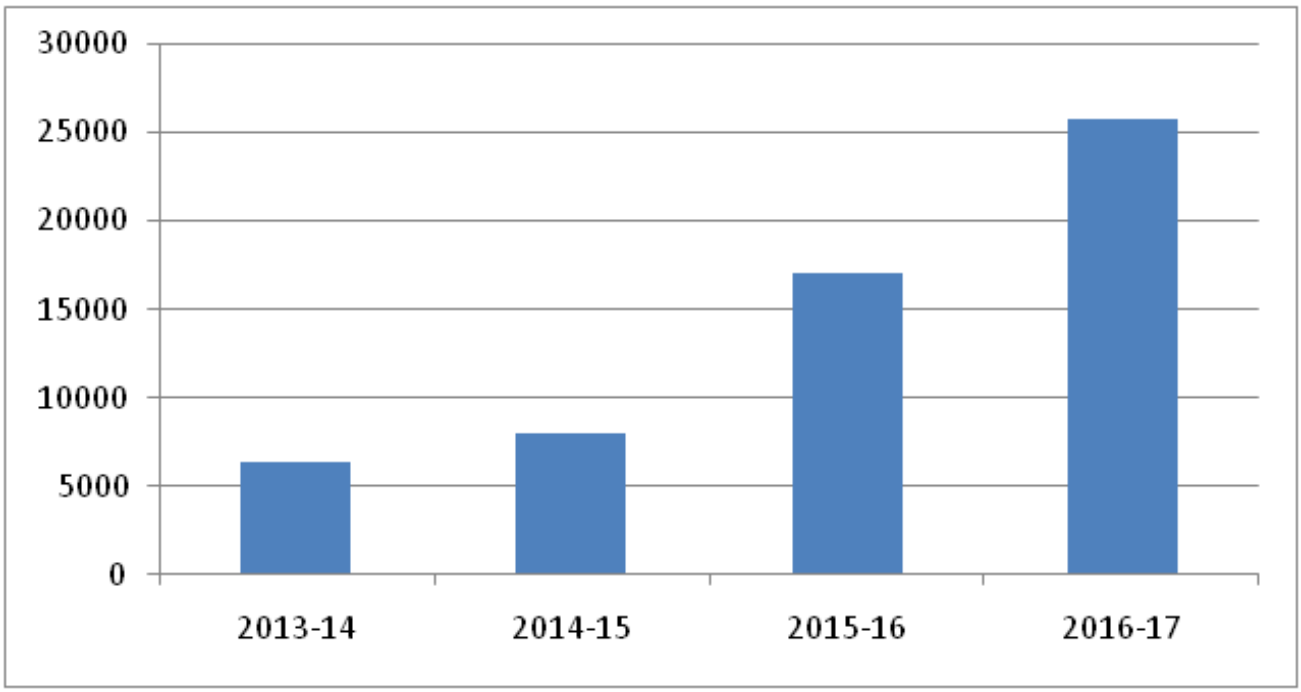
There were some benefits to the farmers using commercial feed. The commercial feed had good water stability and thus the composed nutrients were not dissolved in water and were fully utilized by fishes.

Table 1. Types of feed used by fish farmers and its percentage in Thanjavur district

Type of feed	Number of farmers (n= 50)	Percentage
Manufactured feed	5	10
Farm made feed	10	20
Conventional feed	-	-
Manufactured and farm made feed	25	50
Farm made and conventional feed	20	40
Manufactured and conventional feed	15	30
Conventional, farm made and manufactured feed	0	-

Table 2. Use of feed types by fish farmers and their price in Thanjavur

Type of feed	Price (Rs/kg)	Protein composition (%)	Remarks
Conventional feed	18-20	Unknown	GNOC and rice were not equally mixed
Farm made feed	16-25	Unknown	Low cost and abundantly available local feed ingredients mixed together
Floating feed (1.2-1.8 mm)	58-60	32	Most of the small farmers used farm made feed instead of floating feed
Floating feed (2 mm)	38-40	28	Most of the small farmers used farm made feed instead of floating feed
Floating feed (1.2-1.8 mm)	35-38	24	Most of the small farmers used farm made feed instead of floating feed
Floating feed (4 mm)	30-60	20-28	Most of the small farmers used farm made feed instead of floating feed



Source: State Fisheries Department, Tamil Nadu

Fig 1. Inland fish production of Thanjavur (kg)

Moreover it did not deteriorate the water quality and hence was suitable for intensive fish culture. It reduced the labour cost due to easy handling and feeding method. Fish could be seen by naked eye while feeding with commercial floating feed and it facilitated the observation of the health and size of fishes without sampling. Commercial feed was produced based on the nutrient requirement of culture fishes and their life stages. Hence it provided complete nutrition to the fishes. It was easy to handle commercial feed and transport without damage due to the packaging of feed in quality bags.

Problems in using commercial fish feed

It can be observed from Table 2 that small farmers were dependant on conventional (price Rs 18-20/kg) and farm made feed (price Rs 16-25/kg) due to the affordability and high palatability. Commercially manufactured feed was priced based on the presence of protein composition. Generally it had higher price than conventional and farm made feed due to the middleman interaction between farmers and manufacturers.

It was observed that farm made mash feed was commonly used for rearing of fingerlings up to the size of 200-300 g. After that the farmers started using commercially manufactured feed until harvesting the fishes. It retained protein level for culture fishes and water stability and increased growth of fishes by improving the water quality. Farmers using commercial feed could raise two crops per year through stocking of stunned growth fingerlings.

However some problems were identified in using commercial feed in aquaculture. The perception of the fish farmers was that use of manufactured feed was not cost effective. The cost of commercial feed was high. The farmers fetched low price for fish in certain period of the year. The commercial feed manufacturers sometimes used low quality feed ingredients to reduce cost and get more profit.

CONCLUSION

Fish farmers showed lack of awareness about advantages of commercial feed which can bring significant savings in aquaculture production through reduced FCR 3:1 to 1:1.

Therefore creation of awareness was needed through field demonstrations. There was need to enhance contact between farmers and feed manufacturers to increase the availability and reduce the cost of feed. Farmers associations could establish and manage fish feed manufacturing units through public-private partnership mode under supervision of technical institutions. Thus the farmers could get quality commercial feed at affordable price.

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