Review study on status of production, marketing and farm application of milkfish feed in the Philippines

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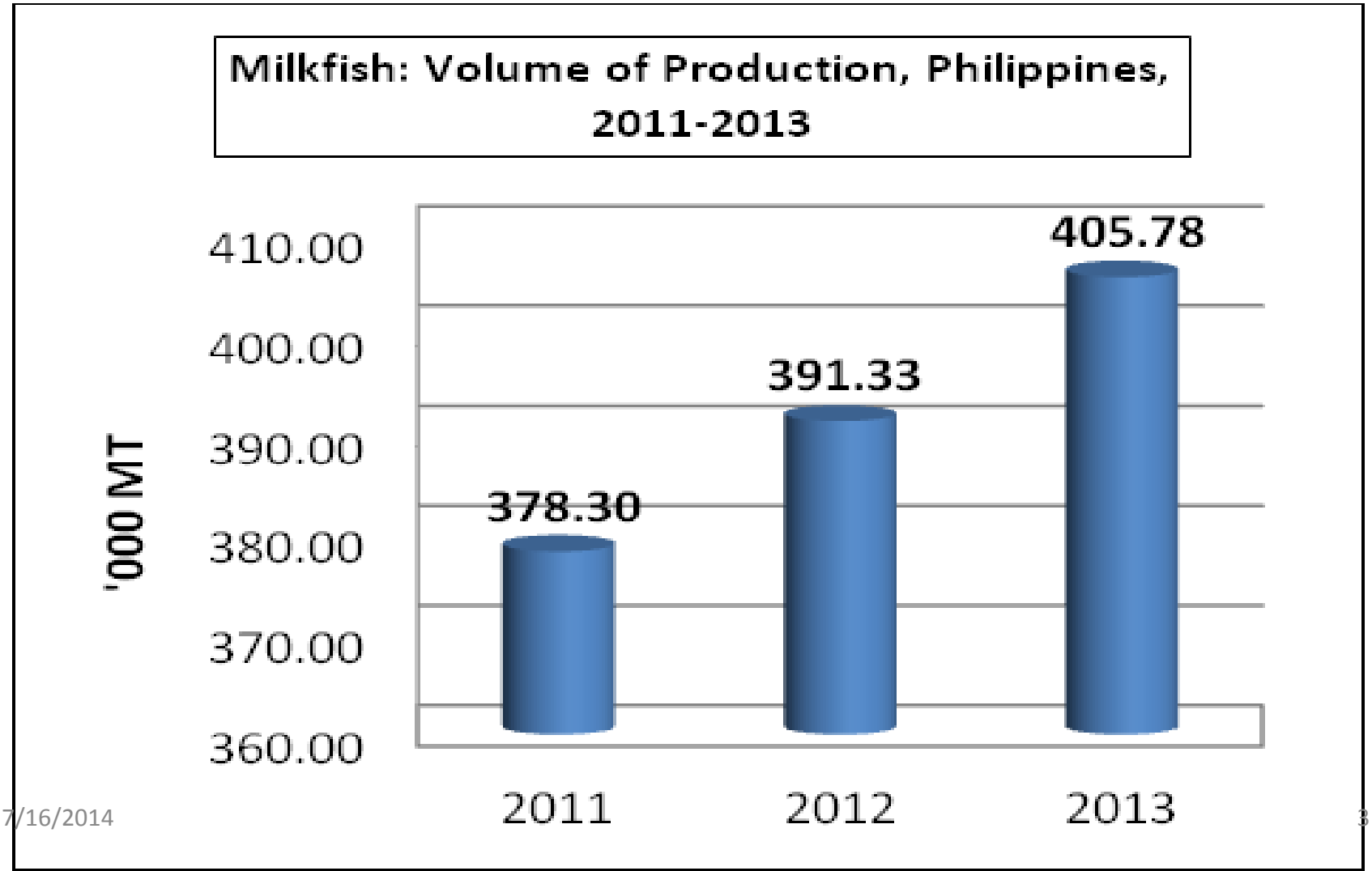
Milkfish and tilapia culture in the Philippines

