

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS TECHNICAL COOPERATION PROGRAMME

Bangladesh TCP/BGD/3501

Enhancing aquaculture production for food security and rural development through better seed and feed production and management with special focus on public-private partnership



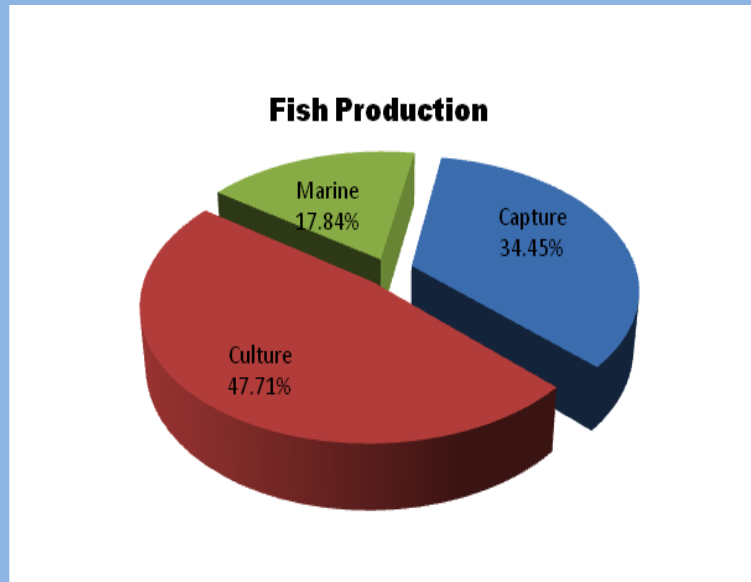
Aquafeeds in Bangladesh

**Improving the supply of safe quality
feeds to farmers**

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Current status of aquafeed manufacturing, supply and use



2001 - 1.89 million MT production

2011 - 3.06 million MT of which Aquaculture 1.46 million MT

Annual Feed Requirements (FCR: 1.5) = 2.19 million MT

Rapid intensification of aquaculture production systems



The Aquafeed Sector

Three components:

- Supplemental feeds
100,000 tons (2007)



- Farm-made feeds
400 operators in Mymensingh



- Commercially manufactured feeds
100 operators countrywide



Largest 40 operators: 2008: 360,000 Tons per annum
 2010: 668,380 tons per annum



Major Issues Affecting the Feed Sector

1. High ingredient / formulation costs

- Significant reliance on imported feed ingredients
- Formulation costs
 - 2012: BRAC formulation costs increased by 10Tk/kg

Commercial feeds

- Erosion of profit margins: Manufacturers, farmers and suppliers
- Impacts on product quality:
 - 2011 BFRI report 300 feed samples: 29-51% feed non-compliant
- Farmers switch to lower quality farm made feeds

Price comparison between the three feed types (Tk/kg)

Supplementary feed	12-15
Farm-made aquafeed	18-24
Industrially manufactured pellet	28-45



Farm-made feeds

- Low farmer purchasing power for inputs
- Reduce the quality of dietary ingredients / ingredient substitution

2. Ingredient quality issues

- BFRI (2011) survey
 - 64 % feed ingredients adulterated
 - Short shelf life (moisture / fatty acids)

3. Farm-made feed quality issues

- Inappropriate formulations
- Poor binding, milling and manufacturing
- Poor storage



3. Legislative Framework

a) Fish Feed and Animal Feed Act (Act 2 of 2010)

Applies to the production of fish feed and animal feed, processing, import, export, marketing, sale, distribution, transport and other related activities

- Director General of DoF as responsible agent
- Set regulations (Feed rules, 2010)
- Licences (procedures / fees / tenure / renewal)
- Feed quality (set inclusion rates / regulate chemical use)
- Monitoring and Compliance (entry, sampling, seizure and destruction of materials)
- Labelling
- Criminal infractions (procedures and penalties)



b) Fish Feed Rules (2010)

- Licencing and fee procedures
 - Commercial feed mills, aquafeed / ingredient importers exporters wholesale and retail traders
- Quality of feed ingredients (proximate composition) and ingredient inclusion rates in formulations (max)
- Guidance on feed additives, binders, vitamins and minerals, preservatives
- Stipulates Formulations for major culture species / size classes (proximate composition)
- Identifies and bans selected feed additives (e.g. classes of antibiotics, hormones) others are allowed and provides acceptable inclusion rates
- Identifies environmental contaminants (e.g. organochlorides, heavy metals) and provides acceptable residual levels



Output 7

A set of technical implementing guidelines for the Fish Feed and Animal Feed Act (2010) is developed and made a provision of the Act.

