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## Oral Presentations

### Advances in Shrimp Culture in China

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Shrimp experimental ecology studies and the shrimp farming industry in China developed rapidly in the 1970's, and great strides have been made in the mass production of shrimp fry and the growing-out of marketable size shrimp since 1978. The total production of artificially reared shrimp fry and cultivated shrimp increased dramatically in the last few years.

The improvement of water quality management and feed supply in larval rearing have resulted in increased production of shrimp fry up to 100,000-200,000 or even 300,000 fry/m<sup>3</sup>. Advances in the nutritional physiology and biochemistry of the digestive enzymes of juvenile and adolescent shrimp have enabled us to develop different kinds of formulated feeds with high efficiency and low cost. Techniques for the transplantation and propagation of small benthic crustaceans (e.g. *Corophium* spp.) or polychaetes (e.g. *Nereis* spp.) to increase the benthos biomass for natural food of juvenile shrimp in nursery ponds have been developed and successfully practised. Improvement of culture techniques including shrimp pond management, has decreased the mortality of juvenile and young shrimp and increased yields of cultivated shrimp in the country. Highest production of 9,000 kg/ha has been achieved in the semi-intensive culture pond.

### Culture of the Blue Shrimp, *Penaeus stylirostris* in Sonora, Mexico

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The Centro de Investigaciones Cientificas y Tecnologicas de la Universidad de Sonora has been conducting research on the culture of the blue shrimp *Penaeus stylirostris* since

1972. Most of the programs carried out are related to intensive culture in the Puerto Peñasco facilities. However, some experiments on semi-intensive and extensive culture have been conducted since 1975.

This paper describes the principal aspects of the technology developed; spawners, larval culture, nursery, growth, feed, environmental parameters, water supply and others. While in intensive culture it is possible to attain over 5 kg shrimp/m<sup>2</sup>, in semi-intensive systems about 1 kg/m<sup>2</sup> is obtained. The intensive system uses raceways for the grow-out of shrimp, the semi-intensive and extensive systems use ponds.

### Brackishwater Shrimp Culture in India and its Impact on Socio-Economics

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Utilization of potential area for shrimp culture in the traditional system was very meager — just 1.8% of total estimated available area of 1.45 million ha. The traditional paddy and fish culture and paddy cum fish culture systems and the return on investment (ROI) are explained. To adopt intensive culture, there is adequate scientific information based on many successful achievements through experimental trials indicating body weight of 16.7 g in 45 days for *P. indicus* with more than 80% survival rate proving economic viability. Basic studies were also made to find out the seasonal seed availability in different regions. Shrimp production to the extent of 500-700 kg/ha was achieved in many demonstration ponds organized by the Marine Products Export Development Authority indicating commercial reality of shrimp culture in India. As vast potential areas are available, shrimp culture will minimize the present 75% idle capacity of the Indian seafood processing industry which is over-dependent on shrimp as its major product for export.

Furthermore, adding more areas to culture has direct impact on the socio-economic status of the rural population. Three thousand self-employed people are now known to be directly engaged in seed collection. In addition, the shrimp farmer realizes returns two to three times more than his