

## EFFECTS OF PHYSICOCHEMICAL PARAMETERS OF THE POND WATER ON THE OCCURRENCE OF WHITE SPOT DISEASE IN *PENAEUS MONODON* CULTURED IN THE NORTH WESTERN PROVINCE, SRI LANKA

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Retrospective and perspective studies were carried out to investigate the effect of physicochemical factors on the occurrence of white spot disease in *Penaeus monodon* caused by the Systemic Ectodermal and Mesodermal Baculo Virus (SEMBV). A questionnaire was distributed among shrimp farmers to obtain information on outbreaks of white spot disease, which occurred since 1996 under retrospective study. Two farms were selected (one at Ambakandawila and the other at Pulchakulam) to find out farm level risk factors that could possibly trigger outbreaks of the disease under perspective study. Salinity, pH, temperature, dissolved oxygen, chlorophyll-a content, alkalinity, hardness, hydrogen sulphide and total ammonia of pond water were recorded on the day of stocking and subsequently once a week. From thirty days onwards post-stocking of juvenile shrimps were sampled weekly and investigations were carried out for the presence of SEMBV. Quick Staining Procedure was performed and histopathological preparations of different shrimp tissues were observed for inclusion bodies of the virus for early detection of the invasion. This investigation was carried out throughout two production cycles.

Results of the retrospective studies revealed that there is a relationship between low salinity of grow-out pond water and occurrence of white spot disease in *P. monodon*. During the second production cycles some shrimps at Ambakandawila farm exhibited symptoms of SEMBV infection and an emergency harvest was performed in December 1998. The average weight of shrimps at this harvest was 20.2 g. Inclusion bodies of SEMBV were observed in the epithelial cells of gills and mid-gut wall of the sampled shrimps before they exhibited external signs of the infection. During this production cycle, salinity of pond water ranged between 5 to 11 ppt and hardness varied between 940 to 1928 mg l<sup>-1</sup>. Salinity and hardness reached their lowest levels of 5 ppt and 940 mg l<sup>-1</sup> respectively at about three weeks prior to the day that shrimps showed external signs of SEMBV infection for the first time with some mortality. Other physicochemical parameters of pond water in both farms were within acceptable ranges for *P. monodon* during both production cycles. It appears that low salinity and low hardness were stress factors for *P. monodon* cultured in the North Western Province, Sri Lanka, which made it susceptible to SEMBV infection causing mortality.

Financial assistance provided by National Science Foundation (Grant RG/97/B3) is acknowledged.