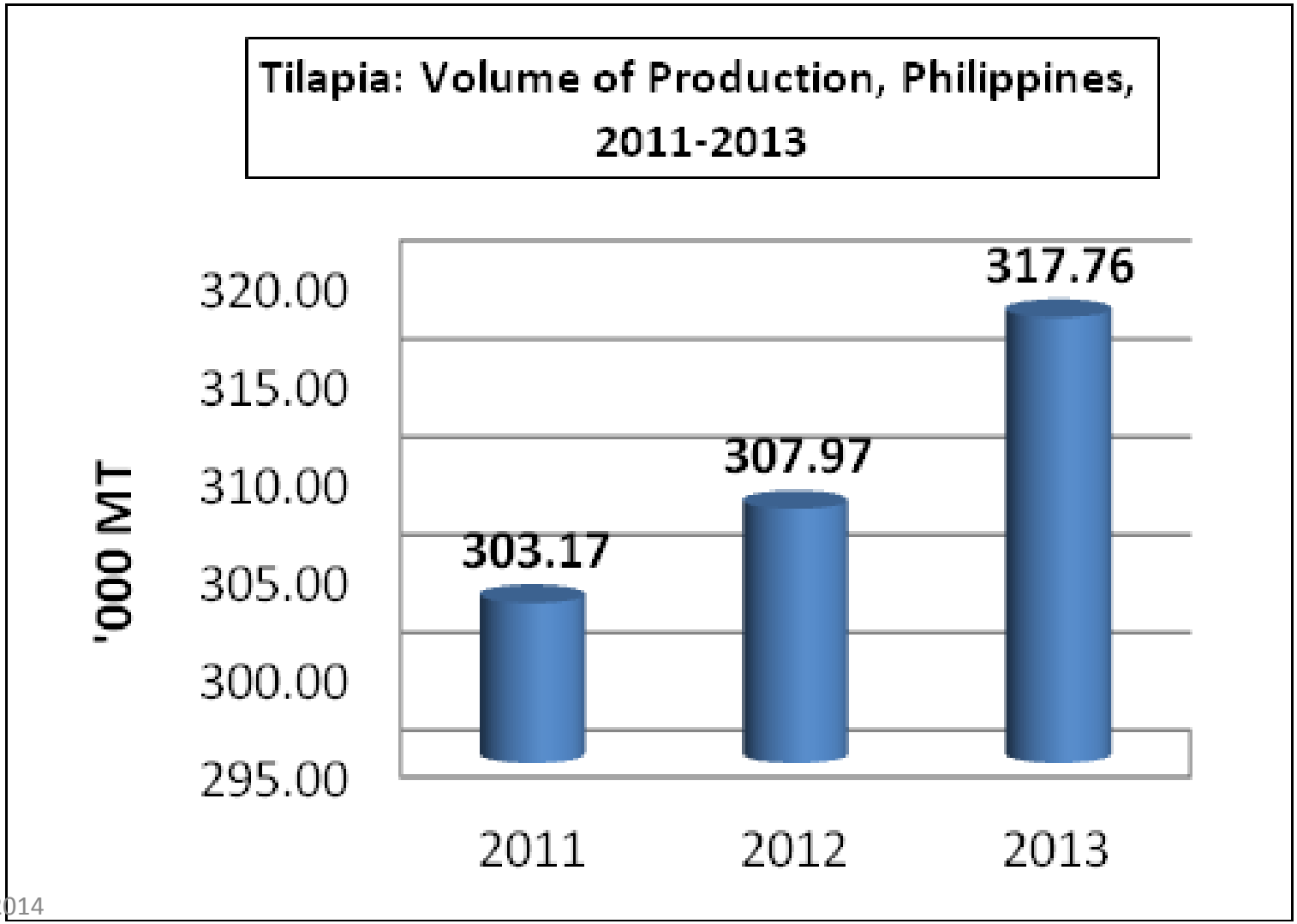
- Most important aquaculture commodities for human consumption in the country
- Production volume rank 2nd and 3rd, next to sea moss

