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**FARM
MADE
AQUA FEED
DEVELOPMENT
BY
WOMEN SELF
HELP GROUP**



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Farm-made Aqua Feed Development by Women Self Help Groups

Introduction

Aquaculture is currently one of the fastest growing food production systems in the world. Most of global aquaculture output is produced in developing countries and significantly, in low-income food-deficit countries. Aquaculture encompasses a wide range of different aquatic farming practices with regard to species (including seaweeds, molluscs, crustaceans, fish and other aquatic species groups), environments and systems utilized with very distinct resource-use patterns involved, offering a wide range of options for diversification of avenues, for enhanced food production and income generation in many rural and semi-urban areas.

Women in India have contributed substantially to the social and economic growth of the economy. In coastal areas, women play an indispensable role in the fishery sector by taking part in various activities both in capture and culture fisheries such as transportation and marketing of fish in domestic sector, shrimp-peelers in fish processing plants, workers in shrimp hatcheries, culture and



fattening of mud-crabs, aqua feed production, preparation, processing and marketing of value added fish products etc.

Aqua feed forms the essential component in all fisheries sectors. The commercial production of ornamental fishes and fattening of crabs depends mainly on the availability of quality aqua feeds to obtain maximum benefits. Trash fish availability is expected to become a major constraint in many countries. The increasing scarcity of traditional fish foods such as trash fish and the high cost of available supplies make their continued use uneconomical. Artificial feeds based mainly on feedstuffs of plant origin, are less expensive and can, with proper balance of nutrients, produce comparable results.

The success of the aqua production depends upon the selection of appropriate proportion of quality raw materials, formulations involved and feeding methods. FAO has suggested that farm-made feeds be defined as

feeds in pellet or other forms, consisting of one or more artificial and/or natural feedstuffs, produced for the exclusive use of a particular farming activity and not for commercial sale or profit (FAO, 2005-2010).

In pond culture trials, crabs fed with pellet feed showed substantial weight increase and better survival over the control group fed trash fish. The value of utilizing aqua feeds already accepted in Asian countries and in China, is becoming well known in India where a very significant growth in production is expected, particularly from shrimp culture. The trials have demonstrated the advantage of using formulated pellet feeds for growing crabs.

Several technologies for brackishwater species of finfish, shrimp and crab have been developed by researchers of the Central Institute of Brackishwater Aquaculture (CIBA). CIBA has also taken efforts in empowering coastal women belonging to fisher and non-fisher communities, with the technologies developed in the institute being adopted by these women for their self-sustenance. Various trainings and demonstrations conducted by CIBA among the women Self Help Group (SHG) beneficiaries have witnessed that 'Farm Made Aqua Feed Development' is a viable alternative livelihood option for coastal women.

CIBA has trained 50 women in '**Farm Made Aqua Feed Development**' and has installed **2 Farm Model Fish Feed Units** at Thonirevu village, Pulicat Tiruvallur District and New Perungalathur, Kancheepuram Dt. Tamil Nadu for developing and marketing of aqua feeds. The method of processing of farm made aqua feeds developed by CIBA is discussed here.

Owing to the relative ease of these techniques, a reasonably good profit margin and familiarity of coastal communities, the adoption of this CIBA aqua feed development technology can prove to be a potential livelihood option for the women self help groups.

The coastal women SHG of Thonirevu village, Pulicat Tiruvallur District and New Perungalathur, Kancheepuram Dt. Tamil Nadu, have experienced aqua feed technology as a viable alternative livelihood option for the coastal women SHGs. Farm-made aqua feed produced by women SHGs is supplied to nearby shrimp aqua farms in addition to their use in fattening of crabs. These women who have taken up avocations based on this technology, have started their enterprise on a small scale level and are on the path of self-sustenance.



FARM MADE AQUA FEED UNIT

Need of Unit

CIBA aqua feed is produced using 'Farm Model Fish Feed Unit' and indigenous raw materials. Consequently, the cost of feed produced has an edge over the commercial imported feeds. The FCR obtained with CIBA aqua feed is practically at par with those of the existing commercial feeds and the cost of production is also comparatively low.

Ingredients for Aqua Feed Development

The ingredients that originate from seawater are the staple ingredients in aqua feed and any unutilized raw material from the sea can be included in the farm made aqua feed very effectively. The common marine protein sources used are dry fish, fish waste, *acetes*, squid waste, *squilla*, prawn head waste, snail meal, clam meal and crab meal. In addition to marine raw materials, locally available plant protein sources like ground nut oil cake, gingelly oil cake, cotton seed cake, sun flower oil cake, soya bean meal and mustard oil cake could also be used based on the availability and cost.

The energy sources comprise broken rice, broken wheat, maize, tapioca, sorghum and other millets. Fat sources like fish oil or any locally available cheap vegetable oil can also be used as energy by-products. Wheat bran and rice bran are also important ingredients for farm-made feeds.





Advantages of using 'Farm Model Fish Feed Unit'

A good hygienic, nutritious and quality feed can be produced. Time and energy can be saved and labour cost reduced. Fresh feeds can be prepared according to the requirements. The unit can easily be operated by women. It gives adequate nourishment and high survival rate in fish, shrimp and crabs. Farm-made aqua feeds are easily digested by the animal, possesses good water stability and can be stored for 2 months.



PRODUCTION OF FEED IN THE FEED UNIT

Steps involved in the production of farm-made aqua feeds

1. Weighing the raw material

According to the formula, all the dry solid ingredients are measured, weighed and thereafter placed on a platform for mixing.



2. Mixing of solid raw materials

All the weighed ingredients are mixed thoroughly. This facilitates mixing of all the ingredients which helps in easy grinding and homogenization.



3. Grinding of raw materials

The mixed ingredients are ground by a grinder. Initially, the materials are coarsely ground followed by powdering.



4. Sieving the powdered materials

The powdered materials are passed through the sieve assembly. This process removes the coarse materials.



5. Mixing the materials

The powdered materials are put into a mixer. The materials in fine form like binder, mineral and vitamin are added at this stage. After mixing for 5 minutes, liquid ingredients like fish oil and lecithin are added. The required quantity of water is also added. For uniform mixing, about 15 minutes are allowed.



6. Cooking the mixed material

The mixed material is subjected to steam-cooking to improve the digestibility of the feed and to destroy any pathogenic microbes which might be present.



7. Pelletizing the feed

The cooked feed material is made into pellets by passing it through the pelletizer. The size of the feed could be adjusted using die of different sizes. The length of the pellet could also be regulated using a cutter. The pellets are finally collected in a tray for drying.



8. Drying the pellet feed

The collected wet pellets are kept in the dryer till the moisture level in the pellet is reduced below 12%. During the drying process, the pellets should be periodically stirred for uniform drying.



Sealing and Packing

The dried material with less than 12% moisture are sieved to remove the finer particles and the pellets are weighed and packed in 5 kg and 25 kg packs. These can be marketed to the local dealers, aqua farmers and companies.



Economics

Cost of one 'Farm Made aqua Feed Unit' - ₹4 - ₹5 lakhs

Capacity of the Unit - 20 kg / hour.

Storage period of feed - Approximately about 2 months

Cost of feed - ₹25 to ₹30/- kg

Conclusion

The adoption of farm made aqua feed development technology among the coastal women SHGs implemented by CIBA and the additional income gained through aqua feed production has enhanced the self confidence level among the SHGs to become successful entrepreneurs in the future.



**Dr. S. Ayyappan, DG, ICAR, visiting the
'Farm Model Fish Feed unit' at
Thonirevu village, Pulicat Tiruvallur
District, TN.**

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