

FAO/NACA Regional Technical Cooperation Project

“Reducing the dependence on the utilization of trash fish/low-value fish as feed for aquaculture of marine finfish in the Asian region”

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THE PROJECT AND ITS OBJECTIVES

A regional Technical Cooperation Project (TCP) “Reducing the dependence on the utilization of trash fish/low-value fish as feed for aquaculture of marine finfish in the Asian region [TCP/RAS/3203 (D)]” was approved in July 2008. The governments of China, Indonesia, Thailand and Viet Nam are participants to this TCP. The project aims to reduce the perception of small-scale marine fish farmers that trash fish (TF)/low value fish (LVF) performs better than compounded pellet feeds and is expected to facilitate a transition away from dependence on trash fish to more sustainable alternatives, contributing to the overall sustainability of the sector and the livelihoods of the many thousands of farmers involved.

BACKGROUND

Marine finfish aquaculture in Asia has been developing rapidly at around 10 percent per annum over the last decade and is the fastest growing sub-sector in Asia. Much of this increasing production is attributable to the expanding culture of high-value marine carnivorous species. The countries that lead in marine finfish aquaculture currently are China, Indonesia, Viet Nam and Thailand, as well Korea and Japan,

with India planning a major expansion.

Asian finfish mariculture, particularly grouper and cobia farming, is growing rapidly in China, Viet Nam and Indonesia and is largely dependent on trash fish/low-value fish as feed. The total use of ‘trash fish’ by the aquaculture industry in Viet Nam was estimated to be between 176 420 and 323 440 tonnes in 2001 (Edwards *et al.*, 2004)¹. A recent estimate placed the Asian use of TF/LVF as fish feed at about 1.6-2.8 million tonnes per year (FAO, 2008)². It is further projected that Viet Nam will use nearly one million tonnes of trash fish and China will require approximately 4 million tonnes by the year 2013 to sustain their marine cage culture activities (De Silva and Hasan, 2007)³. The use of TF/LVF as aquaculture feed is unlikely to be sustainable as the supplies of trash fish are declining apart from potential environmental effects and biosecurity risks the use of trash fish may bring about and the increasing consumer’s concern about its usage in aquaculture feed when many of these TF/LVF can be used as human food (Tacon, Hasan and Subasinghe, 2006)⁴.

The issue was identified as a regional priority by the Asia-

Pacific Fishery Commission (APFIC) which endorsed a regional plan of action at its 29th Session⁵ for reduction of dependence upon trash fish as aquaculture feeds. Taking into account the importance of this issue, the Governing Council of the Network of Aquaculture Centres in Asia-Pacific (NACA) at its 18th Meeting in Bali, Indonesia, unanimously recommended the need to initiate a regional project to reduce the dependence of small-scale marine fish farmers on trash fish as a feed source. The same issue was also taken up at an FAO Expert Workshop on “Use of wild fish and/or other aquatic species to feed cultured fish and its implications to food security and poverty alleviation”, held in Kochi, India in 2007 and the workshop recommended that work on encouraging farmers to use compounded feeds in mariculture be urgently undertaken. This project is a response to these concerns.

IMPLEMENTATION/COORDINATION

The project is implemented under the overall co-ordination of NACA. The respective governmental national focal agencies implementing the national activities of the project are as follows:



M. R. HASAN, FAO

Experimental cage culture of grouper and marine fish species at Krabi Coastal Fisheries Research and Development Center, Krabi, Thailand



M. R. HASAN, FAO

Preparation of trash fish/low value fish to be fed for cage culture grouper and other marine species, Krabi Coastal Fisheries Research and Development Center, Krabi, Thailand

Indonesia: Ministry of Marine Affairs and Fisheries - Implementing Institution: Main Center for Mariculture Development, Directorate General of Aquaculture, Lampung.

China: Guangzhou Provincial Government, through the Ministry of Agriculture, Central Government, Zhanjiang City, Guangdong.

Thailand: Ministry of Agriculture and Cooperatives - Implementing Institution: Phuket Coastal Fisheries Research and Development Centre (CFRDC), Phuket in collaboration with Krabi CFRDC, Coastal Fisheries Research and Development Bureau, Department of Fisheries.

Viet Nam: Ministry of Agriculture and Rural Development – Implementing Institution: Research Institute for Aquaculture No 3, Nha Trang.

EXPECTED OUTPUTS

The overall outcome of the project will be a reduced dependence on trash fish/low-value fish (and other marine resources) for marine finfish farming in China, Indonesia, Thailand and Viet Nam and more widely throughout Asia via NACA's networking mechanisms. The outcome will be achieved through a combination of:

- Assessment of the livelihoods involved in the supplying of trash fish/low-value fish, its marketing channels, and on farmer perceptions in the use of trash fish/low-value fish as aquaculture feed in all four countries;
- Improved feed practices and a shift in the sector towards better diets, and particularly the use of formulated diets. This outcome will increase the long term viability of marine fish farm operations and improve the livelihood of practitioners and contribute to poverty alleviation;
- Establishment of a scientifically rigorous database on the advantages of using pellet feeds;
- Development of better management practices (BMPs) for improving efficiency of marine finfish feeding and building capacity amongst practitioners on improved feed management; and
- Dissemination of BMPs through farmer organizations such as "aquaculture clubs" and use of such organizations as mechanisms to develop credit schemes for procuring feeds.

