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# Economic analysis of tiger grouper *Epinephelus fuscoguttatus* and humpback grouper *Cromileptes altivelis* commercial cage culture in Indonesia

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## Abstract

This study presents an economic analysis of tiger and humpback grouper at different production scales in Indonesia. The results highlight the non-viability of small-scale tiger grouper farming, with a 5-year projected negative cumulative cash flow of –IDR 18,102,650.00 and a negative net present value (NPV) of –IDR 22,059,576.28. An increased production scale of tiger grouper highlights a marginal viability for medium-scale farms (with a 5-year projected cumulative cash flow of IDR 198,320,673.00, a positive NPV of IDR 105,578,440.42; a benefit cost ratio of 1.25; an internal rate of return (IRR) of 88% and a payback period of

0.99 years), and an economically viable large-scale cage culture (with a 5-year projected cumulative cash of IDR 707,746,923.00; a NPV of IDR 406,801,749.07; a benefit cost ratio of 1.33; an internal rate of return of 157%; and a payback period of 0.57 years). The economic analysis of humpback grouper at different production scales highlighted a positive cumulative cash and NPV, a benefit cost ratio over 2, an internal rate of return over 300% and a payback period <1 year. A sensitivity analysis revealed that increased survival rate up to 80% would increase cumulative cash and NPV of small-scale tiger grouper cage culture. Additionally, improved profitability performance was associated with decreasing major production costs, increasing production and price of the product.

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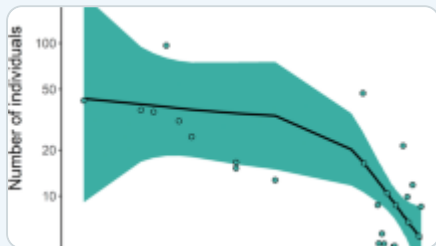
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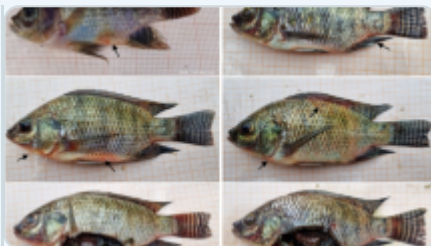
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## References

Bombero-Tuburan I, Coniza EB, Rodriguez EM, Agbayabu RF (2001) Culture and economics of wild grouper (*Epinephelus coioides*) using three feed types in ponds. *Aquaculture* 201:229-240

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Chou R, Lee HB (1997) Commercial marine fish farming in Singapore. *Aquacult Res* 28:767-776

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Chou R, Wong FJ (1985) Preliminary observation on the growth and dietary performance of grouper, *Epinephelus tauvina* (Forsk.) in floating net cages and fed dry pelleted diet from autofeeds. Singapore J. Primary Ind. 13:84–91

[Google Scholar](#)

DGA (2001) Grow-out of humpback (*Cromileptes altivelis*) and tiger (*Epinephelus fuscogutattus*) grouper in net floating cage. Lampung sea farming centre, Directorate general of aquaculture (DGA), Marine and Fisheries Department of Indonesia, Jakarta

[Google Scholar](#)

DGA (2006) Indonesia aquaculture statistic 2005. Directorate general of aquaculture (DGA), Marine and Fisheries Department of Indonesia, Jakarta

[Google Scholar](#)

DGA (2007) Best management practices application in tiger shrimp (*Penaeus monodon* Fabricius) intensive farming. Jepara Brackish water centre, Directorate general of aquaculture (DGA), Marine and Fisheries Department of Indonesia, Jakarta

[Google Scholar](#)

Dwijanti R (2004) Tiger prawn (*Penaeus monodon* L.) brackish water projects feasibility analysis in the frame work of costal area development in purworejo regency. Dissertation, Bogor Institute of Agriculture, Indonesia

FAO (2003) FISHSTAT plus 2.3. <http://www.Fao.org/fi/statis/fispft/fishplus.asp/>. Cited Jan 2009

Gittinger JP (1982) Economic analysis of agricultural Project, 2nd edn. The John

Heemstra PC, Randall JE (1993) Groupers of the world. FAO species catalogue. FAO Fisheries synopsis no. 125, vol 16. Food and Agriculture Organization, Rome

Kawahara S, Ismi S (2003) Grouper seed production statistics in Indonesia 1999–2002. Research Institute for marine aquaculture-Gondol in cooperation with institute for the Lampung marine aquaculture development and the Situbondo brackish water aquaculture development, Department of Marine Affairs and Fisheries, Indonesia

