

**ECONOMIC PROFITABILITY ON THE USE OF AQUASHADE ON THE SEED
PRODUCTION OF NILE TILAPIA (*Oreochromis niloticus* L.)**

by

CARLO D. DOCTOLERO

An undergraduate thesis outline submitted to the faculty of College of Fisheries
in partial fulfilment of the requirements for the degree of

BACHELOR OF SCIENCE IN FISHERIES

**COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueve Ecija
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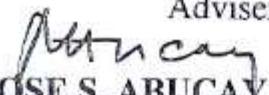
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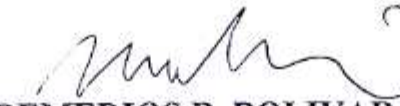
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ECONOMIC PROFITABILITY ON THE USE OF AQUASHADE ON THE SEED PRODUCTION OF NILE TILAPIA (*Oreochromis niloticus* L.)^{1/}

ABSTRACT

The study evaluated the capital cost, operating cost and return of investment of varying level of greenhouse net shading capacity as top cover to 200 m² ponds. The economic profitability of 40, 60 and 80% greenhouse net shading capacity were analyzed for the reason that it affects the seed production of Nile tilapia during hot season (April to July). Some assumptions were introduced, since the data used in this study were generated from a research project so the data were not intended for a commercial production of aquashading.

The estimated assumption for capital cost and operating costs calculated in each net shading capacity were all similar, the only variation for the total cost was the purchase price of greenhouse net.

The total cost of production for each shading capacity in terms of yearly enterprise budget is presented. However, the calculated return of investment of aquashading for 40% and 60% net shading capacity will take more than eight production cycles which exceeded the duration of production (5 production cycles per year).

The 80% net shading capacity attained to cover all the total cost for 3.01 production cycles. This net shading capacity also obtained the highest fry production so it makes it more economical than the other shading capacity in a commercial production setting.

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LITERATURE CITED

- Adey, A.S., H. Abba, M. Benabid, N. Gmira and M. Droussi. 2015. Influence of temperature on breeding of tilapia (*Oreochromis niloticus*) in the station of fish farming of Deroua, Beni Mellal/ Morocco. International Research Journal of Biological Sciences, 4(4): 1-5.
- Appiah-kubi, F. 2012. An Economic analysis of the use of recirculating aquaculture systems in the Production of tilapia. Department of Animal and Aquacultural Science, Norwegian University of Life Science. As, Norway. 40p.
- De Silva, M.P.K.S.K., W.A.R.K. Senaarachchi and N.P.P. Liyanage. 2015. Establishment and efficiency evaluation of a simple mini hatchery for production of *Oreochromis niloticus* (GIFT strain) seeds. Ruhuna Journal of Science, 6: 1-12.
- Engle, C.R. and I. Neira. 2005. Tilapia farm business management and economics. Aquaculture/Fisheries Center. University of Arkansas at Pine Bluff Pine Bluff, Arkansas. 41 p.
- Faruk, M.A.R., M.I. Mausumi, I.Z. Anka and M.M. Hasan. 2012. Effects of temperature on the egg production and growth of monosex Nile tilapia (*Oreochromis niloticus*) fry. Bangladesh Research Publications Journal, 7(4): 367-377.
- Gupta, M.V. and B.O. Acosta. 2004. A review of global tilapia farming practices. WorldFish Center, Penang, Malaysia. p. 7-16.
- Heath, B. 2005. Geoduck aquaculture: estimated costs and returns for sub-tidal culture in B.C. aquaculture. Factsheet No. 05-01. British Columbia Ministry of Agriculture and Land. Courtenay, B.C., Canada. 8 p.
- Irz, X and J.R. Stevenson. 2012. Efficiency and farm size in Phillipine aquaculture. Analysis in a ray production frontier framework. Bio-based and applied economics 1(2):175-198
- Kurbis, G. 2000. An economic analysis of tilapia production by small-scale farmers in rural Honduras. MSC Thesis. Department of Agricultural Economics and Farm Management, University of Manitoba. Winnipeg, Manitoba. 102 p.
- Lopez, N.A. 2006. Sustainable development and trends in the Philippine aquaculture. Retrieved from www.agnet.org/htmlarea_file/activities/20110719101541/11.pdf on November 5, 2016.

- Mirea, C., V. Cristea, I.R. Grecu and L. Dediu. 2013. Influence of different water temperature on intensive growth performance of Nile tilapia (*Oreochromis niloticus*, Linnaeus 1758) in a recirculating aquaculture system. *Lucrări Științifice-Seria Zootehnie*, 60: 227-231.
- Mjoun, K. and K.A. Rosentrater. 2010. Tilapia: environmental biology and nutritional requirements. Retrieved from http://pubstorage.sdstate.edu/agBio_publications/articles/Fs963-02.pdf on November 5, 2016.
- Mwangi, M.H. and J. Thordason. 2007. A comparative economic evaluation of farming of three important aquaculture species in Kenya. Retrieved from www.unuftp.is/static/fellows/document/henry07prfi.pdf on May 5, 2016.
- Ogira, P.G., D. Liti and J. Wanga. 2014. Effects of temperature on embryonic development. *International Journal of Science and Research*, 3(9): 321-323.
- Olagunju, F.I., I.O. Adesiyun and A.A. Ezekiel. 2007. Economic viability of catfish production in Oyo State, Nigeria. *J. Hum. Ecol.*, 21(2): 121-124.
- Olasunkanmi, J.B. 2012. Economic analysis of fish farming in Osun State, South-Western Nigeria. Retrieved from <https://ir.library.oregonstate.edu/xmlui/handle/1957/35912> on January 30, 2017.
- Popma, T. and M. Michael. 1999. Tilapia life history and biology. SRAC Publication No. 283. Stoneville, Mississippi. p. 1-4.
- Pomeroy, R. Undated. Financial management (A fact sheet for connecticut fishermen). Retrieved from media.ctseagrant.uconn.edu/publications/aquaculture/finmgmt.pdf on June 21, 2017.
- Romana-Eguia, M.R., M.A. Laron and M.R. Catacutan. 2013. On-farm feed management practices for Nile Tilapia (*Oreochromis niloticus*) in the Philippines. Fisheries and Aquaculture Technical Paper No. 583. Rome, FAO. p. 131-158.
- Toma, N.I., M. Mohiuddin, M.S. Alam and M.M. Suravi. 2015. An economic study of small-scale tilapia fish farming in Mymensingh District of Bangladesh. *Journal of Agricultural Economics and Rural Development*, 2(3): 050-053.
- Tunde, A.B., M.P. Kuton, A.A. Oladipo and L.H. Olasunkanmi. 2015. Economic analyze of costs and return of fish farming in Saki-Eastl local Government Area of Oyo State, Nigeria. *Journal on Aquaculture Research and Development*, 6(2): 1-5.