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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: A mixed-integer transshipment model for tilapia (*Oreochromis* sp.) marketing in Honduras

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Abstract: Tilapia production in Honduras has increased in recent years. However, lack of thorough understanding of domestic markets and coordinated production efforts have hampered the development of a domestic market. This study quantified marketing costs for tilapia marketed in Honduras and developed a mixed-integer transshipment mathematical programming model to identify the most profitable marketing alternatives for small- and medium-scale farmers. Of the total marketing costs (0.07–0.41 / kg), 40–73% were for transportation and 13–30% for packaging costs. This depended upon farm size, location, and the specific market targeted. Model results suggested restaurants as primary targets with supplemental production delivered to supermarkets in relative proximity to the selected restaurants. The model selected cities with sufficient restaurant demand to absorb the farm's total production. Farms with high production levels can take advantage of the reduced transport cost of larger trucks and sell excess product to alternative outlets whereas small-scale farm volumes were too low to supply markets on a weekly basis. Farms located in the East and South regions had a marketing advantage over farms in other regions due to proximity to the most profitable Distrito Central outlets. To successfully compete for Honduran markets other than the low-priced local open-air markets will require farm sizes greater than 6 ha to supply a minimum weekly production of 900 kg.

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