



# Seed selection of GIFT Tilapia (*Oreochromis niloticus*) in the Mekong Delta area

Southern Branch of the National Freshwater Fisheries Seed Center

Research Institute of Aquaculture II





# Origin of GIFT Tilapia

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- Originated from the seed selection program for 8 strains of Tilapia from different geographical areas:
  - 4 strains from Africa: Egypt, Kenya, Ghana, Senegal
  - 1 strain farmed in Israel
  - 3 strains farmed in Asia: Thailand, Taiwan, Singapore



# Development planning for Tilapia, period 2006 - 2015

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- View points and orientations:
  - Effective use of water surface (fresh, marine and brackish)
  - Domestic consumption and international export: aimed at domestic consumption and explored markets for export (30%)
  - Contribution to commodity diversification
  - Effective commodity production
  - Socializing development

(Source: Bach Thi Tuyet)



# Development planning for Tilapia, period 2006 - 2015

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- View points and orientations:
  - Combination with extension and intensive farming:
    - Extension to the converted and coastal areas
    - Extension of the marine and brackish water areas for the period 2010 – 2015
    - Focus on semi-intensive farming (10 – 12 tons/ha), development of intensive farming (20 – 25 tons/ha)
  - Seeds
    - Mixed and monosex
    - Reduce and not to use hormone
    - High quality seeds

(Source: Bach Thi Tuyet)

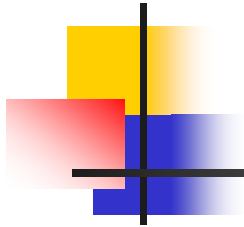


# Development planning for Tilapia, period 2006 - 2015

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- Objectives:
  - Production: 300,000 – 350,000 tons (in 2015)
  - Area: 59,150ha of farming areas
  - Export: 30% with value of 100 mill. USD
  - Domestic consumption value: 5,000 billion VND

(Source: Bach Thi Tuyet)



- Nile Tilapia *O. niloticus*
- A popular farmed specie
- The first seed selection program of GIFT Tilapia in the Mekong Delta Area
- The selected character: growth rate

# 1. Introduction

- A cooperation program among:
  - RIA II
  - World Fish Center
  - Wageningen University



## 2. Initial population

- 10<sup>th</sup> generation of selected GIFT
- WorldFish Center, Penang, Malaysia
- 1,200 individuals, 50 families
- Clear blood-line
- Marked and farmed until maturation





## 2. Initial population (cont.)

- Harvest
- Measurement of length, body weight, body height
- Estimated breeding value (EBV)
- Selection of 50 male fish and 100 female fish



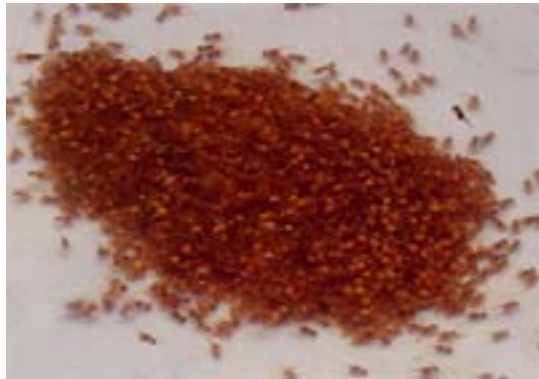
# 3. Family selection (BLUP method)

- Family crossing with GIFT method
- 1 male fish × 2 female fishes
- Production of 100 families



# 3. Family selection (BLUP method)

- Collection of eggs/fries
- Separate incubation and nursing for every family



### 3. Family selection (BLUP method)

- Random selection of 40 individuals/family
- Marking and keep altogether



## 4. Initial results

- Produced 100 families (50 couples of the same father with different mothers) in 2007 (GIFT of 11<sup>th</sup> generation)
- Marked 40 individuals/family
- Kept and farmed together



## 4. Initial results (cont.)

- Harvested in May 2008
- Identification of ID for every individual
- Measurement
- EBV of every individual



## 4. Initial results (cont.)

- The selection effectiveness was estimated to be increased 12% as compared to the controlled individuals
- Genetic coefficient ( $h^2$ ) = 0.3



## 4. Initial results (Cont.)

- Selection of broodstocks for 12<sup>th</sup> generation
- Production and nursing of 12<sup>th</sup> generation families







# Cooperation and development

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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.)

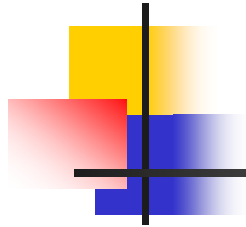
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- Massive production of high quality reserved fish from the best families in order to create 2 different strains of blood-line.
- Strictly not to use the F1 generation of these strains as broodstocks due to high possibility of inbreeding.
- After a 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.

## INITIAL PRODUCTION AND DISSEMINATION RESULTS IN 2008-2009

- 1 partner of large scale seed production
- Dissemination of 10,000 reserved broodstocks
- Production of 8 mill. high quality seeds
- Interest from clients





**Thank you  
very much!**