Activity 7.1: Consult with DoF and legal authorities on the legal aspects of the Act.

Activity 7.2: Organize a team to develop the technical implementing guides.

Activity 7.3: Consult with manufacturers – industrial and small- and medium-scale feed producers.



Output 8

A pilot-scale feed quality analytical laboratory is established and feasibility study of a country-wide feed quality analytical service is completed and a proposal of setting up of a full-fledged laboratory is developed.

Role:

- Regulatory Compliance (Fish Feed Rules, 2010)
- Private Sector Services: Farmers / Feed Manufacturers / Feed Dealers and Importers

Mechanism:

- Chain of custody regulations are in place
- Financing – user pays principle
- Regulatory Requirement for three Laboratories



Technical Requirements

Proximate Composition

- a. Protein: Kjeldhal method
- b. Oil: Solvent extraction (acetone/ether extraction) method
- c. Moisture: Oven drying
- d. Ash: Muffle furnace or any other process scientifically recognized.
- e. Fiber: Solvent extraction, and acid and alkali hydrolysis method
- f. Carbohydrate: By Subtraction

OR ANY OTHER RECOGNISED METHOD

- g. Schedule 7 Chemicals (Fish Feed Rules, 2010)
hormones, antibiotics, dyes, micotoxins, organochorides etc.



Logistics

Sample numbers:

100 Commercial feed manufacturers (6 feed types)

$600 \times 100 = 600$ feeds

Monitor once every four months (4 times per annum)

$600 \times 4 = 2,400$ samples in triplicate

7,200 samples per annum

28 samples per day

Near-infrared spectroscopy (NIRS)



Activity 8.1: Identify and select a suitable existing facility for upgrading into a feed analysis laboratory, upgrade facilities and equipment, develop analytical protocols, select and designate (assign from other units) suitable technical staff.

Establish a Feed Unit at Department of Fisheries

Existing capacity:

FAO Food Safety Programme GCP/BGD/047/NET

BFRI Nutrition Laboratory

Other facilities?



- **Activity 8.2:** Train technical staff and test run the laboratory.
- **Activity 8.3:** Conduct a feasibility study for a country-wide feed quality analytical service and develop a proposal of setting up of a full-fledged laboratory in the country.



Output 9

Inventory of all feed additives being used and a study of their efficacy are completed and findings are disseminated.



Antibiotics



Nutritional supplements – vitamins and minerals



Enzyme mixtures



Probiotics
Prebiotics
Hormones

Activity 9.1: Design a standard methodology for a survey on the use of feed additives throughout the country.

Activity 9.2: Consult DoF, relevant NGOs, farmers and other stakeholders and select the locations for the survey to be carried out.

Activity 9.3: Conduct the survey throughout the country using structured and semi-structured questionnaire on the use and perceived efficacy of feed additives in aquaculture.

Activity 9.4: Analyze the data and prepare the report.

Activity 9.5: Disseminate the findings to different stakeholders.

Are there Implications for Policy / Regulations ?



Output 10

Capacity of feed producers is improved.

Activity 10.1: Organize a team to develop a better farm-made feed production guidelines/ manuals.

Activity 10.2: Develop a training course based on the guidelines.

Activity 10.3: Train selected 120 feed producers in better farm-made feed production.



Output 11

The formation of a national association of feed producers is initiated and assisted.

Activity 11.1: Develop a plan for the workshop and select the relevant participants through appropriate announcements.

Activity 11.2: Invite resource speakers from industrial feed sector in Bangladesh, research institutions, relevant NGOs and Foundations, and other organizations i.e. WorldFish and Network of Aquaculture Centers of Asia-Pacific (NACA).

Activity 11.3: Organize the workshop and write the report.

Activity 11.4: Follow up on the recommendations of the workshop.

