

International Conference on **Aquaculture & Fisheries** July 20-22, 2015 Brisbane, Australia

The role of the sediment in the functioning of semi-intensive shrimp pond ecosystem: Focus on the benthic primary production

Sébastien Hochard¹, Lemonnier H², Royer F² and Hubert M²

¹ADECAL Technopôle, New Caledonia

²IFREMER, New Caledonia

Although sediment is considered as an important detritic component of earthen ponds used in shrimp production, benthic primary production is usually considered as negligible. Yet Benthic microalgae (BMA) are a major component of shallow marine ecosystem functioning. They produce labile organic matter at the sediment surface and control the nutrient exchanges at the water-sediment interface. Thus BMA may have an influence on the benthic pelagic coupling during the rearing period and influence the dynamics of water quality and phytoplankton communities. This may have direct consequences in the pond management strategy. These issues were investigated in the context of New Caledonian shrimp aquaculture which is based on the rearing of *Litopenaeus stylirostris* in semi intensive pond. Our scientific approach included both industrial pond surveys and mesocosm experiments. Our research showed that BMA could reach a biomass that exceeded phytoplankton biomass in both systems. BMA biomass was controlled by nutrient input (food), light availability and shrimp bioturbation. BMA activity had a significant contribution to the total pond metabolism and had an important role in the control of nutrient exchanges at the water-sediment interface. The controlling factors appeared to be different for nitrogen and phosphorus leading to fluctuating release of nutrients from the sediment to the water column both in term of fluxes and N/P ratio. These have direct consequences on the pond management. They discuss these features in term of fertilization strategy, and pond sediment monitoring and management.

Biography

Sébastien Hochard is PhD in Marine Environmental Science (University of Aix-Marseille, France) and specialized in the biogeochemical functioning of shallow coastal ecosystems. He achieved Postdoctoral position at IFREMER and the University of New-Caledonia and studied benthic pelagic coupling in shrimp pond monoculture and co culture with rabbit fish. He worked with ADECAL on the biogeochemical functioning of biofloc. He is now in charge of the HOBICAL project financed by the ZoNéco Program which aim to insert the aquaculture of *Holothuria scabra* in the New-Caledonian aquaculture based on shrimp production.

sebastien.hochard@adecal.nc

Notes: