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ECONOMIC VIABILITY OF TILAPIA FARMING IN NORTHEAST BRAZIL

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Commercial fish farming is a modern system of agricultural production, with high profitability rates compared to other alternatives of investment. Economic viability of aquaculture is crucial for farmers since it provides key data for the decision-making process and the implementation of managerial actions for the sustainability of the business.

The economic analysis of tilapia fish farming in cages in Northeast region in Brazil was carried out using data collected from six fish farmers employing panel methodology in a technical meeting in order to characterize the typical fish farm of the region and to gather production costs along the previous production year.

Synthetic farms are often based on economic-engineering machinery budgets and livestock production coefficients (FAO, 2016). Technical coefficients of a typical farm informed by farmers set up the starting point for the development of the analysis (Table 1).

The index of economic viability followed the methodology described by Faro (1979), that presents: Net Present Value (NPV), Investment Income Relationship (IIR), Internal rate of Return (IRR), Payback, Benefit Cost Relationship (B/C). Production costs data were based on the concept of Effective Operating Cost (EOC) according to Matsunaga et al (1976). EOC includes all expenses assumed by the farmer over a productive cycle and consumed in the same time interval. It comprehends variable costs (eg feed, labor, fingerlings, energy, fuel, vaccines, fertilizers, maintenance) and part of the fixed costs (eg taxes, labor charges, among others). The investment comprises capital invested in land, facilities, improvements, machinery, equipment, taking into account the apportionment of the use of these assets in fish farming. Gross revenue consists of multiplying the selling price of the kilogram of tilapia received by the farmer by the annual production in kilograms. The reference discount rate considered is 6% per annum, and 10 years for project evaluation.

Financial indicators (Table 2) obtained in the typical farm were very optimistic, compared to other tilapia centers in Brazil. Although feed price in Northeast is 20% higher than other regions in the country due to the cost of transport from south/southeast regions, such good outcomes can be explained in part by the positive influence of climate on zootechnical performance of fish during fattening, which, along with production control measures, results in shorter duration of the crop cycle. This region also benefits from the high price paid to the producer compared to other regions.

Table 1: Zoo technical indicators

Cycle of production (days)	180
Final Feed Convertion Ratio	1.61
Final Density kg/m³	144
Fingerling's initial weight (kg)	0,025
Final weight of fish (kg)	1.1
Production of fish (ton)	361

Table 2: Financial results and indicators

Initial investment	US$ 221,929
EOC	US$ 395,777
Gross Revenue	US$ 613,258
NET	US$ 1,378,747
IRR	97,89%
B/C	1.44
Payback	2.09
IIR	2.76

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