

**FIELD PRACTICE REPORT ON THE FEED DEVELOPMENT USING FERMENTED
GROUND MANGO PEEL FOR NILE TILAPIA (*Oreochromis niloticus* L.) AT THE
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER-
AQUACULTURE DEPARTMENT (SEAFDEC-AQD)
BINANGONAN FRESHWATER STATION (BFS)
BINANGONAN, RIZAL**

by

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COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija
Philippines**

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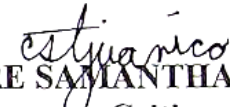
**Undergraduate Field Practice Report presented to the faculty
of College of Fisheries, Central Luzon State University
in partial fulfillment of requirements for the degree**


of

BACHELOR OF SCIENCE IN FISHERIES

Approved:

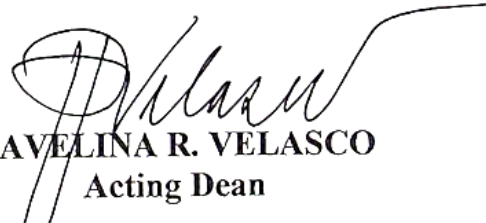

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EXECUTIVE SUMMARY

The field practice was carried out in the Nutrition and Feed Development/Natural Food Section of the Binangonan Freshwater Station (BFS), Southeast Asian Fisheries Development Center-Aquaculture Department (SEAFDEC-AQD) from June 13, 2016 to July 25, 2016.

The station was headed by Dr. Ma. Lourdes Aralar. The research studies at the BFS focus on giant freshwater prawn (*Macrobrachium rosenbergii*), bighead carp (*Aristichthys nobilis*), Asian catfish (*Clarias macrocephalus*), Nile tilapia (*Oreochromis niloticus*), red tilapia (*Oreochromis* spp.), silver therapon (*Leipotherapon plumbeus*) and mud crab (*Scylla serrata*).

The activities undertaken included drying and grinding of mango peels, preparation of fermented ground mango peel, preparation of feeds with fermented ground mango peel, monitoring of water quality, feeding of tilapia, incubation of tilapia eggs and counting of tilapia fry. Induced-spawning of silver therapon and natural food production were also part of the activities done in the station.

The strengths of the station include farm-friendly facilities, training, and research accomplishments. The weaknesses of the station are limited number of staffs, absence of assigned boat in case of emergency and lack of water quality monitoring equipment.

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LITERATURE CITED

Bureau of Agricultural Statistics, Department of Agriculture., (2006). Fisheries statistics of the Philippines. Retrieved from <http://www.psa.gov.ph> on January 25, 2018.

Bureau of Fisheries and Aquatic Resources, (2014). Philippine Fisheries Profile 2014. Retrieved from <http://www.bfar.da.gov.ph> on January 25, 2018.

Loosli J.K., McDonald, Ian W., (1968). Nonprotein nitrogen in the nutrition of ruminants. Retrieved from <http://http://www.fao.org/docrep/004/AC149E/AC149E01.htm> on November 22, 2017.

Naylor, L., Burke, M., (2005). Aquaculture and ocean resources: raising tigers of the sea. Annual Review of Environmental Resources, 4: 269-274.

Popma, T.J., Lovshin L.L., (1996). Worldwide prospects for commercial production of tilapia. Retrieved from <http://www.aces.edu> on March 28, 2017.

<http://www.adb.org/> (accessed 25 January 2018)

<http://www.fao.org/> (accessed 4 August 2017)

<http://www.seafdec.org.ph/> (accessed 4 August 2017)