

Brood stock rearing of white shrimp in an indoor recirculating system

THIS STUDY used indoor automatic shrimp culture system to improve production per unit and brood stock quality of *Litopenaeus vannamei*. Following are the significant results:

- After 4 months of culture, with a density of 20 mm², 1865 shrimp brood stock weighing over 35 g each were produced. Average weights of shrimps cultured on the upper layer of cage net were 38.22, 38.08, and 36.38 g, while those cultured on the bottom layers were 31.61 and 30.27 g. The average growth and survival rates of those on the upper layers were 0.105 g/day and 95.46%, respectively, which were slightly higher than the rate of those on the bottom layers, 0.072 g/day and 94.78%, respectively. Based on the results, it was concluded that indoor automatic culture system could increase production per unit and produce mass brood stock.
- Examination of shrimp brood stock: a) Some shrimps are still under examination for healthy index and virology at the National Taiwan

University (NTU). b) The reproductive capability of the shrimps produced was compared with the ones from the private hatcheries. The shrimps produced in this study had smaller sizes than the ones from the private hatcheries. However, they had similar GSI and sperm volume values. c) The effect of recirculation culture system and static culture system on reproduction of female shrimps was compared. Shrimps cultured under the former system had higher survival and reproduction rates than under the latter system. d) The effects of the kind of feed on the reproduction of brood stock were also investigated in this study. Shrimps fed with worms had higher reproduction rates than those fed with hard clam flesh.

News source: **Mariculture Research Center, Taiwan
Fisheries Research Institute**

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Establishment of database of mtDNA sequences Species of the family Scombridae in Taiwan

TWENTY-TWO species of the family Scombridae, namely *Acanthocybium solandri*, *Auxis rochei*, *A. thazard*, *Euthynnus affinis*, *Katsuwonus pelamis*, *Gymnosarda unicolor*, *Rastrelliger kanagurta*, *R. faughni*, *Sarda orientalis*, *Scomber japonicus*, *S. australasicus*, *Scomberomorus commerson*, *S. koreanus*, *S. guttatus*, *S. nipponius*, *S. sinensis*, *Thunnus alalunga*, *T. albacares*, *T. obesus*, *T. thynnus*, *T. tonggol*, and *Grammatorcynus bilineatus*, were collected from the coastal waters of Taiwan. *G. bilineatus* is a newly recorded species from the coastal waters of Taiwan.

The entire 1140 bp sequence of cytochrome b gene for the 22 species of the family Scombridae was sequenced and aligned. The nucleotide composition of the 22 sequences is as follows: C content (30.09-34.74%) > T content (26.14-30.00%) > A content (24.21-

25.53%) > G content (14.30-15.70%). The transition/transversion ratio ranged from 1.0230 to 5.1667. The pairwise genetic distances of the 22 sequences using Kimura 2-parameter model ranged from 0.008 to 0.229. The phylogenetic tree was constructed using genetic distances by neighbor-joining method. From this molecular tree, species of the same genus were clustered together, then the genus *Thunnus* was firstly clustered with the genus *Sarda*, then clustered with a clade including genus *Euthynnus*, *Katsuwonus* and *Auxis*, followed by a clade with genus *Acanthocybium* and *Gymnosarda*, genus *Scomberomorus*, a clade with genus *Rastrelliger* and *Scomber*, and genus *Grammatorcynus*.

News source: **Taiwan Fisheries Research Institute,
Taiwan, ROC**

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Acetic acid treatment

Relieving dormancy and promoting germination of rice seed

RAINS and typhoons are prevalent during rice harvest period in Taiwan. This condition causes germination on grain panicles and decreases rice yield and quality. To reduce the damages, dormant varieties were selected from breeding materials and then evaluated. These dormant seeds were not able to generate uniform rice seedlings when used for growing seedlings in the second cropping season.

Generally, farmers keep rice seeds under room air temperature for 2-3 weeks to relieve seed dormancy.

However, it becomes too late to transplant the seedlings with this method. In this study, treating the dormant seeds with 50mM acetic acid for 24 h improved germination capacity by above 90% and produced uniform seedlings.

News source: **Kaohsiung District Agricultural Improvement Station, Taiwan, ROC**

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Micropropagation of *Morus latifolia* Poilet using axillary buds from mature trees

SIX-MONTH-OLD axillary buds from 15-year-old trees were used to establish an *in vitro* propagation system of *Morus latifolia* Poilet. Adding activated charcoal to the medium decreased the average number of shoots and roots by five-fold and six-fold, respectively. Optimum shoot multiplication was obtained using MS medium supplemented with 2% fructose and 2 mg/l BA under a light intensity of 80-140 $\mu\text{mol m}^{-2}\text{s}^{-1}$ with ca. six-fold proliferation rate per month. A high frequency rooting (85%) was achieved using

half-strength MS medium supplemented with 2% fructose and 1 mg/l IBA. A rapid, efficient propagation system was developed using 2 mg/l BA, 2% fructose, and 1 mg/l IBA under a light intensity of 80-140 $\mu\text{mol m}^{-2}\text{s}^{-1}$ for the economically important *Morus* species.

News source: **Miaoli District Agricultural Improvement Station, COA, Taiwan, ROC**

For further information, see *Scientia Horticulturae*.

Development of a bovine coronavirus diarrhea inactivated vaccine

BOVINE CORONAVIRUS (BCV) was propagated in HRT-18 cells. Vaccine was produced from the infected virus suspension inactivated with 0.002 M Binary Ethylene Imide (BEI) and incorporated with Montanide oil adjuvant. Concerned about the different adjuvants, which may cause various immune responses, aluminum phosphate, MVP emulsigen, and Montanide oil were included in this study. The mean antibody titers tested by the hemagglutination inhibition (HI) were 1:130, 1:144, and 1:176. This study showed that vaccine produced by the Montanide oil stimulated better

antibody response. The field trial was performed in two cow farms including 50 vaccinated cattle and 6 control cattle. The mean HI titers were 1:26 before vaccination and then increased to 1:264 and 1:240 at the 4th and 8th weeks after the second vaccination, respectively.

News source: **National Veterinary Research Institute, Taiwan ROC**

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