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## RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

**Title:** Social, economic, and production characteristics of giant river prawn *Macrobrachium rosenbergii* culture in Thailand

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**Abstract:** The objective of this study was to review the state of grow-out production for giant river prawns (*Macrobrachium rosenbergii*) in Thailand, assess the perceived ecological impacts of the industry, and suggest avenues by which farmers might adopt more environmentally sound culture systems. A socioeconomic and technical survey of 100 prawn farmers was conducted during 1 May to 31 July 2005 in Thailand. The majority of respondents were male (70%) and average age was  $46 \pm 1$ . Most farmers (77%) had completed an elementary level of schooling (4 years) and experience on the farm as owner, manager, or both averaged  $10 \pm 1$  years. Most respondents (92.9%) obtained information about prawn culture from their neighbors and only 19% received formal training. Monoculture was the dominant system (96%) while remaining farmers utilized polyculture with prawns and white shrimp (*Litopenaeus vannamei*). The most common management strategy included a 30–60 day nursery phase for post larvae and harvesting with the combined method, culling only the largest market-sized individuals beginning at 5 months followed by every 30 to 45 days (66%).

Culture practices at the time of this survey are best described as intensive. Most farmers stocked at densities below  $20 \text{ pieces m}^{-2}$  and average production was  $2338 \text{ kg ha}^{-1} \text{ yr}^{-1}$ , values typically described as semi-intensive. However, some farmers utilized higher stocking densities and obtained production values above those described as semi-intensive. Additional intensive practices were common, including the use of commercially produced feed, frequent water exchange, aeration, and lime and dolomite application. After the culture period water was generally discharged directly into canals without treatment. Average net

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profits were 3918 US\$ ha<sup>-1</sup> yr<sup>-1</sup>. The major problems identified were seed supply (67%), disease outbreak (64%), and external pollution (37%). External pollution was reported to have severe impacts on 16%, moderate impact on 46%, and no impact on 38% of farms. Pollution sources were identified as agriculture (75.4%), aquaculture (39.3%), and industrial and domestic waste (27.9% each).

At the time of this survey the giant river prawn industry in Thailand was valued at US\$79,096,000 and ranked third globally behind China and India. To maintain this level of production, research on alternative practices is necessary to balance adequate environmental benefits and economic returns similar to or better than the current monoculture system. Two avenues to transition to these practices include augmenting existing certification programs and community training sessions to introduce best culture practices and provide a venue for farmers to plan local water supply management.

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