Milkfish production of 406,000 metric tons in 2013 is an increase of 3.7% from 2012, 2nd in the world

(Fisheries Situationer, January-December 2013. Philippine Statistics Authority, Bureau of Agricultural Statistics)



Tilapia production in 2013 is 318,000 metric tons or a growth of 3.18% over 2012, 5th in the world



Overall picture of milkfish and tilapia feed production and marketing in the Philippines

Milkfish feed production volume

- Total milkfish production: 406,000 mt; cultured production: 401,940 mt (99% of total); 70% culture production from feeding; FCR: 1.5
- Estimated total volume milkfish feed: 422,037 mt

Tilapia feeds production volume

- Total tilapia production: 318,000 mt, cultured production: 270,300 mt (85% of the total);
- 70% cultured tilapia from feeding; FCR: 1.5 FCR
- Estimated tilapia feed volume: 283,815 mt

Monthly production volume of combined milkfish and tilapia feeds: 58,820 mt

Types of feeds

- Two major types of feeds are used in milkfish and tilapia farms:
  - Pellet feed: sinking pellets feeds as premium, customized or low-cost feeds (preferred by some farms)
  - extruded feeds: as slow sinking feeds or floating feeds.
- At least 15 brands of fish feeds in the market, include
  - largest feed manufacturers are Santeh Feeds, B-Meg or San Miguel Foods, Inc., Feedmix, Sahara, Hoc Po and President Feeds.
  - Some feed companies offer different types of feeds as shown in Table 1 (excel sheet).

Quality and price of feeds

- The different brands available in the market usually offer premium and customized feeds depending on the request of the customers.
- Quality of feeds is related to the price.
- Premium brands and floating feeds have better quality as well as higher price (at least PhP2.00/ kilo higher)
- Price for premium sinker and floating feeds ranges from PhP 24.00 to 30.00/kilo;
- Some companies offer low cost feeds but with lower protein content and price range is PhP 21.00 to 24.00/kilo.

Current aqua-feed quality control system in the Philippines

- Batch/formula based tests by Feedmill lab cover:
  - Proximate analysis for both feed ingredients and finished goods which includes but not limited to: % Crude Protein, %Crude Fat, %Ash, % Moisture, %Crude Fiber.
  - Feed microscopy tests for raw materials;
  - Water stability tests on finished goods;
  - Pellet Durability Index (PDI)
  - Particle size for grounded mash
  - Homogeneity Tests (%CV) for mixed mash
  - Urease Activity for soybean meal
  - % Brix for molasses
  - %TVN for fishmeal

Quality inspection by management authorities

- Bureau of Animal Industry conducts the following tests to feedmills on random basis or as per request by the private institutions:
  - Proximate Analysis
  - Aflatoxin Tests
- BFAR conducts the following tests on random basis:
  - Proximate analysis
  - Antibiotics (chloramphenicol and nitrofurans)

National feed standard

- The Philippine National Standard for Aquafeeds was established in 2010, which
  - identifies the feed products and forms,
  - specifies their essential composition and quality factors (including nutrient standards for complete feeds, physical requirements at plant and pellet feed water stability and floatability),
  - provides the presentation, packaging and labelling requirements
  - indicates the methods of sampling, examination and analyses
  - defines the types of defectives.
- The standard serves two main purpose: protecting consumer health and making the Philippine fish and fishery products globally competitive.

Application of milkfish and tilapia feed at farm level

- Milklfish and tilapia feeds are mostly used in the semi-intensive and intensive culture systems.
- At present, the bulk consumer of aquafeeds are the fishpens and cages in mariculture areas, which fully depend feeding
- aquafeeds are also used extensive ponds during the last two weeks of culture for fattening of milkfish and tilapia

