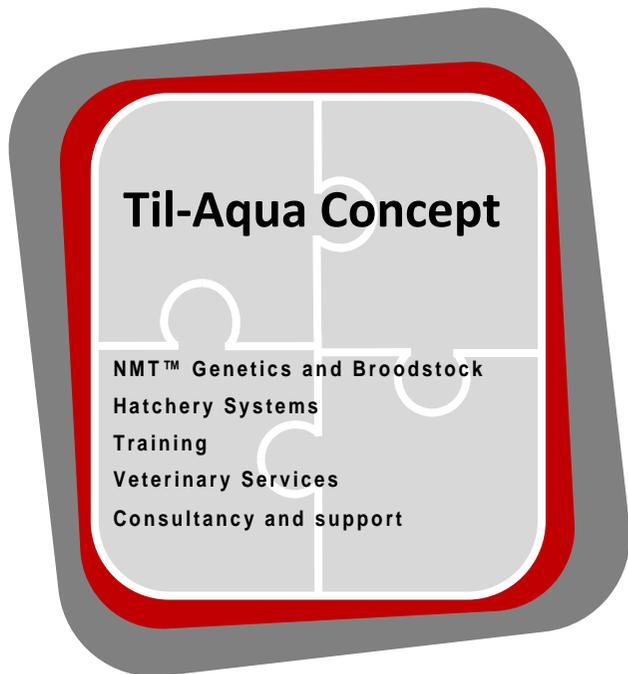


Connecting your business to the resources you need



Til-Aqua International
Tilapia Hatchery Management

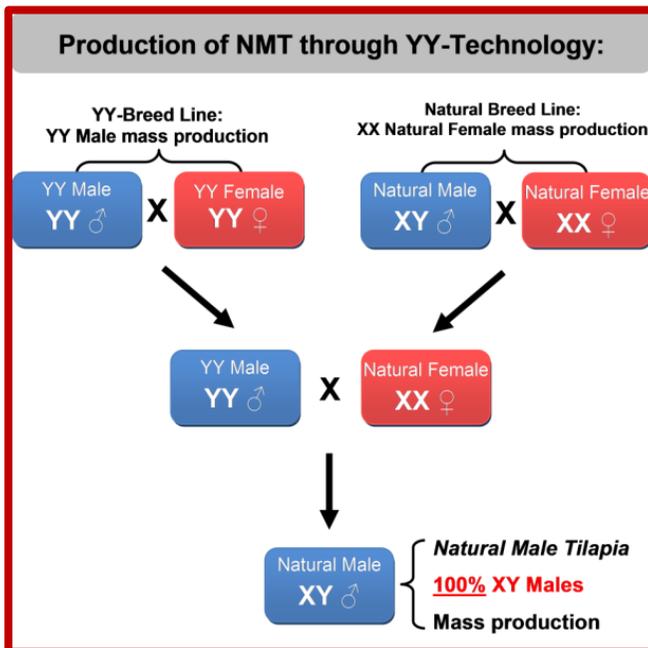
Products and Services



EASY AND EFFECTIVE

- ✓ All-male fry without intervention
- ✓ Uniform batches; constant high male ratio
- ✓ More sustainable for fish, employee and ecosystem
- ✓ Well developed immune system; stronger fry!

Technology...



...at work for you!

NMT™ Genetics

1. YY-development

Since 1996 Til-Aqua International has been working on the development of YY-males and YY-females in tilapia for the production of all-male tilapia without the use of hormones;

Natural Male Tilapia (NMT™).

2. Manual selection - YY line

In 2000, when the Til-Aqua YY line was obtained, manual selection for 100% male offspring was initiated. Each and every male and female from the YY line were crossed with respectively an XX-female or an XY-male. Only those fish that produced 100% male offspring in these crosses were kept for the Til-Aqua genetics program. This selection resulted in today's male ratio:

> 99% ♂ !!

3. Family selection - female lines

The various Til-Aqua female lines originate from two strains; Egypt and Philippine (gene pool Gift, Citralada, and more).

