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Authors: Roel H. Bosma, Lysette Lacambra, Ynze Landstra, Chiara Perini, Joline Poulie, Marie J. Schwaner, Yi Yin



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The financial feasibility of producing fish and vegetables through aquaponics

Roel H. Bosma^{a,*}, Lysette Lacambra^{b,1}, Ynze Landstra^{c,2}, Chiara Perini^{b,3}, Joline Poulie^{d,4}, Marie J. Schwaner^{d,5}, Yi Yin^{b,6}

^a *Aquaculture & Fisheries group, Animal Science Group, Wageningen University & Research (WUR), Post Office Box 338, 6700AH Wageningen The Netherlands. roel.bosma@wur.nl; roel.bosma@xs4all.nl; Telephone +31 317 483861; Fax +31 317 483861*

^b *Plant Sciences, Wageningen University & Research*

^c *Environmental Economics & Natural Resources, Wageningen University & Research*

^d *Animal Sciences, Wageningen University & Research.*

Current institutions and addresses:

¹ *East-West Seed Knowledge Transfer, Chiang Mai, 50290 Thailand; lysette_lacambra@yahoo.com*

² *Friesland-Campina, Bronland 20, 6708 WH Wageningen, The Netherlands; Vinkenburgstraat 160, 3512 AB Utrecht, The Netherlands; ynzelandstra@hotmail.com.*

³ *Agroservice s.r.l., Cormano, Italy; .chiaram.perini@gmail.com*

⁴ *Van der Waalsstraat 16 2, 6706 JN Wageningen, The Netherlands; jolinepoulie@hotmail.com*

⁵ *Department of Biological Sciences, University of Idaho, Moscow, ID, USA; janneke.schwane@gmail.com*

⁶ *Rixin Road 1533, Kunming, Yunnan, China 650000; yin.yi.cg@outlook.com*

Abstract

Aquaponics, producing fish and vegetables in a closed-loop water system, reduces fertilizer use and water discharge, and is therefore promoted as a sustainable venture. A recent global study found that the majority of 257 surveyed aquaponics farms made losses, but the reasons have been poorly analyzed. Based upon grey literature and a post-hoc cost-benefit analysis for an investment in an aquaponics farm in the Philippines, this paper aims to assess the factors contributing to an appropriate level of returns. In the Philippines, vegetables are relatively well-priced, but if catfish were produced, a venture producing 1250 kg fish, 6000 kg lettuce, and 300 kg tomato per year would have a Net-Benefit-Cost Ratio of below 1.3 after 20 years. This ratio should be higher when one considers the risks against which a farmer cannot and should not insure its production, as argued in the paper. Depending on the species of both fish and vegetables, the quantity of nutrients coming from the former component imposes a fish volume : vegetable area ratio ranging from 1:30 to 1:100, thus the quantity of marketable fresh vegetables determines the size of an aquaponics enterprise. As a consequence, the investments in the fish component are relatively high and weigh heavily on the financial balance. For producers to successfully adopt aquaponics, they need to consider starting first with catfish, and then, as they get to master the system's management, they can shift to a high-value fish species for niche markets.

Keywords: Aquaponics, Cost-Benefit-Analysis, Catfish, Seabass, Vegetables.

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