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Sustainable Aquaculture for a Secure Future

Title: Economic Optimization of Shrimp Farming in Honduras

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Abstract: A profit-maximizing linear programming model with a risk programming component was developed to identify sets of optimal management strategies and outline an annual schedule of production activities for shrimp farming in Honduras. A database of 912 complete pond production records was used to define technical relationships between stocking density and survival and growth rates and to develop net return coefficients for the mathematical model. Separate matrices were developed for three farm-size scenarios to account for economies of scale. Results indicated that, in spite of recent viral epizootics, shrimp farming continues to be a profitable economic activity. Stocking density was found to have a negative effect on growth rate, but not on survival rate. As a consequence, low and intermediate stocking rates were most commonly selected, but high stocking densities were recommended in certain periods of the dry season. Results demonstrated some economic advantages of reducing the traditional levels of water exchange with supplemental aeration. The risk programming analysis indicated that the selection of low and intermediate stocking rates resulted in overall annual risk levels that were relatively low.

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