



Workshop on Sustainable Marine Finfish Aquaculture in the Asia-Pacific Region

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The Workshop on Sustainable Marine Finfish Aquaculture in the Asia-Pacific Region was held in HaLong City, Vietnam, from 30 September to 4 October 2002. The workshop incorporated the end-of-project workshop for the Australian Centre for International Agricultural Research (ACIAR) project FIS/97/73, "Improved hatchery and grow-out technology for grouper aquaculture in the Asia-Pacific region", as well as a workshop on the development of standards for cultured marine finfish in the live reef food fish trade.

The workshop was held under the auspices of the Asia-Pacific Marine Finfish Aquaculture Network (APMFAN). APMFAN (formerly the Asia-Pacific Grouper Network, but recently expanded to incorporate marine finfish aquaculture generally) was formed in 1998 at an ACIAR-supported workshop in Bangkok. APMFAN is administered by the Network of Aquaculture Centres in Asia-Pacific (NACA) and has been funded to date by ACIAR and Asia-Pacific Economic Cooperation (APEC). The overall objective of APMFAN is to promote the sustainable development of marine finfish aquaculture in the Asia-Pacific region, through three main mechanisms:

1. Coordination of the regional research and development effort.
2. Promotion of, and support for, collaborative research activities.
3. Extension and training activities.

The overall objectives of the 2002 workshop were to:

- Provide detailed technical results of the ACIAR project, "Improved hatchery and grow-out technology for grouper aquaculture in the Asia-Pacific region".
- Provide a forum for young researchers involved in the development of sustainable marine finfish aquaculture in the Asia-Pacific region to present their results and interact with other researchers.
- Review the research and development needs for sustainable marine finfish aquaculture development in the Asia-Pacific region.

- Identify potential collaborative projects to assist the development of sustainable marine finfish aquaculture development in the Asia-Pacific region.

A one-day, follow-on workshop was held to initiate the development of standards for aquaculture of marine finfish for the live reef food fish trade (LRFFT), as part of an APEC-funded project to develop best practices for the LRFFT (see article by R. Kusumaatmadja et al. in this issue for an overview of the project and the outcomes of the workshop).

Participants included representatives from Australia, Brunei Darussalam, China, Denmark, Greece, Hong Kong SAR, India, Indonesia, Malaysia, Myanmar, Philippines, Solomon Islands, Thailand, United States of America and Vietnam, and represented both private and government sectors. The workshop was supported by the Government of Vietnam, ACIAR and the Australian Academies of Technological Sciences and Engineering (ATSE). Funding from ATSE under the Innovation Access Program allowed participation by young scientists from throughout the Asia-Pacific region.

The workshop focussed on recent improvements in production technology for groupers, particularly the outcomes of the ACIAR project. Among the specific topics presented and discussed in the workshop were:

- Optimising environmental conditions in newly hatched and pre-feeding grouper larvae to increase survival in hatcheries.
- The role of fatty acid nutrition in improving growth and survival of marine finfish larvae in hatcheries.
- Development of new fluorometric analysis techniques to assay the levels of digestive enzymes in marine finfish larvae and live prey organisms.
- Selective breeding of super-small (SS-) strain rotifers for hatchery use.
- Availability, cost and chemical composition of

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locally sourced ingredients for marine finfish diets.

- Digestibility of key ingredients used to develop grow-out diets for marine finfish.
- Optimisation of the nutritional composition of marine finfish diets (protein, lipids, carbohydrate, vitamin C, etc.).
- The role of short-chain and medium-chain fatty acids in grouper diets.
- Socioeconomic impacts of marine finfish hatcheries in northern Bali, Indonesia.
- Case studies in the development of aquaculture to provide alternative livelihoods for fishers involved in unsustainable fishing practices (e.g. cyanide fishing).
- Techniques for capture and culture of pre-settlement post-larval fishes and invertebrates.

Immediate outcomes of the workshop include:

- Dissemination of recent research results to marine finfish aquaculture researchers, managers and industry from the Asia-Pacific region. Dissemination of results will be continued by placing workshop presentations on NACA's website (www.enaca.org/grouper/) and by providing each participant with a CD-ROM of workshop presentations.
- Identification of constraints to the development of sustainable marine finfish aquaculture in the Asia-Pacific region. Break-out groups identified the constraints to the development of sustainable marine finfish aquaculture and identified activities that needed to be undertaken to address these constraints. Participants then identified agencies that were already working on these issues and nominated agencies that were interested to work on them. This information will be collated by NACA and used to identify gaps in the APMFAN research program, and will provide funding agencies in the Asia-Pacific region with a framework for identification of priorities for sustainable marine finfish aquaculture development.
- Enhanced networking. The workshop enabled participants to discuss results and exchange ideas with other researchers and industry representatives working in related areas. A major constraint, identified at earlier workshops in this series, has been the poor information flow within and between the research and industry sectors involved in marine finfish aquaculture in the Asia-Pacific region. This workshop provided a valuable forum for researchers to develop new ideas and to evaluate new research processes, and for industry to gain a valuable update on the latest research results from across the region.

- Enhanced collaboration. The APMFAN has been highly successful in promoting collaborative research, and this workshop will contribute to this collaborative approach. In particular, this was the first opportunity to involve a number of Vietnamese researchers and industry representatives in such a workshop, and the workshop was particularly valuable to Vietnamese participants.
- Enhanced opportunities for young researchers. The involvement of young researchers from the Asia-Pacific region in the workshop provided them with the opportunity to interact with senior scientists, to experience a focussed international workshop, and to present their research results to an international audience. Generally, young researchers (particularly those in developing countries) have limited opportunities for involvement in workshops of this type. The involvement of young researchers enhanced the overall workshop by providing new and different perspectives on marine finfish aquaculture development in the Asia-Pacific region.
- Information provided during the workshop will be used for a strategy paper prepared by the Ministry of Fisheries on the future development of marine fish farming in Vietnam.

Overall, the workshop heard that there have been significant improvements in the production technology for marine finfish, particularly groupers, in recent years. Several species are now routinely produced in hatcheries and more hatcheries are being developed throughout Southeast Asia, particularly in Indonesia, the Philippines, Vietnam, and China. For more information on the workshop, including copies of presentations, visit :

<http://www.enaca.org/grouper/>

