

AQD demonstrates successful tilapia and grouper farming

By **AP Surtida** and **M de los Santos**
AQD conducted two successive foodfests in March to highlight and demonstrate successful tilapia and grouper farming.

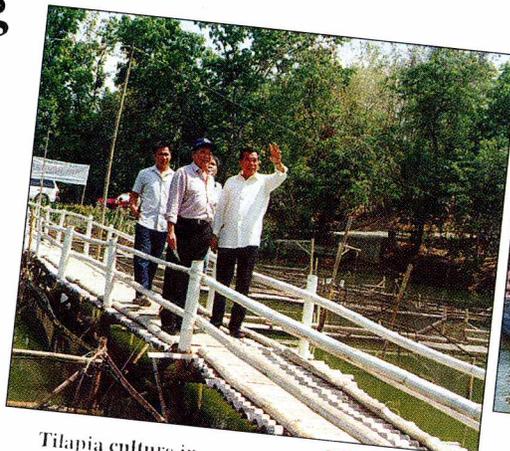
Tilapia farming

For tilapia, the foodfest was held in Bingawan, Iloilo on March 11. The tilapia dishes (featured on page 24, this issue) were prepared from the partial harvest of the tilapia culture project in Bingawan, Iloilo.

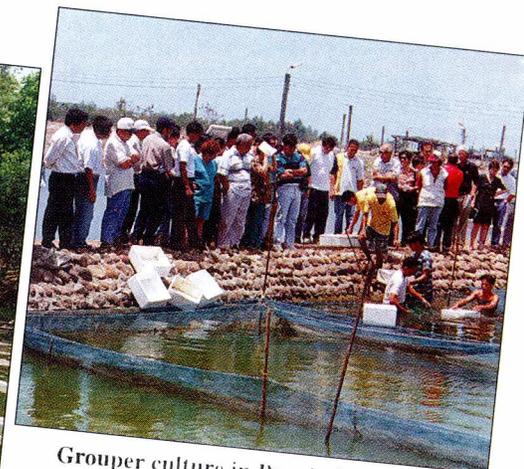
The tilapia project is a collaboration between AQD, the local government of Bingawan, and the Bingawan Multi-purpose Cooperative. In this project, AQD provided the materials for fabrication of netcages, tilapia fingerlings, and feeds. It also provided technical assistance in the form of training, consultations, and regular monitoring of production. AQD's co-operators provided the project site, extra manual labor, and other locally available construction materials. (SEE ALSO PAGE 15)

Hybrid tilapia fingerlings (all males) were stocked in 5 x 5 x 1 meter netcages at the rate of 25, 50, 75, or 100 fish per m². Tilapia fingerlings stocked on 21 November 1997 had an average body weight of 5.64 g. Commercial pelletized feeds were given. After 105 days of culture, the average weight of tilapia in the four stocking densities tested was 128g. Total harvest is scheduled in 150 culture days when the fish reach an average of about 200 g a piece. Recovery or survival is expected at 90%.

Technology Verification Project Head Dan Baliao who initiated the project noted that tilapia is a sustainable and cheap source of protein. Tilapia farming also provides a livelihood opportunity to landlocked rural communities not only in the

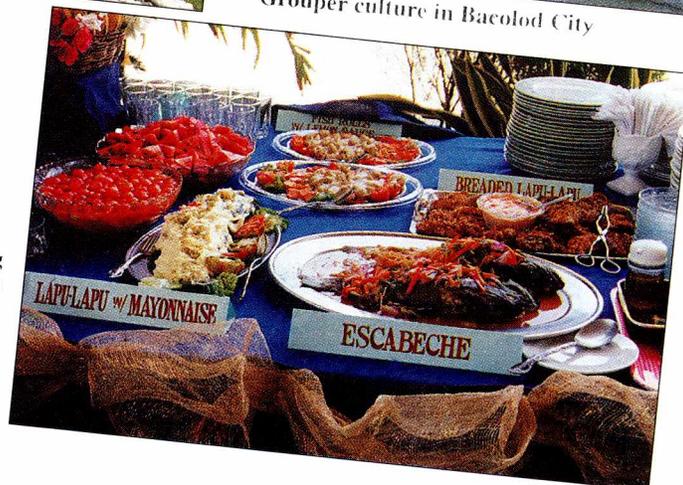


Tilapia culture in Bingawan, Iloilo: AQD Chief R. Platon and Bingawan Mayor Z. Palabrica



Grouper culture in Bacolod City

The many ways of cooking grouper are highlighted in AQD's foodfest on March 23 in Bacolod City. AQD demonstrated successful grouper farming in the Sanson Farm.



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Philippines but also in other Southeast Asian countries.

Baliao said that preliminary economics and costings for a 6-unit netcage module (using the best stocking density of 100 fish per m²) show an estimated production of 2,700 kg with return-on-investment of 51% and net income per crop of ₱46,864.

Grouper farming

For grouper, the foodfest was held in the Sanson Farm in Bacolod City on March 23. Sumptuous grouper recipes were savored by representatives of the private sector, the local media, local government units, and NGOs. The dishes featured were

prepared from the partial harvest of Sanson Farm's second grouper culture trial.

