



# Asian Aquaculture

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## Third World Outlook Aquaculture in Asia, Africa and Latin America



Aquaculture production goals should be attainable with the necessary financial investments, scientific expertise, technological inputs, and support services. Provision of these is crucial to the development of aquaculture in Third World countries.

### SEAFDEC Aquaculture Department Marks 5th Year

The SEAFDEC Aquaculture Department is now five years old.

In fitting ceremonies July 7 to 9, highlighted by a review of accomplishments by officials of key divisions, the Department marked its first five years as one of three major arms of the Southeast Asian Fisheries Development Center — a multi-national treaty organization committed to the development of fisheries in the region.

In five years, the Department has grown from a 15-man task force working in make-shift research and administration huts to a community of 600 highly-skilled research and support personnel providing the lead role in aqua-

culture research and development in Southeast Asia. The research facilities now includes eleven stations equipped with modern research hardware. Over the past few years, the Department has chalked up a number of research breakthroughs, notably in prawn — a high potential dollar earner, and milkfish — an important food item for the masses.

The beginnings of all these can be traced to the pioneering research work of Dean Domiciano K. Villaluz, the Chief of the Aquaculture Department, who has steered the Department through its first five years. Early in his career

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Fish farming is an age old practice — said to have started in Egypt 2,500 years ago — but a relatively new significant industry in most countries of the developing world. Its expansion and development has become the focus of interest of international, national and non-governmental agencies for its potential role in increasing food production, human nutrition, rural development, employment generation, and environmental management. However, as an industry, it suffers from inadequate support services and scarcity of well-trained practising aquaculturists; as a science, it has not benefited from a well-organized interdisciplinary systems-oriented research.

This is the gist of an FAO/UNDP report on the recently concluded Consultation on Aid Requirements for Aquaculture Development held in Pontevedra, Spain on 20-23 June, 1978. The consultation was sponsored by FAO/UNDP with participants coming from six international agencies and six countries including the Philippines. Participants from the Philippines were SEAFDEC Aquaculture Department executive director, Q. F. Miravite and newly appointed Asian Institute of Aquaculture director, Joseph C. Madamba.

#### Prospects

The consultation noted that of the total 70 million tons annual world fishery production, aquaculture contributes some 6.2 million tons of which

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# Freshwater Aquaculture Technology in India.. (from page 4)

tion in several countries. The FAO Aquaculture Conference at Kyoto (1976), recommended establishment of a "Pituitary Bank" to facilitate supplies for seed production programs in developing countries.

The CIFRI, Cuttack, established a "Pituitary Bank" a decade back when pituitary extracts preserved in glycerine were ampouled and stored at the bank to be supplied on request to fish breeders all over India. In 1976, the CIFRI even supplied pituitary glands to FAO, on request, for other countries who were in need.

Success in controlled reproduction also opened up a new line of research in evolving superior strains of fish by selective breeding and hybridization.

Another important constraint in the development of fish culture was the heavy mortality (97-100%) of post larvae (early fry) encountered by the fish farmers. The Institute identified the various causes of mortality and evolved remedial measures. The improved nursery management technique generated at the Institute increased survival rate considerably (60-70%) and accelerated the rate of growth of fry by addition of

growth-promoting substances with the feed. Production as high as over 6 million fry from a hectare of water in about two week's time has been achieved.

Polyculture technique of raising together a number of compatible species of selected cultivated fishes of different feeding habits, grazing in different ecological niches in the pond so as to utilize the available food to the maximum, has been successfully developed at the Institute. A decade of research with various quick-growing indigenous species in combination with selected exotic species developed the technology known as *Composite Fish Culture* and a maximum of about 10 tons per ha per yr of marketable fish have been produced with an average of 8 tons per ha per yr in dug-out ponds without any flow or circulation of water. Such high yields have been achieved by judicious stocking of a combination of several species in fertilized ponds provided with cheap supplementary feed of vegetable origin and by manipulation of stock. The production could be increased two to three times by intensive multi-species culture provided with well-balanced pelleted feed, elimination of the

accumulated metabolites, provision of aeration devices, multiple cropping, and periodic replenishment of the old water. Highly encouraging results have also been obtained from studies on the utilization of domestic sewage for fish culture, control of noxious aquatic weeds and algae, culture of air-breathing fishes in swamps, and on pond fertilization.

The technology thus developed is now under verification in different regions of India under different agro-climatic conditions through the institute-based All India Coordinated Research Project on "Composite fish culture and fish seed production" and through the "Operational Research Projection Rural Aquaculture." The results so far obtained are highly promising.

For popularization of the polyculture technique in rural areas in an effort to develop the rural economy, the Indian Council of Agricultural Research (ICAR) has sponsored a project on "Rural Aquaculture in India" through the CIFRI, in collaboration and with the financial assistance of the International Development Research Center (IDRC), Canada.

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## Aquaculture in Third World Countries.... (from page 1)

Asia's share is some 84 percent or 5.21 million tons, Africa 107 thousand tons, Latin America 70 thousand tons, and Europe 817 thousand tons.

The report stressed however that various projections of future production increases worldwide range from 5 to 10 times by the end of the century. Projected production goals of some 32 countries in Asia, Africa, and Latin America shows that Asia will attain about 4.26 million tons more, Africa 850 thousand tons more, and Latin America 1.55 million tons more per year — a total additional production of around 6.6 million tons per year — in ten years time.

Increased productivity, the Consultation declared, is expected to be achieved through (1) wider application of known technologies, including the expansion of areas under culture, (2) improvement of existing technologies to enable more intensive farming, and (3) development and utilization of new technologies.

Some experts have also noted that the reportedly declining marine catch and the new regime of the seas will

push aquaculture into the forefront of the total fishery resource picture even faster.

### Problems

Aquaculture is considered a labor intensive and high-risk bio-industry. Although it can be organized as a large-scale industry or as small-scale rural enterprises, the former would be more attractive to financial investors. However, in the developing countries, emphasis is and should be on the development of small-scale farming, as it lends itself very well to integration into a rural economy and can have an important role in overall rural development, the report said.

Success of such a pattern of development depends much on the support services such as extension services, production and distribution of inputs, and marketing facilities. These services, the report said, are at present rudimentary in most countries.

Technologies being recommend-

ed are not often, if at all, subjected to technology verification and ecological adaptation.

Though a practice of long-history, aquaculture as a science has not so far benefited from multi-disciplinary systems-oriented research. More scientific workers are getting involved in research on various aspects of aquaculture, but there is a scarcity of experienced practical aquaculturists with expertise on production management and extension work. In all countries, the lack of well-trained practising aquaculturists is a major constraint.

Despite the attention to aquaculture, it remains an unfamiliar field for administrators, financiers, and funding agencies. Appealing though it may be, there is a general reluctance to risk support. Existing credit schemes, grants, subsidies or other support services do not at present usually apply to aquaculture. (NEXT ISSUE: *DEVELOPMENT REQUIREMENTS OF THIRD WORLD COUNTRIES*)