

# The Impact of Aquaculture Field School Training on the Shrimp and Milkfish Yields, and Income of Farmers in Demak, Central Java.

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## Abstract

Indonesian traditional farmers of milkfish and shrimp occupy 80% of its shrimp production potential, but produce only 10% of its shrimp. These farm households make about 1,500 USD yr<sup>-1</sup>. Many of these farmers cleared mangrove forest almost up to the coastline, thus reducing sedimentation and increasing exposure to coastal abrasion. In 2016-18, to support the recovery of mangroves near ten coastal villages of Demak district (Central Java), the Building with Nature project implemented an aquaculture field school training for farmers who practiced traditional shrimp and milkfish production (Brown & Fadillah, 2013). Farmers went through 16 training days on Low External Input Sustainable Aquaculture (LEISA). To improve water quality, they were taught how to produce and apply on-farm liquid compost in the bottom of their ponds. The yields of 277 participants were monitored by the project. However, we only used 125 completed records over 2017 and 2018 for calculations. To assess the financial results, we selected, from among those trained in 2016, 18 farmers from three villages.

Among the 125 farmers, 85% of those who applied LEISA had their shrimp yields tripled compared to a baseline of 2015 (Ariyati et al., 2016). Among the 14 farmers, who provided all data during one or two full year, 60% adopted LEISA. The participants adopting LEISA significantly increased their gross margins due to higher yields: triple for milkfish and five-fold for shrimp, and higher operational cost. The training did cost 1,000 USD per farmer; the rate of return of the aquaculture field school at project level was 1.2, but for the sample this rate was 3.5, indicating space for enhancement of farmers' skills by post-training activities. Moreover, the study found that smaller ponds generated higher yields and gross margins for the farmers. The results show that Indonesian aquaculture production can increase by about 30% at low risk by training shrimp/milkfish farmers at low cost in aquaculture field schools. To improve their income, farmers could reduce their pond size without affecting their gross margins and restore part of the mangrove greenbelt (Bosma et al., 2012 & 2014).

Figure 1: Demonstration on pond water quality at the field school.

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