Table 1. Different culture systems for milkfish

Culture System	Main culture area	Stock Density (fingerlings/ha)	Feeding Practice
Fishpond:			
Extensive/Traditional	Bulacan, Pampanga, Panay	1000-3000	dependent on natural food; 40% of production cost is utilized for lablab prodn feeds are used only when lablab is depleted
Semi-intensive	Negros, Batangas, Gen Santos Pangasinan	5000-10,000	combination of feeds and supplemental foods feed cost comprised about 50% of prodn cost uses feed nets, demand feeders,
Intensive	Negros, Batangas	12,000	feed cost comprised about 60-70% of prodn cost uses automatic feeders, aerators, pumps
Fishpen	Laguna Lake Pangasinan	30,000 - 50,000 1-3/cu.m.	pens in Laguna lake has no feeding but uses supplemental feeds
Fishcage	Taal Lake	10-20/cu.m.	
Mariculture	Pangasinan, Negros, Davao, Misamis, Leyte,Cebu, Zambales	20-30/cu.m.	feed cost comprised 70-80% of production cost;

Table 2. Different culture systems for tilapia

Culture System	Main culture Area	Stock Density (fingerlings/ha)	Feeding Practice
Fishpond			
Extensive	Ilocos Sur, Ilocos Norte Southern Leyte, Pangasinan	>10,000	dependent on natural food; 40% of production cost is utilized for lablab prodn feeds are used only when lablab is depleted
Semi-intensive	Ifugao, Pampanga, Tarlac Negros	10,000 - 20,000	combination of feeds and supplemental foods feed cost comprised about 50% of prodn cost uses feed nets, demand feeders,
Intensive	Pampanga, Negros	>20,000	feed cost comprised about 60-70% of prodn cost uses automatic feeders, aerators, pumps
Fishcage	Taal Lake, Lake Sebu, Lake Bato, Lake Buhi, Lake Lutayan, Ambuklao Dam, Maguindanao	10-30/cu.m.	feed cost comprised 70-80% of production cost;

Feeding Practices

- Most extensive fishpond operators use rice bran, bakery waste, snackfood rejects and aquafeeds when the natural food depletes in their ponds and the desired harvest size is not yet attained, feeding quantity is based on estimation;
- Farmers practicing the semi-intensive or intensive culture system, tend to follow the feeding programme provided by the Technical Sales representatives of feed companies. Some have been using demand or automatic feeders

Poor feed management practices of some Pen and cage operators

- ***Use of poor quality feeds***
  - too price-conscious instead of quality-conscious, choose cheap feeds of poor quality
  - high percentage of fines (as high as 4-8%), ending up as wasted feeds, with feed price of PhP 20/kg, fines alone additional PhP 1.6 - 3.2/kg of fish produced
- ***Storing feeds on the railings of cages or pens***
  - Exposing feed to the extreme heat of the sun or rain can damage or lose the vitamins and other essential elements contained in the feeds

Poor feed management practices of some Pen and cage operators

- ***Hastily shifting to the next size of feed***
  - some farmers hastily shift to the next feed size without considering whether the smallest fish size in the population can well accept next feed size, to save on cost;
- ***Overfeeding or underfeeding***
  - Some operators or caretakers apply a pre-fixed amount of feeds daily in the cage or pen, regardless of the condition of the water
  - fish consumption actually varies greatly with the quality of water, which can be affected by the tidal cycle and weather;
- Poor feed management eventually results in higher production costs

Main issues and constraints in tilapia and milkfish feed production, quality, marketing and farm application

- Increasing costs of fishmeal and fish oils, animal protein ingredients from both local and imported sources are getting scarce and costly
- Farming areas hit by typhoons and floods – results in erratic supply of local materials – copra, rice bran, corn bran, etc
- increasing demands for basic ingredients duo to Increased feed production for poultry and hog feeds;
- High cost of power, fuel, labor in the feed manufacturing;
- Lack of financing facilities available to farmers leaving feedmillers to finance farm production.
- Longer credit terms or contract farming is a common practice which requires heavy capitalization from feedmillers.
- What about the feed quality control and distribution?

Recommendations on how to effectively tackle the issues and constraints

- Look for more alternative sources of quality feed ingredients.
- Evaluate production program to consider typhoon and flood season
- ……?