

**A report on
Capacity building of tribal women self help groups on brackishwater
aquaculture integrated with agro - based technologies**

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The Central Institute of Brackishwater Aquaculture, Chennai, Tamil Nadu (South India), under the tribal Sub Plan demonstration programme titled '**DEVELOPMENT OF ALTERNATE LIVELIHOOD OPPORTUNITIES AMONG THE (ST) WOMEN SELF HELP GROUPS THROUGH AQUACULTURE INTEGRATED WITH AGRO - BASED TECHNOLOGIES**' adopted sixty scheduled tribal women self help groups from Tiruvallur and Kancheepuram Districts of Tamil Nadu (South India) during the period 2012-13.

Nursery rearing of brackishwater finfish Asian seabass juveniles in hapas was demonstrated among 30 *Irular* tribal women SHGs of Kulathumedu village, Tiruvallur dt., Farm made fish feed development, ornamental fish farming and mushroom farming were demonstrated among 30 *Irular* tribal women SHGs at New Perungulathur, Kancheepuram dt.

1. SEABASS NURSERY REARING IN HAPAS BY TRIBAL WOMEN SELF HELP GROUPS [OPEN WATER SYSTEM]

Asian seabass *LATES CALCARIFER* is an ideal candidate species suitable for brackishwater aquaculture either in ponds or in cages. Seabass can tolerate wide range of salinity from 0-40 ppt and can be farmed in marine, brackish and freshwater conditions. The fish can grow above 1.0 kg in 8-10 month period and fetch Rs.250- 350 per kg depending upon the size.

Nursery rearing of seabass is an important component of farming practice, where the seabass fry is reared to fingerling size in net hapas, ponds and tanks. Hapa nursery rearing can be done either in open water bodies or in 1.5 m pond system having minimum of 1-1.5 m water depth. In hapas, seabass fry of 1-1.5 cm size can be stocked @ 500 numbers /m² and reared from 45-60 days. The preferred hapa size is 1X1X2M (2 m³).

After 60 days rearing, seabass fry can attain the fingerling size of 6-8 cm, when fed with either trash fish or pellet feed @ 10-15% body weight daily in two rations. In hapa rearing, seabass seed have to be graded weekly twice in order to separate the shooters and to maintain uniform size. Regular grading would help in non occurrence of cannibalism, which results in improved survival rate. After nursery rearing, farmers can benefit with expected profit of Rs.6-10/piece and can earn monthly income Rs.10000-20000. Small scale farmers and tribal women self-help groups can take up seabass nursery rearing as a livelihood option.



Stocking the seabass fry



Grading



Seed segregation



Feed preparation



Feeding



Transportation

2. SCAT' ORNAMENTAL FISH FARMING IN TANKS BY TRIBAL WOMEN SELF HELP GROUPS

Ornamental fish trade is a multi-billion dollar global industry propelled by enormous consumer demands since the interest among the people for aquarium keeping is increasing every year. In India, there are many potential brackishwater ornamental fish species are available. Development of breeding technology for these species would provide a source of income generation activity for rural poor.

CIBA has developed breeding and juvenile production technology for spotted scat *Scatophagus argus* under controlled conditions. Being omnivore, scat can consume benthic and filamentous algae, detritus matter, and zooplankton. After 1.5cm it can easily accept low protein formulated feed as dough. Since, scat can tolerate wide range of salinity from 0-35 ppt, it can be reared in marine, brackish and fresh water aquaria. Juvenile scat (1-2 inch) can fetch Rs.30-50/piece in retail market and fetch higher prices in the international market.

Farmer can stock 1.0 cm size scat fry either in hapas/tank or in ponds for marketable size production. It can be stocked @ 500 numbers/m². Scat fry can be fed with low protein artificial feed @ 8-10% body weight daily in two rations. The fry can attain 1-2 inch size in 45 days culture period with 70 -80% survival rate. Small scale farmers and tribal women self-help groups can take up scat rearing as backyard homestead activity as source of income generation and can earn Rs.8000 - 12000 per month.



Stocking and setting the hide outs



Assessing the growth



Grading



Live feed processing



Packing



Sales of scat

3. FARM MADE FISH FEED PROCESSING BY TRIBAL WOMEN SELF HELP GROUPS

Aqua feed forms the essential component in all fisheries sector. The commercial production of ornamental fishes, fattening of crabs depends mainly on the availability of quality aqua feeds for feeding purposes, to get 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

CIBA aqua feed is produced using farm model fish feed unit and also largely using indigenous raw materials. Because of this the cost of the feed produced has an edge over the commercial imported feeds. Since the FCR obtained with CIBA aqua feed are practically on par with those of the commercial feeds, the cost of production is also low when compared to the commercial feeds.

The ingredients that originate from marine water are the staple ingredients in aqua feed and any unutilized raw material from marine water 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, gingely oil cake, cotton seed cake, sun flower oil cake, soya bean meal and mustard oil cake can be used based on the availability and cost. The energy sources used are broken rice, broken wheat, maize, tapioca, sorghum and other millets. Fat sources like fish oil or any vegetable oil available locally at cheaper cost can also be used as energy by-products. Wheat bran and rice bran are also important ingredients for farm made feeds.

A good hygienic, nutritious and quality feed can be produced using this farm model fish feed unit. Time and energy can be saved. Labour cost can be reduced. Fresh feeds can be prepared according to the requirements. The unit can be easily operated by the women. It gives good nourishment and high survival rate to aqua fish, shrimp and crabs. Farm made aqua feeds are easily digestible by the animal. Feed possess good water stability. It can be stored for 2 months. Cost of one farm model aqua feed unit is Rs. 4 - 5 lakhs (INR). Capacity of this unit is 150 - 200 kg / day. Feed can be stored for 2 months. Cost of the feed is Rs. 30 to 35/- Kg (INR).

Owing to the relative ease of these techniques, reasonably good profit margin and familiarity of coastal communities with the adoption of this CIBA aqua feed development technology can prove to be a potential livelihood for the women self help groups. Farm made aqua feed produced by women self help group can be supplied to near by shrimp, fish and crab aqua farms. Aqua feed technology is a viable alternative livelihood option for the tribal women self-help groups . These tribal women can take up this avocation and start their enterprise on a small scale level.



4. MUSHROOM FARMING BY TRIBAL WOMEN SELF HELP GROUPS

Mushroom production enhances farm waste utilization. Waste materials (paddy straw) are decomposed and converted into Rich edible food. Oyster mushrooms are produced out of paddy straw. Mushrooms are called vegetable mutton. Mushroom tastes like Non-vegetarian food. Rich in protein and amino acids. Cholesterol free food (zero percentage). Low cost investment, self-employment activity in Rural and peri-urban areas. Enhances easy digestion in human body because of rich in fiber. Portable food for irrespective of ages (6 – 60). Small scale farmers and tribal women self-help groups can take up mushroom farming as backyard homestead activity as source of income generation and can earn Rs.350- 400/- day from a mushroom shed of 10x15 ft size shed. .



Mushroom bed preparation



Harvesting the mushrooms



Weighing & packing



Incubating the mushroom bed in shed



Harvested mushrooms



Sales of mushroom in the vegetable market