

- Invited Paper -

SEEDLING PRODUCTION OF FINFISH FROM SEAWATER POND IN THE KOREAN COASTAL AREA

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Fish seedling production can be increased substantially by fertilizing seawater ponds with organic and/or chemical fertilizers provide nitrogen, phosphate and potassium, which are essential for both the primary production of phytoplankton and the secondary production of zooplankton and benthic invertebrates. Korean rockfish, *Sebastes schlegeli* and black porgy, *Acanthopagrus schlegeli* production has often been high production cost, high abnormality and water pollution in inland flow-through tanks, thus the importance increasing in seawater ponds treated with organic and/or chemical fertilizers for fish seedling production has been recognized.

The objectives of this study were to document phytoplankton abundance, zooplankton diversity and production, and the survival of rockfish and black porgy larvae in ponds treated with organic and/or chemical fertilizers. This experiment was conducted in eight small ponds (1,000-1,500 m³) and one large pond (10,000 m³) at the Marine research development institute, Soonchunhyang University, South Korea (36° 41' N; 126° 18' E) from March to June 2001 and 2002. The chemical and organic-fertilized ponds produced higher numbers of nauplii, copepoda and polychaeta, especially during the critical 2-week period after stocking; phytoplankton levels were also initially higher compared to the control ponds. The major zooplankton taken rockfish and black porgy larvae analyzed by stomach content were nauplii and copepoda.

Abnormal of black porgy greatly appeared in inland flow-through tanks, ranging from 20% to 98%, but abnormalities of black porgy seedling released by the fertilized eggs, 10-day-old and 20-day-old larvae were 0.4%, 2.18% and 4.51%, respectively. Rockfish and black porgy larvae average survival rate in rearing ponds was to be less than 33% until the marketing size. After 60 days, the average survival rate of black porgy seedling production by non-fertilized control, only chemical fertilized and chemical/organic fertilized ponds were 5%, 11.8% and 20%, respectively.

This low survival of black porgy seedling chemical fertilized pond led to conclude that the rapid blooming of phytoplankton according to excessive chemical fertilizer and water quality deterioration.

These results suggest that pond management effort (including the amount of fertilized, other fertilizers such as alfalfa, animal manure and treatment timing of fertilizers) should be shifted to maximize zooplankton foods during the period 4 weeks before and 2 weeks after stocking of fertilized eggs or larvae.