



Magazine



Marine finfish aquaculture developments at 'Indonesian Aquaculture 2007'

'Indonesia Aquaculture 2007', held at the Inna Grand Bali Beach Hotel, Sanur, Bali, 31 July – 2 August, showcased recent development in aquaculture in Indonesia. The conference theme was 'Sustainable Aquaculture and Food Safety'. Overall, the conference was a great success with a strong program of presentations on a wide variety of topics, and a trade show that proved very popular with participants. Inevitably, the conference had a strong focus on shrimp aquaculture. However, marine finfish aquaculture is also developing rapidly in Indonesia, and this article briefly highlights some of the marine finfish presentations at the conference.

As aquaculturists know, good quality product starts with good quality broodstock and eggs. Tinggal Hermawan, Zakimin and Nur Muflich Juniyanto (BBL Batam) presented on 'Gonad maturation and spawning success of some marine fish species by feeding program improvement'. This presentation pointed out the importance of good nutrition for broodstock. BBL Batam feeds a mixture of 'trash' fish, squid,

pellet mix (a mixture of chicken pellets and squid oil), plus vitamins C and E to broodstock held in cages and in tanks, including seabass, tiger and giant grouper, snappers (*Lutjanus johnii* and *L. seabae*), silver pompano and golden trevally.

Santoso Djunardi (BBPBL Lampung) also pointed out the importance of providing appropriate nutrition to broodstock. Giant grouper (*Epinephelus lanceolatus*) broodstock at BBPBL Lampung are fed fish and crabs, with added Vitamin C (150 mg / kg feed) and Vitamin E (1,000 mg / kg feed). The giant grouper are induced to spawn using injections of HCG.

Giant grouper is becoming a candidate of interest for aquaculture because of its relative hardiness and its reputed fast growth rate. Hanung Santosa and Sukadi reported on breeding success with giant grouper at BBPBL Lampung. Females (35–55 kg body weight) and males (25–35 kg) were housed in 250m³ tanks with five fish of each sex per tank. The broodfish were implanted with LHRHa implants at 10–20 mg/kg.

After implantation in January, spawning began in early May. Fish spawned in conjunction with the full moon, between 0500 and 0700. Total number of eggs spawned was 4.95×10^6 , fertilization rate was 60–90 % and hatching rate was 80–90%. The diameter of fertilised giant grouper eggs is 906 µm, the larvae hatch 14–16 hours after fertilisation (at 28°C and 32 ppt salinity), and the length of newly hatched larvae is 1.55 mm.

Interest in culture of mouse grouper (*Cromileptes altivelis*) has been limited because of its slow growth rate: around 2 years to harvest size. This issue is being addressed by research on selecting faster-growing fish. Suci Antoro, Eko Sutrisno and Arif Rahman (BBPBL Lampung) presented their results on selective breeding of F1 and F2 generation mouse grouper. The selected F1 population grew 17–22% faster than the control (unselected) group. Heterozygosity of the selected F2 population was improved over the F1 population. The program is continuing with a comparison of the performance



of F1 and F2 selected fish, and with breeding planned for the selected F2 generation.

With quality of fingerling production still an issue in Indonesia, it was encouraging to see an increasing focus on improving fingerling quality. Wiwie Soemarjati (BBAP Situbondo) gave an interesting presentation on good hatchery practices for mouse grouper. Good hatchery practices include: sterilisation and thorough cleaning of larval rearing tanks prior to stocking, stocking with PCR-tested eggs, washing eggs in iodine solution to reduce bacterial levels, and using nutritional supplements to improve the nutritional composition of live feeds (rotifer and brine shrimp). The implementation of these procedures has improved larval survival from 3–4% to 6.5–8%, while the rate of deformity in juvenile mouse grouper has dropped from 5–7% to 1.5–2%. Growth rate also improved, with Day 60 grouper reaching 2.8 – 3.7 cm.