Larson KD, Wild JJ, Chiappetta B (2002) Fundamental accounting principles, 16th edn. McGraw-Hill Irwin, USA

Leong TS (1997) Management of marine finfish disease in Malaysia. Paper presented at a seminar on sustainable development of mariculture industry in Malaysia, 30–31 July, 1997, Kuala Lumpur, Malaysia

Manadiyanto ZN, Purnomo AH, Pranowo SA, Azizi TA (2002) Development grouper model centre at Batam Riau. Research Centre for Product Processing and Social Economic Marine and Fisheries Department, Jakarta

Marte CL (2003) Larviculture of marine species in Southeast Asia: current research and industry prospect. Aquaculture 227:293–304

Petty JW, Peacock R, Martin P, Burrow M, Keown AJ, Scott DF, Martin JD (1996) Basic financial management. Prentice Hall, Sydney

[Google Scholar](#)

Pomeroy RS, Agbayani R, Duray M, Toledo J, Qunitio G (2004) The financial feasibility of small scale grouper aquaculture in the Philippines. Aquaculture Economics and Management 8:61-83

[Article](#) [Google Scholar](#)

Pomeroy RS, Parks JE, Balboa CM (2006) Farming the reef: is aquaculture a solution for reducing fishing pressure on coral reef? Marine Policy 30:111-130

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Rimmer MA, Phillips MJ, Sim SY (2005) Aquaculture of groupers in Asia and the Pacific. In: Johnston B, Yeeting B (eds) Economics and marketing of the live reef fish trade in Asia Pacific, proceeding of workshop, Noumea, New Caledonia, 2-4 March 2005, ACIAR working paper no. 60

Sadovy Y (2000) Regional survey for fry/fingerling supply and current practices for grouper mariculture: evaluating current status and long-term prospects for grouper mariculture in South East Asia. Final report to the Collaboration APEC grouper research and development network (FWG 01/99)

Sadovy YJ, Lau PPF (2002) Prospect and problems for marine culture in Hong Kong. Aquaculture Economic and Management 6(3/4):177-190

[Article](#) [Google Scholar](#)

Sadovy YJ, Donaldson TJ, Graham TR, Mc Gilvray F, Muldoon GJ, Phillipps MJ,

Rimmer MA, Smith A, Yeeting B (2003) While stock last: the live reed food fish trade. ADB pacific studies series. Asian Development Bank, Manila

[Google Scholar](#)

Shang YC (1990) Aquaculture economic analysis: an introduction. World Aquaculture Society, Baton Rouge, LA

[Google Scholar](#)

Shapiro AC (2005) Capital budgeting and investment analysis. Pearson Prentice Hall, New Jersey

[Google Scholar](#)

Sheriff N (2004) Fisher livelihoods in southern Thailand: sustainability and the role of grouper culture. Dissertation, Stirling University, UK

Sih YS (2006) Grouper aquaculture in three Asian countries: farming and economic aspect. Dissertation, Deakin University, Australia

Sim SY, Rimmer MA, Toledo JD, Sugama K, Rumengan I, William KC, Phillips MJ (2005) A Practical guide to feeds and feed management for cultured grouper. NACA, Bangkok

[Google Scholar](#)

Sugama K (2003) Indonesia focuses on groupers. Aquaculture Asia Magazine VIII(2), April-June 2003

Tacon AGJ, Rausin N, Kadari M, Cornelis P (1991) The food and feeding of tropical marine fishes in floating net cages: Asian seabass, *Lates calcarifer* (Bloch), and brown-spotted grouper, *Epinephelis tauvina* (Forskal). Aquac Fish Manag 22:165-182

Wu RSS, Lam KS, Mackay CW, Lau TS, Yam V (1994) Impact of marine fish farming on water quality and bottom sediment: a case study in the sub tropical environment. *Mar Environ Res* 38:115–145

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Yashiro R, Vatanakul V, Panichsuke P (1999) Status of grouper culture in Thailand. In: Report of the APEC/NACA cooperative grouper aquaculture workshop Hat Yai, Thailand, 7–9 April 1999, pp 27–35. Collaborative APEC Grouper Research and Development Network (FWG 01/99). Network of Aquaculture Centres in Asia Pacific, Bangkok, Thailand

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