

April 2018

	منظمة الأغذية والزراعة للأمم المتحدة	联合国 粮食及 农业组织	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'alimentation et l'agriculture	Продовольственная и сельскохозяйственная организация Объединенных Наций	Organización de las Naciones Unidas para la Alimentación y la Agricultura
<b>ASIA-PACIFIC FISHERY COMMISSION</b>						
<b>Thirty-fifth Session</b>						
<b>Cebu, the Philippines 11-13 May 2018</b>						
<b>Promote responsible production and use of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific</b>						

**BACKGROUND**

1. Aquaculture has been one of the fastest growing food production sectors in the past three decades globally. The annual growth rate was at an average of 8 percent from 1984 to 2014. As the major contributor to the world aquaculture production, Asia achieved an average annual growth of 8.4 percent in the same period, and the production reached 92.8 tonnes in 2014, accounting for 91.7 percent. Currently, Asian aquaculture supplies some 60 percent of food fish for consumption while contributing significantly to rural livelihood. The rapid production growth has been largely attributed to intensification of production with increasing dependence on artificial feeding. Finfish and crustacean are two major groups of cultured aquatic animals that require artificial feeding, in the forms of commercial feeds, farm-made feeds, and fresh feeds. Their global production reached 56.8 million tonnes in 2014, including some 6.92 million tonnes of crustacean and 49.9 million tonnes of finfish. With silver carp, catla and bighead (filter feeder on plankton) excluded, it was estimated that 38.8 million tonnes of finfish out of the total 49.9 million tonnes were produced through entire or partial feeding based on the feeding habit and common culture practices. Therefore, aquaculture commodities produced through partial or complete feeding accounted for 45.2 percent globally in 2014, while it was only 42.5 percent 10 years ago. The total production of aquaculture species depending on artificial feeding has increased by 97.9 percent in the past 10 years.

2. The rapid growth of production of fed species in aquaculture has resulted in drastic increase in demand for commercial feed. As a result, the aquaculture feed industry has grown rapidly in the past two decades. In 1995, the total production of industrial compound aqua-feed was only 7.6 million tonnes. By 2010, the total production had increased to 4.5-fold to 34.1 million tonnes, and 40.2 million tonnes in 2012. Industrial aqua-feed production has increased at the average annual rate of 11 per cent since 1995, which was significantly higher than the annual aquaculture production growth of about 8 per cent. The increased use of feed in aquaculture has greatly contributed to production efficiency and quality of products, and enabled farmers to better meet market requirements and achieve sound economic benefit.

3. On the other hand, rapid increase in use of feed in aquaculture has also caused a number of issues which may threaten the sustainable growth of the industry. The major issues include the following.

- Increased feed cost has caused significant reduction of profit margin in production of many important aquaculture commodities. Feed cost often accounts for 70 percent for cultured commodities that entirely depend on artificial feed. This problem is largely caused by high cost of feed that is often non-locally produced and with poor utilization efficiency of feed. What has made the situation worse is that the prices of aquaculture products have been declining since 2013 and the trend will remain until 2020 according to the prediction (FAO, 2016)
- In general, Asian aquaculture feed production has become overly dependent on externally sourced feed ingredients, and this has resulted in significant problem in supply and costs. For instance, fishmeal price increased significantly from 2006 to 2013, peaking at US\$1,747 per tonne in 2013 and has remained high since. This is also because the amount of the captured fish destined for non-food use has fallen, down from 34.2 million tonnes in 1994 to 20.9 million tonnes in 2014.
- In order to sustain capture fisheries and maintain marine ecosystem functions and services, there has been increasing effort to combat IUU fishing globally. In order to cut off the demand for IUU products for aquaculture purpose, responsible sourcing of feed ingredients free from IUU fishing will soon be a certification requirement in international trade. Export of aquaculture products from the region will be impacted if appropriate actions cannot be taken timely.

#### **REGIONAL CONSULTATION ON RESPONSIBLE PRODUCTION AND USE OF FEED AND INGREDIENTS FOR SUSTAINABLE GROWTH OF AQUACULTURE IN ASIA-PACIFIC**

4. In order to support the member countries to effectively addressing the major problems related to feed and feed ingredients facing the region's aquaculture, FAO and the Network of Aquaculture Centres in Asia-Pacific jointly organized a regional consultation on responsible production and use of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific from 7-9 March 2017 in Bangkok, Thailand.

#### **Objective of the regional consultation**

5. The objective of the regional consultation is to review the current situation of aquaculture feed production and use, in respects of production status, demand and supply, sourcing of ingredients, government policies and institutional support, ongoing progress and development issues. The consultation will also try to initiate regional strategies and develop plans of action to promote responsible utilization of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific through sharing of available knowledge, technological innovations and scaling up successful practices and further research and technology development.