The nursery stage of grouper aquaculture continues to have high mortality due to cannibalism, particularly with the popular tiger grouper (*Epinephelus fuscoguttatus*). In South Sulawesi, Mohd. Syaichudin, Nana, Suarni, Naomi, Hasmawati and Maqbul (BBAP Takalar) found that increased water flow, higher feeding frequency and nursery

tank design improved the survival rate of tiger grouper from the usual 25–30% up to around 70%.

Although there is considerable interest in coral trout (*Plectropomus* spp.) aquaculture in Indonesia (and elsewhere), there were only a few presentations on coral trout at the conference. Ketut Suwiryana and N.A. Giri presented their experiences with coral trout spawning, hatchery and grow-out at RIM Gondol. They noted that coral trout are more susceptible to parasitic infestations than other grouper species. RIM Gondol has developed a treatment regime for coral trout (*P. leopardus*) to reduce this problem, involving the regular application of formalin and a commercial product. Coral trout broodstock spawn monthly, spawning between midnight and 0200. Hatchery survival is about 1–3%. Experimental grow-out in sea cages took 9 – 10 months to reach 500 g (starting from 15 g). *P. leopardus* is relatively sensitive to environmental perturbations.

Herno Minjoyo (BBPBL Lampung) presented some results on grow-out of coral trout on different feeds. This experiment compared feeding 'trash' fish and a commercial pellet. Overall the results were extremely poor for the commercial pellet: only 16% survival compared with 93% for fish fed 'trash' fish. It was suggested that poor quality

of the pellet feed (or possibly poor storage and transportation procedures) may be to blame for this result. Such results indicate the need to improve the composition, handling and storage of pellet feeds for these to replace the widespread use of 'trash' fish as a grow-out feed for marine finfish aquaculture.

The above gives just a sample of the marine finfish presentations and posters from 'Indonesian Aquaculture 2007' intended to give members of the Asia-Pacific Marine Finfish Aquaculture Network some insight into current research and development, as well as commercial activities in Indonesia. It also highlights the strong level of technical support that is provided to the Indonesian industry by the Directorate-General of Aquaculture and the Central Research Institute for Aquaculture of the Ministry of Marine Affairs and Fisheries. Obviously, there is still a strong focus on grouper production because of the high prices and continuing strong demand from the live fish trade. However, other species are also being developed for marine fish farming, such as the golden trevally (*Gnathanodon speciosus*) and pompano (*Trachinotus blochii*). 'Indonesian Aquaculture 2007' was a great opportunity to see how aquaculture in Indonesia is progressing. The 2007 conference was such a success that the next conference is being planned for 2008 or 2009.

Production update – marine finfish aquaculture in the Asia-Pacific region

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Introduction

The Food and Agriculture Organisation of the United Nations (FAO) has recently released the annual update of global aquaculture production and value statistics (<http://www.fao.org/fi/website/FIRetrieveAction.do?dom=topic&fid=16073>). This article summarises recent changes in production trends for marine finfish aquaculture in the Asia-Pacific region based on these FAO data, which now cover the period up to 2005. Although the FAO

data sets go back to 1950 (production) and 1984 (value) only the last 10 years' data are presented here.

Please note: the data compiled by FAO are provided by the producer countries. In many cases the classification of aquaculture production is not reliable (see the FAO web site for comment on the accuracy of the data sets), so these data should be treated with some caution. To reduce potential inaccuracies I have confined this analysis to fairly broad search criteria, or to well-known species. Unless otherwise

noted, data were sorted for: Countries: Continent = Asia & Oceania; Environments: Brackishwater & Mariculture.

Marine finfish

Production of marine finfish in the Asia-Pacific region increased by 11% between 2004 and 2005, from 1,031,800 to 1,143,719 tonnes (Table 1). Value increased by 9%, from USD 3.815 billion to 4.141 billion from 2004 to 2005 (Table 2). The largest producer remains China, with 659,000 tonnes of production in 2005 valued at USD 662