PROGRESS

(1) Inception planning workshop

The first activity of the TCP was an Inception Planning Workshop, convened in Krabi, Thailand, from 8 to 10 September 2008, hosted by the Department of Fisheries, Royal Government of Thailand and held at the Golden Beach Resort, Krabi, Thailand. The workshop was attended by 16 participants (11 from four project participating countries, 3 from NACA and 2 from FAO) and one observer from a feed industry. The workshop was facilitated by 3 NACA personnel (SS De Silva, MJ Phillips and H Kongkeo) and 2 FAO officers (MR Hasan and M Weimin).

The workshop discussed follow-up project activities and finalized the modus operandi with primary focus on the following: a) project concept, rationale, envisaged outputs and broad outline of activities and the feasibilities of carrying out the different activities, b) draft questionnaire outlines that were prepared in respect of the livelihood analysis of trash fish (TF)/low-value fish (LVF) supplier and the environmental impact assessment components, c) methodology to study the farmers' perception on the use of TF/LVF vs. formulated feed, d) in-country logistics of conducting different project components and survey plans for each country, e) overall work plan including the time-frame of implementation and responsibilities of all project holders, and f) other important issues/problems to be addressed before launching the field activities.

The main outputs of the workshop were:

- Better understanding of the marine fish farming sector in the four participating countries directly dependent on TF/LVF as feed for aquaculture and the importance of this TCP for sustainable development of this sub-sector;
- Increased understanding of the project concept, rationale, mechanism of project implementation, envisaged outputs and broad outline of activities and the feasibilities of carrying out the planned activities of different components of the project;
- Outputs related to the implementation of different activities of the project with specific reference to participating countries:
 - nature and extent of the information to be collected for livelihood analysis of TF/LVF supplier and suggestions for revision of draft questionnaires to be used for livelihood analysis survey;
 - design of the livelihood survey including identification of survey location/area, type and size of TF/LVF sample to be surveyed in respective countries,
 - revised methodology of rural rapid appraisal for farmers' perception study on the use of TF/LVF vs. formulated feed;
 - guidelines for carrying out environmental impact assessment study including type of water quality monitoring, sample size and frequency of data collection; and
 - framework of farmer's participatory trial including the selection of site in each country, type of species, number of farms, cage size, duration of growth cycle and monitoring requirement; and
 - finalized TOR of first national stakeholders' workshop/training in four participating countries.



Tiger grouper, Epinephelus fuscoguttatus and humpback grouper, Cromileptes altivelis

More information on the project can be obtained from Mohammad R. Hasan: [FAOHQ Mohammad.Hasan@fao.org](mailto:FAOHQ.Mohammad.Hasan@fao.org), Cécile Brugère: [FAO/HQ Cecile.Brugere@fao.org](mailto:FAO/HQ.Cecile.Brugere@fao.org) Miao Weimin: [FAORAP weimin.miao@fao.org](mailto:FAORAP.weimin.miao@fao.org) Sena S. De Silva: [NACA/Bangkok: sena.desilva@enaca.org](mailto:NACA/Bangkok.sena.desilva@enaca.org)

(2) Viet Nam in-country national stakeholder workshop/training

This workshop was organized in Nha Trang from 24 to 27 November 2008 with the participation of national counterparts (National Project Coordinator and other project staff), researchers from Research Institute of Aquaculture (RIA-3) and the University of Nha Trang, other stakeholders (fish farmers and trash fish suppliers), Feed Company (EWOS) representative and NACA. The workshop finalized the selection of farmers for farmers' participatory trial (FPT) including the species to used, time-frame for livelihood analysis for TF/LVF suppliers, record keeping format for FTP, environmental data collection, preliminary design and time table for the FTP.

FORTHCOMING ACTIVITIES

- In-country National Stakeholder Workshop/Training, 2-4 February 2009, Lampung, Indonesia
- In-country National Stakeholder Workshop/Training, 12-14 February 2009, Phuket, Thailand
- In-country National Stakeholder Workshop/Training, Zhanjiang, Guangdong, China, dates to be decided

PUBLICATIONS/REPORTS

- Inception Planning Workshop Report, Krabi, Thailand, 8-10 September 2008
- Report of the National Stakeholder Workshop/Training, Nha Trang, Viet Nam, 24-27 November 2008

¹Edwards P., Tuan, L.A. & Allan, G.L. 2004. *A survey of marine trash fish and fish meal as aquaculture feed ingredients in Viet Nam*. ACIAR Working Paper 57, 56 pp.

²FAO, 2008. Report of the FAO Expert Workshop on the Use of Wild Fish and/or Other Aquatic Species as Feed in Aquaculture and Its Implications to Food Security and Poverty Alleviation, Kochi, India, 16-18 November 2007. FAO Fisheries Report No. 867. Rome, FAO, 29 pp.

³De Silva, S.S. and Hasan, M.R. 2007. Feeds and fertilizers: the key to long term sustainability of Asian aquaculture. In M.R. Hasan, T. Hecht, S.S. De Silva and A.G.J. Tacon.(eds). Study and analysis of feeds and fertilizers for sustainable aquaculture development. *FAO Fisheries Technical Paper*. No. 497, Rome, FAO. pp. 19-47.

⁴Tacon, A.G.J., Hasan, M.R. and Subasinghe, R.P., 2006. Use of fishery resources as feed inputs for aquaculture development: trends and policy implications. *FAO Fisheries Circular*. No. 1018, Rome, FAO. 99 p.

⁵FAO (2006) Asia-Pacific fisheries Commission, report of the 29th Session, RAP Publication 2006/19, FAORAP, Thailand, Bangkok. 39 p.