Enhanced Tilapia) or GIFT (Genetically Improved Farm Tilapia) in high saline environment (35ppt) as shown by series of experiments conducted by NIFTDC.

- The hybridization protocol used is novel for *O. niloticus* x *O. mossambicus* combination and maybe applicable to other fish species.
- The first phase is completed. Hybrid populations resistant to salinity are ready for the growth selection phase.

PHASE II : Selection of the fast growing character from the interspecific hybrid population.

- The selection phase is still on the process using fecundity tests to improve the growth of the hybrid population.

Development of SALINE TILAPIA MOLOBICUS

in the PHILIPPINES

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Introduction

Tilapia is one of the major foodfish species in aquaculture. It exhibits most of the desirable qualities of a good culture species such as the ability to survive and adapt to a wide range of environmental conditions including resistance to handling and diseases, efficient conversion of low protein diets, ease of breeding and high palatability.

Primarily, tilapia is cultured in freshwater ponds. Many of its species are euryhaline but with varying tolerance limits. The Mozambique or Java tilapia (*Oreochromis mossambicus*) is considered to be among the most salt tolerant of the tilapias and can grow well in ponds at salinities from 32-40 ppt. It is observed to grow better in saline media than in freshwater but it is not a

salinity tolerant hybrid conducted in freshwater (Phase 1); and the selection for growth from hybrid material conducted in brackishwater (Phase II).

PHASE I : Creation of an artificial pool of gene inside an interspecific hybrid population which can tolerate high levels of salinity.

- Breeders of *O. niloticus* and *O. mossambicus* were collected, selected and managed in concrete tanks.
- Cross breeding and backcrossing was done to combine the wanted characters of *O. niloticus* (fast growth) and *O. mossambicus* (resistance to salinity).
- The crossbreeding and backcrossing hybridization scheme led to the development of 4 hybrids named: H2NiMo, H2MoNi, H3NiMo and H3MoNi.
- The progress of salinity resistance of each generation was evaluated using short-term and long-term salinity tests. The salinity tolerance of the hybrids is comparable to *O. mossambicus.*
- Growth of the hybrids is better than GET (Genetically

high-saline brackishwater and marine areas, which are unsuitable for agricultural purposes but alternative culture areas for tilapia.

- Exposure of tilapia to salinity at early stages was found to improve its subsequent growth performance

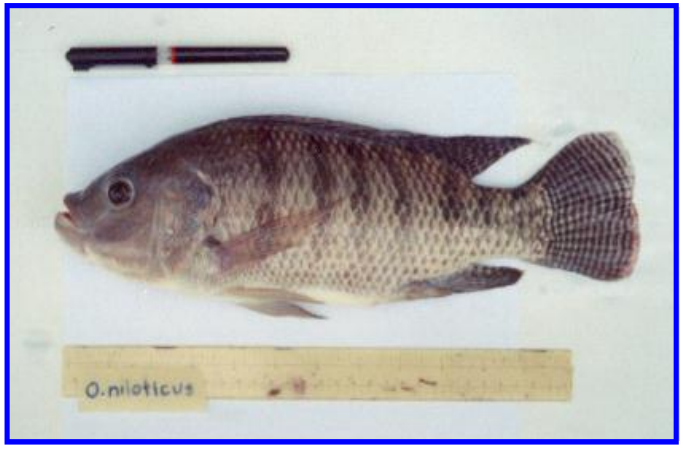
- Salinity was observed to suppress territorial aggression in tilapia.
- The flesh of tilapia reared in saline water is likely to have less off-flavor problem and lower bacterial count.

What was done?

The selection of a fast growing tilapia resistant to high salinity is being accomplished in 2 successive phases: the production of a

popular fish for culture. On the other hand, the Nile tilapia (*Oreochromis niloticus*) is widely recognized to be one of the best species of tilapia for aquaculture. It grows very fast and thrives well in many culture systems.

Considering that the culture of salinity tolerant tilapia in the coastal regions is indispensable especially for those fisherfolks engaged in brackishwater fish farming and to increase supply of affordable fish to many Filipinos, a new strain of tilapia



that grows fast in high salinity environment was developed. Named MOLOBICUS, this was done through crossbreeding and backcrossing of *O. niloticus* and *O. mossambicus*.

Why important?

The promise of reaping the advantages of developing a synthetic strain of tilapia, which can tolerate high salinity levels and grows very fast has been tremendous for several reasons:

- The strain will optimize production in more than 200,000 has. of brackishwater ponds.
- The prawn farming industry will significantly gain from the technology because the integration of tilapia in intensive prawn farming can prevent disease problems in prawns. In extensive prawn farming, the farmers recognize the contribution of tilapia in the control of Hydrilla spp (digman), which is considered a major pest.

- The culture of tilapia in high saline environment could discourage conversion of areas otherwise used for rice and crop production.
- The freshwater-based aquaculture could be limiting due to increasing demands on the use of freshwater for agricultural, industrial and domestic purposes (Suresh and Lin, 1992). Concomitant to the expansion of tilapia farming is the increased conversion of rice fields into fishponds. Similarly, lakes and other communal waters, which are being used for fish cages and pens, had reached their carrying capacities. This resulted to poor growth performance of tilapia and increased incidence of fish kills. The development of the technology and the hybrid will allow the utilization of