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**Environmental Impact of Conventional and Organic Shrimp
Pond Effluents on the Guaraíras Lagoon: A Case Study at
Tibau do Sul, Brazil**

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Abstract

Attracted by the demand for shrimp in the developed countries, shrimp aquaculture has expanded rapidly, mainly in the subtropical and tropical lowlands of America and Asia. In some of these countries, the growth of shrimp aquaculture industry has created various environmental and socio-economical concerns. There are some potentially deleterious effects from shrimp pond effluents on the water quality of the estuarine/lagoon environments: the magnitude of the discharge, the chemical composition of the shrimp pond effluents (suspended solids, nutrients, organic matter, and the characteristics of the receiving waters. Effluents from shrimp ponds are typically enriched in suspended solids, and nutrients, with concentrations largely depending on whether the management is intensive or semi-intensive. The aim of the present study was to compare an organic, semi intensive and intensive shrimp pond effluents and their environmental impact on the receiving waters of the Guarairas lagoon. The study was carried out on shrimp farms located at the margins of the Guarairas estuary in the municipalities of Tibau do Sul and Ares, in Rio Grande do Norte state, Brazil. Water, soil and macrobenthos samples were collected and analyzed during the period of May to July of 2005. The results showed: 1) a higher environmental impact from the semi intensive pond effluent, where artificial fertilizers were used; 2) a reduction of diversity of macrobenthos in the semi intensive outlet and a dominance of opportunistic groups *Polychaeta* and *Oligochaeta*; 3) apparently the organic farm presented the most favourable values for dissolved oxygen, total ammonia concentration in water, redox potential in the soil and a higher diversity of organism groups in the soil.

Key words: Shrimp pond effluents, organic and conventional farming, environmental impact, sediment, water, macrobenthos abundance