

# AQUA Dept NEWS

Internal Newsletter of the SEAFDEC Aquaculture Department

Vol. XV11 No. 36 September 9, 2002

## Animal by-products as feedstuff in grouper culture

Animal by-products from slaughterhouses are useful feed ingredients for grouper culture.

This was the finding of AQD Senior Scientist Oseni Millamena in a research titled "Replacement of fish meal by animal by-product meals in a practical diet for grow-out culture of grouper *Epinephelus coioides*."

Animal by-products such as combination of meat meal and blood meal (4:1) can effectively replace fish meal up to 80% with no adverse effects on growth, survival, and feed conversion ratio (FCR) of grouper juveniles.

Results of the experiment showed that grouper juveniles readily accepted the diets with animal by-product meals. The replacement allowed

growth rates similar to those fed fish meal.

Being carnivorous, groupers are traditionally fed with trash fish or feeds with fish meal as the main ingredient (up to 50% of the diet). However, fish meal is also being utilized in feeds for livestock and other food production sectors. With the decline in global production of fish meal due to environmental degradation and increased fishery exploitation, fish meal has become expensive because of increasing demand and limited supply.

The replacement of fish meal as protein source in commercial aquaculture feeds by an alternative protein source is one way of reducing feed



cost. Further, it would reduce the requirement for trash fish, which are also consumed by humans and serve as the main food source for culture of most fish species.

Animal byproduct meals on the contrary are cheaper, readily available, and just as effective in promoting growth and survival in grouper culture. Hence, their use could make fish farming more profitable.

Grouper, popularly *to page 2*

## TVS updates on JMANTTP



Siotchi farm in Nasugbu, Batangas

The Technology Verification Section (TVS) of TVCD has been very active in the implementation of the Technol-

ogy Outreach Program of AQD in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) through the Joint Mission for Accelerated Nationwide Technology Transfer Program (JMANTTP).

What are these technology demonstration and transfer projects and activities? Read on.

The BFAR demonstration centers in Butong (Taal, Batangas), Pacita (Lala, Lanao del Norte), and AQD

Dumangas Brackishwater Station are doing the third run field testing and verifying the Environment-Friendly Shrimp Culture Scheme. Stocking densities of 15 pcs/sq.m. and 5 pcs/sq.m. are used.

The shrimps are harvested upon reaching average body weight (ABW) of 32 grams, probably on the second week of September in Batangas and last week of October in Dumangas. Land Bank key officials will be invited during the harvest for technology promotion.

There are also ongoing direct-technology transfer projects for Environment-Friendly Shrimp Culture in Nasugbu, Batangas *to page 3*

# Seaweed is an efficient biofilter in grouper culture



The use of seaweed as biofilter significantly reduces total ammonia nitrogen (TAN) and improves feed conversion ratio (FCR) in intensive culture of grouper in tanks.

These were the findings of researcher Aurelio delos Reyes Jr. in a study titled *Integrated recirculating tank culture of grouper and seaweed* presented during a research seminar on August 8 at TMS.

The efficiency of seaweed (*Gracilariopsis bailinae*) as biofilter, growth and amenability of grouper (*Epinephelus coioides*) to intensive stocking in tanks, and nutrient dynamics were evaluated in pilot-scale recirculating tank culture systems. The systems consisted of four 3-m<sup>3</sup> tanks, a 125-liter upflow sand filter, and a 0.75 kW (1.0 hp) pump.

In each of two identical systems, as well as flow-through tanks (con-

trol), two tanks were randomly stocked with grouper, and two tanks with seaweed (primarily for ammonia removal).

Grouper was fed with fixed amount of AQD formulated diet containing 43% protein two to four times a day. Only one kind of feed was used. Water quality from the

inflow and outflow of each culture tank was assessed weekly, and water flow was measured through a calibrated container and timer. Parameters analyzed included total ammonia nitrogen (TAN), nitrite nitrogen (NO<sub>2</sub>-N), and orthophosphate-phosphorous (PO<sub>4</sub>-P). *In situ* monitoring of water temperature, DO, salinity, and pH was done regularly in all tanks.

Acceptable levels of TAN (0.01-0.96 mg L<sup>-1</sup>), NO<sub>2</sub>-N (0.001-2.015 mg L<sup>-1</sup>), and PO<sub>4</sub>-P (0.02-4.9 mg L<sup>-1</sup>) were observed in the recirculating systems. TAN levels were affected by stocking and feeding level. DO (6.46±0.59 mg L<sup>-1</sup>), temperature (29.43±0.05 °C), and salinity (31.96±0.12 ppt) were all at highly acceptable levels, with no significant differences observed.

FCR increased as the fish grew. Groupers of about 30g (100 m<sup>-3</sup>) at-

tained 90g in 97 days for an FCR of 2.68-2.98 and a survival rate of 86.7-98.3%. Fishes of 330 g (180 m<sup>-3</sup>) attained 435 g in 162 days for an FCR of 6.14 and 95.6% survival. An equivalent density of up to 72.65 kg m<sup>-3</sup> (502 fish in 3 m<sup>-3</sup>) was achieved in the densely stocked grouper tank.

