Flow-Through and Recirculatory Water Systems for Fish Tanks

Enhance fish farming efficiency with sustainable water systems, reducing resource wastage and ensuring robust fish growth.

Recirculatory Aquaculture Systems involve advanced setups for fish farming in tanks. They maintain essential conditions like oxygen levels and water temperature. Water is continuously filtered, ensuring a clean and healthy environment for the fish.

✓ This technology is TAAT1 validated.

7·8 Scaling readiness: idea maturity 7/9; level of use8/9

Inclusion assessment 👍 4

Climate impact 👍 4

Problem

- Challenges in maintaining water quality and oxygen levels for successful fish farming
- Need for effective waste management and control of pollutants in aquaculture systems
- Dependence on reliable water sources and electricity infrastructure for flow-through systems
- Cost and complexity of installing recirculatory systems compared to conventional methods

Solution

- Efficient use of limited land and water resources for higher density fish culture
- Maintenance of peak water quality conditions despite dense stocking rates
- Continuous water filtration and purification, leading to a healthier environment for fish
- Conversion of waste products into non-toxic substances for potential use in crop cultivation
- Flexibility in location choice based on water availability and electricity access

Key points to design your program

Recirculating Aquaculture Systems (RAS) continuously filter and reuse water, reducing water consumption by up to 90% while enabling intensive, biosecure fish production in areas where conventional pond systems are not feasible. Suitable for climate-smart aquaculture, urban food systems, sustainable food production, and water resource management programmes, the technology contributes to SDGs 2 (Zero Hunger), 6 (Clean Water and Sanitation), 11 (Sustainable Cities and Communities), and 13 (Climate Action). By maximizing production from limited land and water resources, RAS creates profitable aquaculture opportunities for women, youth, and small-scale entrepreneurs.

To successfully integrate this technology, consider the following key actions :

- Identify urban and water-constrained production areas where land and water limitations reduce aquaculture potential.
- Establish partnerships with WorldFish, fisheries institutions, equipment suppliers, and extension services to support system installation and technical assistance.
- Strengthen technical capacity on water quality management, biosecurity, filtration systems, and efficient RAS operation while promoting integrated resource management and productive use of aquaculture effluents.
- Monitor water-use efficiency, fish survival, feed conversion ratio, productivity, profitability, and programme outcomes.

44000 USD
Recirculation System (130 m3) treatment

1.5—5 USD
Settling of square meter pond construction

IP
Open source / open access

WorldFish Center
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

2 ZERO HUNGER
6 CLEAN WATER AND SANITATION
13 CLIMATE ACTION
11 SUSTAINABLE CITIES AND COMMUNITIES

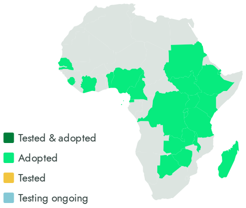
Categories

Production, Equipment, Aquaculture Systems

Best used with

All Male Tilapia Fingerlings with Greater Yield and Uniformity, Fast Growing and Hybrid African Catfish
See all 2 technologies online

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.