Intensive prawn farming in the Philippines: ecological, social, and economic implications

Abstract
The benefits of intensive farming of the giant tiger prawn Penaeus monodon in the Philippines are discussed in relation to the environmental costs. Ecological effects include mangrove conversion into ponds; use of antibiotics and chemicals leading to drug resistance; dumping of pond effluents which affect neighboring ecosystems; and pumping of groundwater that causes saltwater intrusion and vulnerability to floods. In addition, these effects lead to social costs in the form of reduction in domestic and agricultural water supplies; decreases in the production of foodfish and other food crops; further marginalization of coastal fishermen; displacement of labor; and credit monopoly by big businessmen. Comparative economic analyses of three prawn-farming systems showed that, compared to extensive and intensive culture, semi-intensive farms give the best performance using undiscounted (payback period, return on investment) and discounted (net present value, internal rate of return) economic indicators. With a 20% fluctuation in inputs or selling price intensive farming will no longer be profitable because of the high variable cost. The paper concludes with recommendations for strict enforcement of existing government guidelines (e.g. ban on mangrove conversion); institution of new policies on the use of groundwater, seawater and public credit; diversification of cultured species; and emphasis on semi-intensive farming parallel with brakes on further intensification of prawn farming.

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Subject
Environmental impact; Environmental protection; Intensive culture; Mangrove swamps; Pollution control; Pond culture; Shrimp culture;
Intensive shrimp farming is the option that capitalist investors prefer. It provides quick return on investment, and collapses within few years due to self-pollution, disease epidemics and isolation from supportive natural ecological services in the seascape. Sustainability has three pillars – economic, social and environmental, and these need to be integrated into mainstream agriculture and aquaculture production, and along the entire food supply chain (Giovanni 2008). Powell C B 1983 Fresh and brackish water shrimps of economic importance in the Niger Delta. In: Proceedings of the 2nd Annual Conference of the Fisheries Society of Nigeria (FISON), 24-27 January, 1982, Calabar, Cross Rivers State, Nigeria , pp 254-285. The consultant was expected to review the economic conditions applicable to international enterprises and/or entrepreneurs intending to invest in farming of marine shrimps in Myanmar. The consultant, jointly with the expert on coastal environments and appropriate officers in the government, was to draft guidelines for the management of the participation of international shrimp culture enterprises in the Myanmar economy. The Japanese market always sets price trends for black tiger and white shrimp in the international market. High inventories and very low domestic consumption during late 1988, due to the Emperor's illness and eventual death, caused black tiger prices to drop to US$7.50/kg for 16/20 counts during mid-1989 from US$13.50 in early 1989 and US$17.40 in mid-1988. There are also a few prawn farms in Arkansas, Georgia, Illinois, Indiana, Louisiana and Ohio. During the 1980s and 1990s, 0.2 to 0.4 million pounds of prawns per year were produced in the U.S. The crop had an annual wholesale value of $0.89 million to $2.54 million and the prices for whole prawns paid by processors and other wholesale buyers ranged from $4 to $7 per pound. There were similar results for semi-intensive stocking densities. Commercial yields (500 to 800 pounds per acre) trailed behind...
experimental yields (900 to 1,000 pounds per acre). The chemicals needed for prawn farming typically include agricultural lime, pond fertilizers and rotenone.