#### **Expected outputs of the regional consultation**

6. The regional consultation is expected to deliver the following major outputs:
- Available knowledge and successful technologies and good management practices related to responsible use of aquaculture feed and feed ingredients are shared in the region;
  - Major issues and technology gaps related to responsible use of aquaculture feed and feed ingredients are identified;
  - Appropriate strategy and follow-up actions for promoting responsible use of aquaculture feed and feed ingredients are recommended for the member governments

#### **Preparatory work for the regional consultation**

7. As the preparation for the regional consultation, 10 experts specialized in different fields related to aquaculture feed and feed ingredients were invited to prepare a review paper on

specific topics related fish nutrition and feed technology, development policies and industrial practices and management. The review studies covered the below subjects:

- Overview of Aquaculture Feed Production and Use in Asia-Pacific Region
- Development and Use of Alternatives of Fishmeal and Other High Cost Feed Ingredients in Aquaculture
- Promoting Cost-Effective Aquaculture Feed Made of Locally Available Feed Ingredients
- Traceability of Aquaculture Products in Relation to Feed and Feed Ingredients
- Innovation in Aquaculture Farming and Feeding Practices for Reduced Feed Costs and Environment Impacts at Farm Level
- Government Policy and Enabling Environment Supporting and Managing Aquaculture Feed Production and Marketing for Sustainable Aquaculture Development
- Efforts of Private Feed Sector Supporting Sustainable Aquaculture Development
- Certification of Aquaculture Feed and Feed Ingredient

8. NACA member governments were advised to prepare individual country paper by a government nominated expert. The county paper focused on:

- Overview of aquaculture feed production and use in the country (feed production/supply, feed types, major cultured species that depend on commercial feed, trend in feed use and supply of feed ingredients etc.);
- Government policies/strategies and regulations towards aquaculture feed production and use;
- Successful experiences in improving aqua-feed production and utilization; and
- Major issues to be addressed in aquaculture feed production and use.

### **Conduct of the regional consultation**

9. The regional consultation was held at Centara Grand Hotel at Central Plaza Ladprao, Bangkok, Thailand, from 7 - 9 March 2017. A total of 39 participants attended the workshop. They represented 22 organizations, including research and education institutes, government agencies, feed producers, aquaculture farms, international and regional organizations and non-governmental organizations from 16 countries.

10. Country representatives from Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Thailand, Vietnam shared the information and experiences of their respective countries on status of aquaculture feed production and use, efforts for aquaculture development by various sectors, country policies, major issues, successful stories and some lessons learned.

11. Ten invited experts delivered thematic presentations, which focused on research advances, current status and development trends of aquaculture feed industry, major development issues, use of alternative and locally available feed ingredients, roles of private and public sectors, government policies, farming innovations for effective and efficient feeding, and use of fish meal and fish oil.

12. Two working group sessions were organized, in which participants were divided into three groups. Each group was assigned with identical task for the two working group sessions, respectively identifying issues and development gaps and recommending appropriate strategies

and actions to promote responsible use of aquaculture feed and feed ingredients. The outputs from the working group sessions were presented and discussed in the following plenary sessions.

## **OUTCOME OF THE REGIONAL CONSULTATION**

13. The regional consultation reached the following conclusions:

- Feed demand and supply for aquaculture has been increasing and will continue to increase. By 2025, aquaculture feed demand may be well over 60 million tons in Asia-Pacific.
- Aquaculture feed industry has yet to be established in some countries in the region. Limited availability of aquaculture feeds constrains the sector development. Some small scale farmers are especially at the disadvantage. They either have no access to commercial feeds at all or face logistic difficulties and high cost to acquire feeds.
- The region is importing a large amount of feed ingredients for animal production. Supply of quality ingredients for aquaculture is a rising challenge, facing shortage and competition for other uses.
- In spite of concerns on use of fish meal and fish oil, increase of aquaculture production has not been necessarily coupled with proportional increase of use of them. Aquaculture free from fishmeal and fish oil is technically possible.
- Feed cost is high and has been increasing over the years. High feed cost is the major reason for the relatively low profitability of aquaculture operation in the region.
- Farm-made feeds to some extent ease the problem of feed availability, yet quality and feeding efficiency are questionable.
- Good practices of farming and feeding management at farm level that favor high eco-efficiency and feeding cost-effectiveness are not widely known to farmers as they should be, while some common prevailing practices such as excessive protein input, “satiation” feeding etc. may need to be rechecked and properly adjusted.
- Aquaculture feed production and uses need policy and institutional support. Standards and regulations need to be in place and robust implementation is required.
- Use of local available feed ingredients and alternative ingredients are strategically important to the region.
- Research and development efforts need to be strengthened to develop specialty feeds, low cost feeds, feeds using local/alternative ingredients, eco-efficient farming systems and feeding practices.
- Collaboration, coordination and cooperation among agencies, sectors, and countries are required for effective information exchange, experience sharing, technology dissemination, capacity building and optimization of research and development efforts.

14. The regional consultation recommended the following major strategies for country government, regional organizations, academies and private sector to promote responsible production and use of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific.

- Support the establishment an enabling environment for development the aquaculture feed industry with good governance and production practices, through conducive policy formation and implementation, standard setting and certification, investment in research and related public services;
- Prioritize research and development needs in sustainable production and use of aquaculture feeds and implementation of research and development initiatives with focuses on use of locally available and alternative feed ingredients, cost-effective feed production, innovative feeding practices at farm level, accessibility to feeds by small scale farmers and feeding efficiency;
- Strengthen the capacity building for sustainable production and use of aquaculture feed at all levels, which include but not limited to governance, public services, research and development, feed manufacturing and aquaculture farmers;

- Promote regional sharing of knowledge and collaboration in development and utilization of locally available feed ingredients and cost-effective aquaculture feeds and promote public and private partnership in translating research results into commercial production and scaled application by small aquaculture farmers.

## **SUGGESTED ACTION BY THE COMMISSION**

15. The commission is invited to comment on the FAO initiative to promote responsible production and use of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific;
16. The commission is invited to comment and endorse the strategy recommended by the regional consultation;
17. The commission is invited to recommend immediate actions for FAO and the member governments.