

Creating initial materials for Red Tilapia (*Oreochromis spp*) seed selection

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Introduction

Tilapia:

- Common name for all the fish under *Cichlidae* family.
- 3 main species are based on the breeding and juveniles feeding characteristics (Beveridge and et all., 2000), i.e:
  - *Tilapia*
  - *Sarotherodon*
  - *Oreochromis*
- Nile Tilapia *(O. niloticus)* is the most popular farmed specie.

Introduction (cont.)

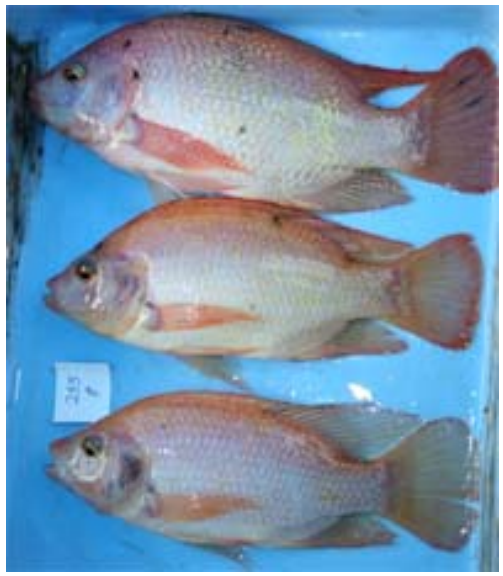
Red Tilapia:

- Being hybrid the first time in Taiwan, Israel and Florida (USA)
- **Hybrid slecies** of:
  - Black mutant-coloured Tilapia (*O. mossambicus)*
  - Nile Tilapia (*O. niloticus)*
  - Green Tilapia (*O. aureus)* and Zanzibar Tilapia (*O. urolepis-horonum)*

  (Lovshin, 2000)
- Popularly farmed in Asia, Middle America, and South America.

Introduction (cont.)

- Colors: grey, white, pink, red-orange, and can be mixed with black dots (Pante and et all., 1988)
- The combined color is made of the following factors:
  - Color of scale
  - Color of skin
  - Color of flesh muscle
- Main colors found in Vietnam:
  - Red or pink
  - Light pink
  - Mixed with black dots
  - Mixed of red/dark and light pink



Different colors of red Tilapia

Different colors of red Tilapia

Different colors of red Tilapia

Appearance and biology

- Appearance: is not different from Nile Tilapia in terms of form criteria (Pante and et all., 1988)
- Similar characteristics in growing and breeding as Nile Tilapia
- Red Tilapia has a better **salinity tolerance**, therefore it can live and **grow well** in **marine and brackish** water (**15 – 25ppt or even higher**) (Romana-Eugia and Eguia, 1999).

Red Tilapia in the Mekong Delta Area

- Red Tilapia (*O.* Spp): is a popular farmed specie in the East Southern and the Mekong Delta Areas.
- It can adapt well with the industrial farming models, i.e.:
  - Raft culture
  - Pen culture
  - Pond culture

Current status

- **Growth rate is not high**: the average weight after 6 months of raft reached 500g/individual (equal to only 80% of GIFT Tilapia).
- **Low survival rate**: it is to get diseases, high percentage of loss.
- **Color**: not homogenuous, but mixed with black dots. Tilapia with solely red/pink color is preferred and can be sold at a higher price.

Solutions

- Seed selection is based on quantitative genetic theory
- The following seed selection programs are being carried out by RIA II:
  - Tra catfish (growth rate, fillet ratio)
  - GIFT Tilapia (growth rate)
  - Green giant prawn (growth rate)
- RIA II, in cooperation with AKVAFORSK Genetic Center (AFGC), creates the initial population of red Tilapia as the basis for:
  - Seed selection program
  - Program of disseminating the selected seeds

Material source

- Red Tilapia seeds selected in Ecuador
- 100 families (100 children populations from 100 different broodstocks)
- F2 generation of the seed selection program carried out in 2004 in Ecuador

Material source (cont.)

The charaters selected in Ecuador:

- Good growth rate in marine and brackish water conditions (15 – 25ppt)
- Fillet ratios

Precious charaters:

- High growth rate
- High survival rate
- Low percentage of inbreeding, because of the followings:
  - Generated from all the current red Tilapia species in South America)
  - Family selection was carried out to minimize inbreeding

Current status

- 100 families of red Tilapia from Ecuador
- Received in 2 times: on Apr. 1 and May 27, 2008
- Kept separately and cultured at the Southern branch of

the National Freshwater

Fisheries Seed Center

Selection

Selection of broodstocks for the next generation:

- 500 females (+ 250 spare females)
- 250 males (+ 100 spare males)
- Good-looking red color
- The highest body weight

Magnetic marking for individual differentiating and genealogy maintaining

The selected characters for the next generation

- Growth rate:
  - Fresh water
  - Marine and brackish water
- Color
- Fillet ratio

Cooperation and development

- Experiment on growth rate of Tilapia imported from Ecuador in the farming conditions of the Mekong Delta Area:

  - Commercial raft culture in fresh water environment

  - Rotational culture in tiger shrimp ponds

- Cooperation for disseminating the selected seeds:
  - Potential partners
  - Receiving the selected seeds for production and supply to the farmers
  - Profit sharing based on the percentage of fry income from seeds

Cooperation and development (cont.)

Materials for dissemination:

High quality broodstocks obtained from:

- the remained quantity after family representatives have been sent to the selected populations for the next generation.

- the remained quantity after selecting the reserved fish for the next seed selection program.

Cooperation and development (cont.)

- Massive production of high quality reserved fish from the best families in order to create 2 different strains of blood-line.

- Strictly not to use the F1 generation of these strains as broodstocks due to high possibility of inbreeding.

- After a certain time of being used, the reserved fish will be replaced by a new ones from the the seed selection program of the Center. The new fishes have more advantages in some surveyed characters.

RIA II initiated the first seed selection program for red Tilapia in the Mekong Delta area


Thank you!