

GRADUATE SCHOOL




I.5.1. Instructional Materials Development;

Master of Science in Animal Science

I.5.1. Instructional Materials Development;

The project on Developing Halal Curriculum enabled the crafting of the instructional material entitled- Module 4: Halal Aquaculture. In the same project, this Module was used in the lecture for Halal Curriculum under the said Module.

Module 4- Halal Aquaculture Production 1



MODULE 4
Halal Aquaculture
(Tilapia and Milkfish)
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*Image Source: Hatchery International- HatcheryInternational.com

أجل لكم صيد البحر وطعامه متاعا لكم وللمسافرين وخرم عليكم صيد البر ما
دُمتم خرمًا واقولوا الله الذي إليه تحضرون

It made lawful for you game (of) the sea and its food (as) provision for you and for the travelers, and is made unlawful on you game (of) the land as long as you (are in) Ihram, and be conscious (of) Allah the One to Him you will be gathered.
Surah Al Ma'ida (5:96)

1. Overview

This module aims to provide the students with basic knowledge as well as comprehensive understanding in the science of halal fish production related to *Halal*, *Haram* and *shubha* in the modern times. This module highlights two main fish commodities divided in two lessons particularly on tilapia (*Oreochromis*

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niloticus) and milkfish (*Chanos chanos*). It is the goal of this module to elaborate on the good production practices of fish production in larval rearing and grow-out stage of fish culture with emphasis to tilapia and milkfish. Whereby, this module is created pursuant to Republic Act 10817, the Philippine Halal Export Development and Promotion Act, in compliance to Philippine National Standards for Halal Agriculture and Fisheries products (PNS/ BAFS 101: 2016), and other PNS guidelines encompassing Halal quality standards applicable to aquaculture.

2. Intended Learning Outcomes (ILOs)

At the end of this module, you will be able to:

2.1 Identify and distinguish good production practices for halal fish production.
2.2 Understand the science behind halal fish production

3. Pre-test

A baseline activity in a form of pre-test will be conducted to determine prior knowledge of the students on aquaculture and halal-based fish production before it started the lecture.

Also, another activity will be allotted for definition of terms and basic aquaculture concept and commonly used terms to facilitate smooth conduct of lectures.

4. Lecture

The lecture is divided into three main lessons and each lesson with the following subtopics:


- LESSON 1: Importance and Prospects of Producing Aquaculture Products for the Halal Industry
 - o Aquaculture and Halal
 - o Is fish considered Halal?
 - o What are the quality management systems for halal acceptability of aquatic products?
 - o Halal via Aquaculture
- LESSON 2: Halal Tilapia Production
 - o Tilapia Hatchery Production
 - A. Seed stock
 - B. Breeding
 - C. Natural Food Production
 - D. Hatching
 - E. Larval Rearing

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a. Stocking
b. Feeding
c. Water quality management
F. Grow-out Stage via Hatchery Production

- o Tilapia Pond Production
 - A. Seed stock and Breeding
 - B. Natural Food Production
 - C. Stocking
 - D. Pond Management
 - E. Feeding
 - F. Harvesting
- o Technologies for Tilapia Inland Production
- LESSON 3: Halal Milkfish Production
 - o Milkfish Hatchery Production
 - A. Seed stock
 - B. Hatching
 - C. Natural Food Production
 - D. Larval Rearing
 - a. Stocking
 - b. Feeding
 - c. Water Quality management
 - o Milkfish Pond Production
 - A. Pond Preparation
 - B. Pond Design and Lay-out
 - a. Modular
 - b. Multi-stock Harvest
 - C. Pond Compartments for Grow-out Stages
 - a. Nursery Pond
 - b. Transition Pond
 - c. Rearing Ponds
 - d. Catching Ponds
 - e. Accessory Ponds/ Facilities
 - D. Feeding
 - E. Water Quality Management
 - F. Harvesting
 - o Technologies for Milkfish Inland Production

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LESSON 1
Importance and Prospects of Producing
Aquaculture Products for the Halal Industry

*Image Source: Aquaculture DIGEST- WordPress.com

Introduction

In the latest fisheries situationer report, aquaculture production exceeded both municipal and commercial fisheries production (Table 1). This trend has been observed in the previous years with the continued decline in fish capture despite regulatory actions. On the other hand, aquaculture has been fast growing as a result of different research and development efforts as well as technology adapters opting to invest in this industry. Thus, it has been predicted that aquaculture is the next big thing as a solution for food security.



LESSON 2 Halal Tilapia Production

* Image Source: The Philippine Post

Introduction

Tilapia is the generic name of a group of cichlids endemic to Africa. Since its introduction in the country, farmers have opted for culturing tilapia in ponds and cages. Today, all commercially important tilapia outside of Africa belong to the genus *Oreochromis*, and more than 90% of all commercially farmed tilapia outside of Africa are Nile tilapia (*Oreochromis niloticus*). In the Philippines, *Oreochromis* constitutes to the genera that is widely cultivated in fish culture particularly *Oreochromis niloticus* (Nile Tilapia) locally known as "tilapia" or "ple-ple". The positive characteristics of Tilapia served as advantage in production particularly its fast growth and high survival rate when reared in controlled condition among other kinds of tilapia. This is why the *niloticus* has become very popular among fish farmers in the Philippines. Tilapia production in the country has continued to increase in production since 2002.



LESSON 3 Halal Milkfish Production

*Image source: aboutfilipinofood.com/bangus

Introduction

The milkfish is the most important fish species being farmed in the Philippines mainly because of its economic value in the local and export market. It is cultivated in freshwater, brackishwater and marine environments. Locally known as *bangus* or *bangrus*, milkfish is a primary marketable food. Local terms have also been assigned in various stages. For instance, the fry stage is called "*kawag-kawag*" and the breeders are called *sabalo*. Pangasinan has been dubbed as the "bangus capital of the Philippines" because they provide the highest production of milkfish by volume and value. Milkfish is basically marine in nature but it can also grow in freshwater environment but high quality harvest is found in brackishwater ponds and cages. This is because the water quality and salinity in this area supports optimum growth of milkfish. Milkfish reared in freshwater ponds may be smaller in weight and size however it becomes more suitable and easier for fish processing products such as canned milkfish. Milkfish processing opens to many opportunities when it comes to home-based enterprise.



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