FarmInABox

RECIRCULATION AQUACULTURE SYSTEMS (RAS) FOR AFRICA

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A brief history of Tilapia production in Sub Saharan Africa

From the development of Pond Farming in the Belgian Congo post the Second World War, Southern African Tilapia Farming has been very slow to progress.
Over the past 4 decades these major farms have been developed:

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Farm Name</th>
<th>Species/Technology</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970's</td>
<td>Chirundu Bream Farm</td>
<td>1st O.niloticus fingerlings</td>
<td>Zambia</td>
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<td>1980's</td>
<td>Nakambala Sugar Estates, 1st RAS systems</td>
<td>Zambia</td>
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<td>Kariba Bream Farm</td>
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<td>Zimbabwe</td>
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<td>Nakambala Sugar Estates 1st RAS systems</td>
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<td>Willards Foods Pond Farm 1st O.niloticus fingerlings</td>
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<td>Zimbabwe</td>
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<td>Lake Harvest Cage Farm 1st Commercial cage farm</td>
<td></td>
<td>Zimbabwe</td>
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<td>1990's</td>
<td>Son Cage Farm</td>
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<td>Uganda</td>
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<td></td>
<td>Kafue Bream Farm Large scale pond farm Kafue</td>
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<td>Zambia</td>
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<td>2000's</td>
<td>Maldeco Cage Farm</td>
<td>Local species</td>
<td>Malawi</td>
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<td>Yalelo Zambia Siyavonga Lake Kariba</td>
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<td>Zambia</td>
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<td></td>
<td>RAS Farm Lilongwe</td>
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<td>Malawi</td>
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<td>Cage Farm Tete</td>
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<td>Mozambique</td>
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Tilapia farms in Sub Saharan Africa

Last 3 Decades in the African Tilapia Landscape

>50 commercial operations
>$500 million invested
>1% of World Production
>50 Commercial Feed Plants
>50 Commercial Hatcheries

< 500 million people

Declining Fish Stocks and Declining Farmed Production
The half billion people in the region cannot be fed from these few farms and the many thousands of small scale pond farms which exist in the sub Saharan region.

The production of fish (Tilapia) cannot continue to develop at this slow pace if fish protein is to be accessible to all.
Moving African Tilapia Production in the right direction

- The poultry industry provides a model from which Tilapia production can be developed.
- The FarmInABox Semi Intensive Systems was developed to follow the technological and cyclical production of Tilapia.
- The RAS units are single systems, making them scalable and modular.
- Skills transfer is simple, the system is robust and daily operations help hone skills.
- Exponential increased production is therefore possible in any community, nation or region.
Criteria for Developing RAS systems for Africa

- Affordability
- Efficiency
- Productive
- Suitable for most locations, rural and urban
- Functional
- Easy to transport
• Easy to construct
• Low energy
• Low water use
• Environmentally friendly
• Scalable
• Modular
• Low maintenance
• Robust
• Zero waste
A Happy RAS Urban Farmer in DRC Africa
RAS system – Components

Waste Water to Plant production = A Zero Waste System
RAS system – Specifications

• Production Tank of 10Kl @20kg/m³
• Standing Bio Mass 200Kg
• Ideal system for training and schools
• Filter Units - 4Kgs Feed /Day
• Powered by 2x100 Watt Blowers
RAS system – Specifications continued

• Bio Filter

• Mechanical Filters

• 20m$^2$ Footprint
Scalable and Modular

One System

960Kg/year
6000 edible fish/year

15 Systems in A Greenhouse 40x10m

20 000Kg/year
300 000 kg/year
850 000 fish/year

Production per hectare
Comparison between small scale Pond and RAS Farming

Outputs per annum

Ponds 4-6 Tonnes per Hectare / year

RAS 1 Tonne per 20m2 / year

Whilst Africa has a lot of available land and water, the development of these areas is difficult, pond management is poor, stock and feed qualities are poor and production is low.
A simple RAS systems will:

- Increase production
- Fresh fish readily will be available
- Skills will be developed
- Genetic Stock will be improved as well as the availability
- Feed quality will be improved as well as the availability
- Use less water and provide more control
RAS systems together with support Industries and Services in Africa will drive production

Fish farming is not a stand alone industry it it requires;

- Commercial hatcheries
- Feed Plants
- Training and skills development
- Research institutes
- Supply chains and value chains
Small Scale Farmers with 1 FIAB
Production 1Mt/yr.

1000’s of farmers

Medium Scale Farmers with 1-10 FIAB Modules
Production 20MT- 200MT/yr.

100’s of farms

Large Scale RAS, Cage and Pond Farms

1000 – 20 000kg/yr.
Few and Far Between

Rapid growth of production, lower capital costs, lower risks, more fish in the market. Greater demand for fingerlings and feed. More skilled farmers

Support industries and Services
Fingerlings from commercial Hatcheries
Feed from Commercial Producers
Training and Skills Development
One system which will assist the production growth in Africa

WHERE IT SHOULD BE

Africa’s PRODUCTION
Thank you

rydawi fish farms

nmt™ niloticus hatchery
production systems