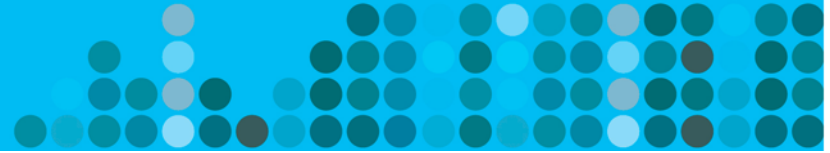


Economic Decision Tools for Sea Cucumber: Hatchery, Nursery and Growout

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Economic Decision Tools



Purpose:

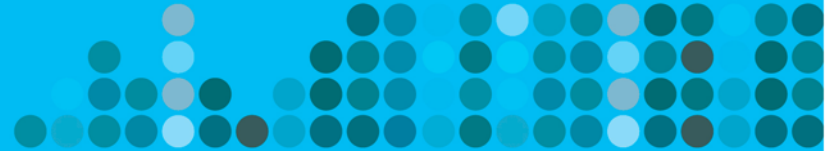
Provide the framework to assess the capital required, operating costs involved, the labour input and the profit margins given an identified level of risk (such as the likelihood of crop damage by cyclones, or fluctuations in market price).

- Assess changes in profitability caused by changes in the cost of feed, labour, electricity, packaging and transport .
- Evaluate the economic effects of improvements in yield, future development plans, or a change in production efficiency.
- Assess impacts such as disease, climate and market prices (externalities) that may influence profitability through risk analysis.

Economic Basis: Whole farm budget over 20 years

A whole farm budget is a planning tool which sets out the potential consequences of a plan that has been worked out for the farm as a complete business. The whole farm budget projects total production and income, and incorporates all capital, fixed and variable costs.

Discounted cash flow analysis is used to determine the annual cost structure and the likely profitability. Discounting reduces future costs or benefits to an equivalent amount in today's dollars



Current Range of Models

1. Hatchery Model (includes nursery phase post-hatchery)
2. Pond Production Model (includes nursery phase pre-grow out)
3. Sea Ranching Model (includes nursery phase pre-release)
4. Vietnamese Pond Production Model

Economic Indicators



NPV

The NPV is the difference between the present value of cash inflows and the present value of cash outflows over the life (20 years) of the project. If the NPV is positive the project is likely to be profitable.

Equivalent Annual Return

When the NPV is converted to a yearly figure it becomes annualised. It is a measure of annual profit after deducting capital, operating and labour costs generated over the life of the project expressed in today's dollars.

Payback Period

The year in which the cash flow rises above zero is considered the payback period. It is a measure of the attractiveness of a project from the viewpoint of financial risk. Other things being equal, the project with the shortest payback period would be preferred.

Internal Rate of Return

The discount rate at which the project has an NPV of zero is called the internal rate of return. The IRR represents the maximum rate of interest that could be paid on all capital invested in the project.

Risk Analysis



- Since the development of agriculture farmers have tried to find ways of reducing risk by exerting better control over production processes, yet risk remains an inevitable feature of the decision making process.
- Decision making under certainty is straightforward and leads to the optimal solution (maximum profit) - Decision making under risk requires more information.
- Risk and uncertainty are features of most business activities and needs to be understood to ensure rational investment decisions.
 - **What are the risks (cyclones, floods, disease, theft, market fluctuations etc.)?**
 - **How often do they occur?**
 - **Consider both price risk and production risk in determining profitability.**