Loss in seaweed biomass was observed at 12 and 6 kg per system so seaweed biomass was reduced to 3 kg (without effect on water quality).

There were instances of decline in biomass and high variability observed in daily growth rate of seaweed. These were attributed to pump intake, which was very difficult to account for. Changes in TAN through the seaweed tanks were hard to detect, although water quality was maintained. Measurable reduction in TAN was observed through the sand filters even though the sand filters were sized primarily for solids removal.

Together with nitrification attained in upflow sand filters, about 3 kg of seaweed provides sufficient uptake of ammonia nitrogen from 1.5-2 kg grouper feed. Groupers can thrive in properly designed and operated recirculating tank system at high stocking densities up to 180 fish m<sup>-3</sup> for 330 g fish, or about 70 kg m<sup>-3</sup>.

---

## Animal byproducts...from page 1

known as “lapu-lapu” is one of the country’s most delicious and expensive food fish. Pound for pound, live grouper today commands a price in the international market almost as high as that of shrimps. And growing it is far simpler and cheaper than growing shrimp. It is also sturdier and has bigger chances of survival in captivity.

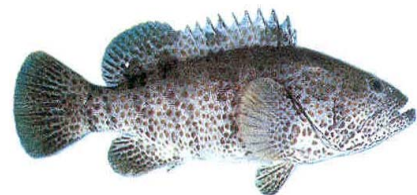
Grouper has big demand in local and international markets as a favorite food for luxurious dining, especially in Chinese restaurants. It is sold

and ordered live from on-site aquariums in restaurants from cities like Manila and Hong Kong. It is also popular in Thailand, Taiwan, Malaysia, Singapore, China, Japan, and Mexico. In the Philippines, it has a high demand during the months of October to March when most festivities in the country occur.

Groupers of various sizes have many species mostly belonging to the genus *Epinephelus* growing and living around coral reefs. Most grow to weigh 1 to 2 kg but some of the largest species can grow up to 45 kg. Groupers are marketed at a size of

700 to 800 g in the Philippines.

Groupers are cultured either in net cages or ponds. However, cage culture is more popular than pond culture in the Philippines. Grouper cage farming has been recorded since the late 1970s. Its pond culture was developed only recently by AQD in polyculture with tilapia.



# AQD initiatives for environment-friendly shrimp culture



Two commercial-scale skills capability building and transfer projects are going on under the second phase of the SEAFDEC-BFAR Joint Mission for Accelerated Nationwide Techno-Transfer Program (JMANTTP).

The technology verification section (TVS), under JMANTTP had been assisting the shrimp farms of Albertito Siotchi in Nasugbu, Batangas and Antonio Campos in Banate, Iloilo. TVS field technicians were deployed in their farms since pond preparation stage to train their personnel as a form of direct technology transfer. They

were both doing semi-intensive shrimp culture. Siotchi had three pond compartments and Campos had one. TVS provides the technology while they shoulder all the ex-

penses during the culture period.

At a stocking density of 20 pieces per square meter, the performance of the environment-friendly shrimp culture scheme of AQD as of the latest sampling was as follows:

Ponds	Siotchi farm			Campos farm
	1	2	3	1
Area (sq.m.)	3000	3000	3000	7000
Days of culture	92	92	92	78
Average body weight	21	23.5	25.2	18.7
Estimated survival (%)	85	85	85	85

The shrimps in Siotchi's farm will be harvested on the second week of September while harvest in Campos' farm will be in mid October.

The farms of Siotchi and Campos have been idle since 1996, following disease outbreaks which caused the collapse of the shrimp industry. They requested AQD to assist them in reviving their shrimp farms.

JMANTTP through TVS responded by initiating a direct transfer of technology to their respective farms in the form of one complete demonstration run. At this early stage,

both parties expressed desire to use additional pond compartments for expansion.

Two collaborating shrimp farms also made similar requests for the direct techno-transfer program of JMANTTP: Eric Ledesma of Silay City, Negros Occidental and Robert Yu of Ozamiz City. Their sites are now being evaluated for suitability.

The trial runs showcase AQD's technology for existing growers and potential investors from surrounding provinces.

— TVS

## TVS updates... from page 1

and Banate, Iloilo in the farms of Albertito Siotchi and Antonio Campos, respectively. AQD technicians were deployed in their farms on a full-time basis. (See related story).

On completion of the said technology-demonstration runs, an AQD Extension Manual on Environment-Friendly Shrimp Farming using modified extensive and semi-intensive stocking densities shall be consequently released.

TVS has also conducted lectures on Environment-Friendly Shrimp Farming for BFAR Freshwater Station staff in Los Baños, Laguna and in San Jose, Mindoro in June and July, respectively. The lectures conducted were upon the request and financial support of BFAR Region IV Director Rosa Macas.