For improving these female lines, family selection is applied to improve growth performance and physical appearance.



4. Heterosis

The Til-Aqua YY line and the Til-Aqua female line have been completely separated from each other since the beginning. This avoids inbreeding on the NMT™ offspring and also causes a so-called heterosis effect, meaning the offspring is performing better than the average of its two parents:

1 + 1 > 2 !!

5. Other female lines

Since 2016 Til-Aqua International is testing the performance of Natural Male Tilapia offspring that is originating from breeding Til-Aqua YY males with other commercially available female lines. This has given excellent results:

Til-Aqua NMT

99% ♂ - Uniform and excellent growth

Egyptian NMT

97% ♂ - Uniform growth

Philippine NMT

96% ♂ - Excellent growth

Kenian NMT

96% ♂ - Performing well in cold conditions

GIFT NMT

98% ♂ - Excellent growth

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Products: Broodstock and Genetics

Til-Aqua Silver strain (Wildtype)



Oreochromis niloticus L.
Male line: origin Lake Manzala, Egypt
Female line: Til-Aqua gene-pool
Other female lines possible.
Fry production/set: 7,500 – 15,000*
Male-Ratio: > 99%

Til-Aqua Red strain



Oreochromis niloticus L.
Male line: origin Til-Aqua gene-pool
Female line: Stirling Red
Fry production/set: 12,500 – 17,500*
Male Ratio: > 96%

** Depending on management and environment.*

Distribution of Til-Aqua International Broodstock and Genetics:

1. YY Broodstock Sets

The Til-Aqua YY males are supplied together with the Til-Aqua female line. Since all fish are shipped as fingerlings, they need about 5 months before they reach maturity. Before the fish can be stocked for NMT™ production, the female line still requires manual selection for the females.

2. YY Broodstock Males

The Til-Aqua YY males are supplied without the Til-Aqua female line. Recommended for customers that already have a female line which they prefer to use. Easy and effective increase of male ratio and decreased transport costs compared to the YY Broodstock Sets.

3. Knowledge transfer

To improve the performance and efficiency of its customers' broodstock and genetics, Til-Aqua International is willing to share its knowledge and vast experience on various aspects:

- Setting up breeding programs to help develop genetically improved lines.
- Broodstock management Support to have a more efficient production while avoiding inbreeding.
- In exceptional cases Til-Aqua International can help a leading company to develop its own YY line.

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Services: Training

Training Program

During an intensive training program Til-Aqua International is showing how to produce high quality fingerlings. Not only theoretical knowledge will be shared, but the different procedures will also be shown in practice. All information is covered through the Til-Aqua Factsheets which are detailed information sheets on all activities and processes occurring in a hatchery. At the start of the course the participants will receive a folder containing all these Factsheets which can serve afterwards as a reference book.

Location and duration

The training program can take place at the Til-Aqua International facilities in The Netherlands (Internship), but also at the customer's site or at the facilities of a dedicated Til-Aqua International partner.

Depending on the range of information that has to be covered in the Training Program, the duration of the training program can be divided into three modules:

2 days - Nursery course: basic handling of tilapia fingerlings

5 days - Hatchery-Nursery course: complete course from spawning till grow-out

10 days - Intensive Hatchery-Nursery course: complete course from spawning till grow-out with elaborate practice and discussion. Could also be split into Internship (5 days) and onsite training (5 days).

Services: Veterinary Services

Til-Vet International

Preventing health issues is an essential subject in managing a high quality tilapia hatchery. The Til-Vet International veterinarian has the knowledge and experience to set-up sanitary and hygiene protocols. Other veterinary services include diagnostics and treatment plans; all to ensure that fish health and welfare are guaranteed. Sick or weak fish are a major threat to the performance of a tilapia farm during all stages.

Services: Consultancy and Support

Til-Aqua International is always looking to help customers -both existing and new- with developing their facilities to perform at the highest level possible. When necessary, a network of experts can be consulted for their point of view. The consultancy and support that is provided depends on the phase of development of the specific project.

