

## ABSTRACT

This case study assessed and documented the main management practices of the first shrimp farm (Baaboud Shrimp Farm) located 40 km south of Port Sudan on the Red Sea coast of Sudan. The case study was based on data collected from the farm during a – two grow-out seasons of two shrimp species, *Penaeus monodon* and *P. indicus*.

Two ponds were selected (pond #14 and pond #2) and detailed study was carried out with respect to the culture practices, water quality, feed utilization efficiency and shrimp production. Data was collected from these two ponds all through two successive production cycles extending from 21<sup>st</sup> February, 2003 to 26<sup>th</sup> November 2004, pond # 14 was stocked with *P. indicus* and pond # 2 was stocked with *P. monodon* from the farm hatchery.

For pond #14 during 2003 the mean values ( $\pm$  sd) of dissolved oxygen, pH, salinity, water temperature, Secchi disk reading and water depth were  $6.43 \pm 0.622$  mg/l,  $8.09 \pm 0.5468$ ,  $42.21 \pm 1.45$  ‰,  $27.85 \pm 3.03$  °C,  $48.68 \pm 4.99$  cm,  $109.32 \pm 7.79$  cm, respectively; and for pond #2 the recorded values were  $4.82 \pm 0.835$  mg/l,  $8.85 \pm 0.1280$ ,  $42.34 \pm 1.58$  ‰,  $29.06 \pm 1.09$  °C,  $40.96 \pm 8.70$  cm,  $86.57 \pm 23.79$  cm, respectively.

For pond #14 during 2004 the mean values ( $\pm$  sd) of dissolved oxygen, pH, salinity, water temperature, Secchi disk reading and water depth were  $6.43 \pm 0.821$  mg/l,  $8.16 \pm 0.5438$ ,  $42.34 \pm 1.58$  ‰,  $28.04 \pm 2.80$  °C,  $51.48 \pm 5.47$  cm,  $127.92 \pm 13.32$  cm, respectively; and for pond #2 they were  $5.23 \pm 0.684$  mg/l,  $8.76 \pm 0.1460$ ,  $41.86 \pm 1.49$  ‰,  $28.25 \pm 1.42$  °C,  $50.09 \pm 5.89$  cm and  $103.36 \pm 8.38$  cm, respectively.

During 2003, the initial stocking density and final survival rate for pond # 14 were 120000 individuals/ha ( $12/m^2$ ) and 42%, respectively; and for pond # 2 were 30000 individuals/ha ( $3/m^2$ ) and 50%, respectively. During 2004, the initial stocking density and final survival rate for pond # 14 were 200000

(20/m<sup>2</sup>) and 16 %, respectively and for pond # 2 were 100000 (10 / m<sup>2</sup>) and 50%, respectively. These very low stocking density were attributed to the shortage of postlarvae production from the farm hatchery. In turn, this low postlarvae production was due to the inavailability of enough wild broodstocks.

The performance of studied species during the grow-out periods was evaluated by calculating the specific growth rate (g/day), specific growth rate (%) and final mean body weight (g) and the values recorded during 2003 for pond #14 were 0.13 g/day, 1.03 %/day and 24 g, respectively; and for pond # 2 were 0.27 g/day, 1.03 %/day and 50 g, respectively.

During 2004, the specific growth rate (g/day), specific growth rate (%) and final mean body weight (g) for pond #14 were 0.1 g/day, 1.02 %/day and 17.7 g, respectively; and for pond # 2 were 0.18 g/day, 1.02 %/day and 35.2 g, respectively.

During 2003 the gross yield of whole shrimp (Kg), total feed offered (Kg) and the feed conversion ratio (FCR) for each production cycle for pond #14 were 1437 Kg, 5252 Kg and 3.7, respectively. For pond # 2 they were 898 Kg, 2823 Kg and 3.2, respectively. During 2004, the gross yield of whole shrimp (Kg), total feed offered (Kg) and the feed conversion ratio (FCR) for each production cycle for pond #14 were 3041 Kg, 6482 Kg and 2.1, respectively. For pond # 2 the values recorded were 1799 Kg, 5700 Kg and 3.2, respectively. The FCR values were high due to the excessive amount of feed offered compared to the low number of animals in the pond.

Dissolved oxygen mg/l, pH, salinity (‰), phosphate, nitrite and nitrate amount in the discharged water were found to be 3.8, 877, 43.00, 1.28, 0.998, 0.1325 mg/l, respectively. No shrimp diseases were detected during the study periods.

The yielded data provided tremendous information that could be employed in addressing future development potential and the challenges of the shrimp

aquaculture industry in Sudan. The study concluded that there is a great potential for shrimp farming in Sudan and that the success of this first trial is believed to pave the road for a quick expansion of shrimp farming in the country. For that reason the study suggested the development of an immediate national plan for a responsible shrimp farming in the coastal area of Sudan. The national plan is intended to address all the technical, managerial, social, economic and environmental concerns.