A BIOECONOMIC MODEL FOR THE CAGE PRODUCTION OF GILTHEAD SEABREAM *Sparus aurata* IN THE CANARY ISLANDS

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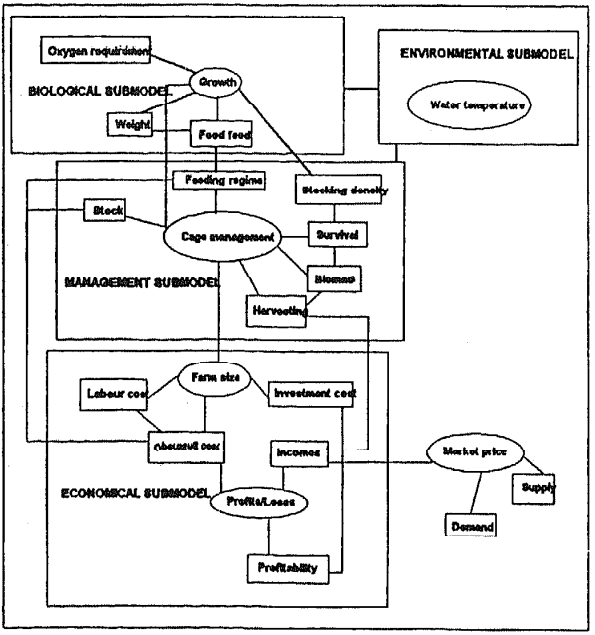
A bioeconomical model was developed to assess the production of gilthead seabream in floating, off-shore cages at the Canary Islands. The model included four submodels: biological, environmental, managerial, and economic, and it was designed with a software for simulation in systems dynamic, using the Euler integration method with daily time-intervals. Net Present Value (NPV) and Internal Rate of Return (IRR) were used as economical indexes of profitability.

Results presented here include the simulation of different feeding regimes, stocking densities, and variations in water temperature, for an average production of 600 Mt per year and two market sizes: 400 g and 700 g, representing 80% and 20% of the farm product, respectively.

The study of different feeding regimes showed that the economical optimum level coincided with that recommended by commercial feed producers in there provided feeding tables. An increase of 20% in the amount od food offered to the fish with respect to this feeding regime (as a common practice by farmers) resulted in an increase in the average production cost of 0.13 $ dollars per Kg, by increasing the food conversion ratios (FCR). On the contrary, levels below this optimum resulted in decreased profitability.



Both NPV and IRR values increased almost linearly with the increase of the average final stocking density, showing the benefit of farms in the Canary Islands with respect to those at the Mediterranean region, where values rarely are higher than 15 Kg/m^3.

An increase in 1°C in the water temperature during one year cycle resulted in decreased average production costs and substantial increased profitability.