AQD provided technical assistance to the Sanson Farm when the latter was forced to consider alternative species when the shrimp industry began losing money. The collaboration started January 1997. Grouper culture has proven to be a good alternative to the problem-plagued shrimp.

AQD's Dan Baliao noted that the grouper culture trial was able to produce about 1,500 kilograms of live grouper af-

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ter 5-7 months of culture using a 0.9 hectare grow-out pond. This is equivalent to 1,800 kg fish per hectare.

Survival rate was 80% and average body weight was about 450 grams per piece. Total feed consumption of grouper during the grow-out period amounted to 5,783 kilograms, or a feed conversion ratio of 3.82. The mean relative growth increment of grouper was 2.04 grams a day per fish.

Economics and costings for a one hectare pond at a stocking rate of 5,000 fish per ha will give an annual net income of P223,502.50 with 124% return on investment and a payback period of 0.81 year.

Prior to stocking in the grow-out ponds, grouper fry (~4g) were first held in netcages in the pond (nursery phase) for 30 days.

AQD journal publications ... from p 4

Toledo JD, SN Golez, M Doi, RS Bravo, and S Hara. 1996. Preliminary studies on the rearing of the red-spotted grouper *Epinephelus coioides* larvae using copepod nauplii as initial food. UPV J. Nat. Sci. 1: 119-129 ---

One day old red-spotted grouper (*Epinephelus coioides*) larvae from SEAFDEC/AQD, Iloilo, were packed at 3,300 ind/L and transported to Dagupan, Pangasinan for larval rearing. Transport time was about 10 hours. More than 90% of the larvae were active after transport. These were reared in two 7-ton tanks (Tanks 1 and 2) using *Acartia nauplii* and rotifers as initial food and in one 10-ton tank (Tank 3) provided with rotifers only. Feeding incidence at the onset of feeding (Day 3) was higher (90 - 95%) in Tanks 1 and 2 than in Tank 3 (85%).

All larvae sampled from Days 4-10 in Tanks 1 and 2 had food in the gut while feeding incidence in Tank 3 was variable (75 - 100%). Larvae in Tanks 1 and 2 showed consistently higher food electivity for *Acartia nauplii* than rotifers. Higher survival rates were observed on Day 13 in tanks provided with copepod nauplii (16 - 18%) than with rotifers only (2%). Average total length on Day 13 was higher in copepod-fed larvae (4.5+0.5 mm) than larvae fed with rotifers only (3.0+0.3 mm). All larvae fed with rotifers alone died on Day 15. A total of 675 larvae were harvested on Day 45 from Tanks 1 and 2. These results indicate the feasibility of transporting one day old *E. coioides* larvae for at least 10 h and of using copepod nauplii as food for the first feeding *E. coioides* larvae.

Rabanal SF, R Azanza, A Hurtado-Ponce. 1997. Laboratory Manipulation of *Gracilariopsis bailinae* Zhang et Xia (Gracilariales, Rhodophyta). Botanica Marina 40 (6): 547-556 ---

Milkfish broodstock ... from p 8

of hatchery-produced fry are similar to that of wild-caught fry. Thus, hatchery operators face difficulties in marketing fry despite the fact that they can deliver large numbers of fry. Furthermore, fry produced from the hatcheries should be harvested within 21 to 24 days from hatching, and without buyers, rearing fry for several more days will entail additional operating expenses as well as decreased survival. This

further cuts revenue. What may be needed is for the industry to evolve into specialized components such as broodstock development and management for egg production, hatchery operation, and fingerling production. Cohesiveness of these enterprises (such as contract growing schemes) will ensure the continuous artificial propagation of milkfish and the sustainable growth of milkfish aquaculture in the country.

Carpospore germination, carposporeling development and tetraspore formation were investigated in *Gracilariopsis bailinae* Zhang et Xia by manipulating photoperiod, photon flux density, temperature, salinity and nutrients. Laboratory-generated sporelings attained mean growth rate from 4.05 to 10.31% d(-1) during the first week of incubation. Duncan's multiple range test (DMRT) showed that growth rates were significantly different ($P < 0.05$) between the treatment combinations and between weekly intervals. The optimal condition for growth of sporelings, irrespective of culture age, was attained at treatment combinations of 26 degrees C, 11:13 (h. L:(D) over bar) photoperiod, 100 μ Em(-2)s(-1) photon flux density (PFD), 25 μ M NH4Cl; 2.5 μ M K2HPO4 and 25 parts per thousand salinity followed by a treatment combination of 26 degrees C, 11:13 (h. L:(D) over bar) photoperiod.

TABLE 3 List of broodstock maintained by the Department of Agriculture.

Location	Rearing facility	Age (years)	No. of stocks
Puerto Princesa, Palawan	Cage	10	20
	Cage	7	120
	Cage	4	140
Naujan, Mindoro Oriental	Pond	2	230
New Washington, Aklan	Pond	2	3,000
Calape, Bohol	Pond	3	200
Bais City, Negros Oriental	Pond	7-8	500
Baliangao, Misamis Occ	Cage	10-12	98