A training-demonstration on the breeding of native catfish was held for BFAR personnel of Antique on April 17 to 19 and an onsite seminar on grouper cage culture was conducted on August 1 to 2 in Kalibo, Aklan for selected growers and interested entrepreneurs.

The programmed milkfish modular crop rotation project in BFAR Demonstration Training Center in Calape, Bohol was temporarily postponed due to budgetary constraint. Thus, requests for technical assistance from Central Visayas will be attended either by TVS technical personnel in Iloilo or those presently assigned in Lanao del Norte. All other expenses related to these requests for technical assistance are taken cared of by the requesting party.

The hands-on training of the four

fisherfolk representatives from the municipalities of Guimaras is ongoing at the Joint Mission Mariculture Livelihood Demonstration and Training Facility at Igang, Nueva Valencia, Guimaras.

The municipality of Sibunag has already been assisted in the installation of 30 units of fishcages for its registered fisherfolk members. The Nursery Section of AQD helped them in the purchase, transport, and stocking of grouper and red snapper fingerlings.



Try not to become a man of success but rather to become a man of value.

~ ALBERT EINSTEIN

## HUMOR

### Lawyer Joke

An attorney was asked to make a contribution to a worthwhile charity.

His response was, "I guess you haven't heard, my mother is suffering from a terminal illness and she has medical bills which far exceeded her income. My brother is a disabled combat veteran. He is not only blind, but is in a wheelchair and he has to take ten different medicines a day. My sister is a single parent of three children since her husband died without life insurance. She has no college education and scrubs floors for a living while moonlighting by taking in ironing. My wife is in a mental ward, and may never get out. My only child is in a drug rehabilitation program, but he left and no one can find him."

Before he could get his breath and continue on, the fund-raiser thought it wisest to end this and let the poor man alone. "You are correct, sir. I had no idea of your problems. Of course we can't expect you to make a contribution with so many demands already on your income."

The attorney nodded and replied, "Exactly — why should I contribute to your organization when I don't even give to my own family?"



### Political Joke

George Bush, Albert Einstein and Pablo Picasso have all died. Due to a glitch in the mundane/celestial time-space continuum, all three arrived at the Pearly Gates more or less simultaneously, even though their deaths have taken place decades apart.

The first to present himself to Saint Peter was Einstein. Saint Peter questioned him. "You look like Einstein, but you have NO idea the lengths certain people will go to, to



# Network your way to success



Any expert will tell you networking is one of the best ways to advance your career, and it is also a good source of support for everyday job concerns. Almost everyone recognizes the value of networking. There are official — as well as unofficial — networks for virtually every group.

But remember that how you network is just as important as whether you network. Here are some networking rules of the road:



sneak into Heaven under false pretenses. Can you prove who you really are?"

Einstein pondered for a few seconds and asked, "Could I have a blackboard and some chalk?" Saint Peter complied with a snap of his fingers. The blackboard and chalk instantly appeared. Einstein proceeded to describe with arcane mathematics and symbols his special theory of relativity.

Saint Peter was suitably impressed. "You are really Einstein! Welcome to heaven!"

The next to arrive was Picasso. Once again Saint Peter asked for his credentials. Picasso didn't hesitate. "Mind if I use that blackboard and chalk?" Saint Peter said, "Go ahead."

Picasso erased Einstein's scribbles and proceeded to sketch out a truly stunning mural. Bulls, satyrs, and nude women: he captured their essence with but a few strokes of the chalk.

Saint Peter clapped. "Surely you are the great artist you claim to be! Come on in!"

The last to arrive was George Bush. Saint Peter scratched his head. "Einstein and Picasso both managed to prove their identity. How can you prove yours?"

Bush looked bewildered, "Who are Einstein and Picasso?"

Saint Peter sighed, "Come on in, George."

• *Get an early start.*

The sooner you start creating a network, the faster you'll progress in your career. Many professional societies have student chapters in colleges and universities. Making connections early will give you a head start on your career.

• *Look before you leap.*

Be careful of whom you ally yourself with. You may be used to advance an issue. Choose a network that can advance your cause. Carefully find the network that will be most beneficial to you.

• *Cast a wide net*

Look for support wherever you find it. Networking works best when the group's common interest is the success of each member. Establishing a broad network enables you to turn to different groups, depending on your professional challenges. Without a broad-based network, there's no one to turn to in a time of crisis. The broader you cast your net, the broader your catch will be.

- The Internet

## ROUND-UP

**Maria Rowena Egua**, BFS Associate Scientist is on a study leave to Japan from September 1 to November 29. She is conducting her PhD dissertation under the Ronpaku Program. Her ongoing research is titled *Genetic marker variation and culture performance in communally reared tilapia strains*.



**AQUA DEP'T NEWS** is published weekly by DEVCOM, TID at the Tigbauan Main Station. **Editor this issue:** SM WEE; **Circulation:** E Gasataya