Services: Research Facilities

Research activities have played a role within the development of Til-Aqua International for a long time. Therefore broad knowledge about tilapia and research is readily available and nowadays the facilities in Someren are well equipped. These facilities are opened up as Til-Aqua International is presenting itself as a reliable partner for conducting high quality research. The various possibilities and specific requests are to be discussed between Til-Aqua International and the customer.

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Products: Hatchery Systems and Equipment

1. Spawning



Specifications:

- Hapa size: 8.00m x 2.50m = 20m²
- Hapa height: 0.84m
- Mesh size: 1mm - semi flow-through

Requirements:

- Concrete tank with water inlet and outlet
- Size: 8.10m x 2.60m x 0.80m
- Steel cable with cable ties for hapa
- Breeding facilities like flower pots
- Watervolume: 14.000L
- Electricity: 0 Watt

2. Incubation (The Kit)



Specifications:

- Recirculation system
- 3 McDonald incubation jars
- 1 Sedimentation tank with filter blocks
- 1 Submersible pump 40 Watt
- 1 UV 11 Watt
- PVC pipes, valves, etc.
- 1 Construction manual
- Watervolume: 400L
- Electricity: 51 Watt 220-230 Volt 50 Hz*

3. Swim-Up (The Kit)



Specifications:

- Recirculation system
- 2 HDPE fish tanks (1.2m x 1.0m x 0.76m)
- 1 Sedimentation tank with filter blocks
- 1 Submersible Pump 40 Watt
- 1 UV 40 Watt
- 2 Bio-towers with distribution plates
- 1 Aeration pump 25 Watt
- PVC pipes, valves, etc.
- 1 Construction manual
- Watervolume: 1.200L
- Electricity: 105 Watt 220-230 Volt 50 Hz*

* other voltage and frequency available

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4. Primary nursery



Specifications:

- Hapa (8,00m x 2,50m x 0.84m)
- Mesh size: 3x5mm
- For growing from 0.5 gram until 3-5 gram

Requirements:

- Pond

Optional:

- Also available in RAS ; ask for the possibilities!

5. Hatchery Equipment



Specifications:

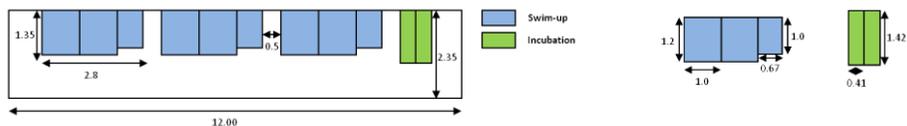
- Nets
- Microscope
- Cleaning materials
- Graders
- Chemicals

Optional:

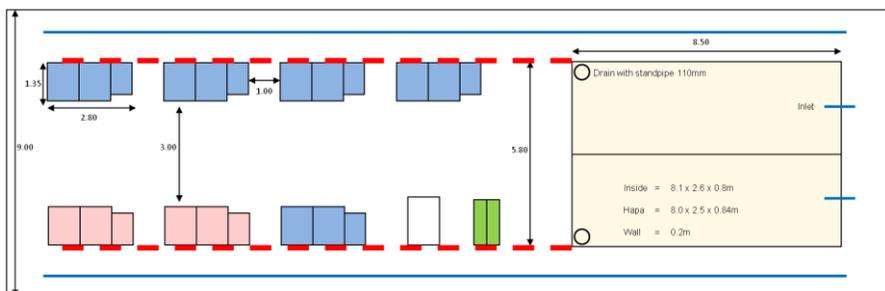
- Automatic feeder 24V

6. Floorplan

Next to providing the various systems and equipment, Til-Aqua International can also help to think about an optimal set-up of these systems within the customer's facilities. Besides standard set-ups within a container or a greenhouse (see below), dedicated floorplans can be designed.



Example of The Kit Floorplan; Incubation and Swim-up implemented in 40 feet container.



Example of The Kit Floorplan; Quarantine, Spawning, Incubation, Swim-up implemented in f.i. tunnel greenhouse.

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