A community-oriented project for aquaculture in Kenya

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Aquaculture in Africa

- Important component of rural livelihood
- Alleviates food insecurity, malnutrition and poverty
- Provides food of high nutritional value
- Generates income and employment
- Increases farming sustainability
- Complements catches from traditional fisheries
Aquaculture development needs

• Global knowledge not available to farmers
• Weak rural extension and lack of local examples
• More emphasis required on:
  – readily available species
  – use of local materials
  – improvement of culture systems
  – education of farmers
Sustainability issues

- Provision of an enabling environment of technology, policy and legal frameworks
- Involvement of stakeholders in decisions, planning, development and management
- Access to key resources of information, materials and money
- Culture of species low down in the food chain to provide low cost product to poor communities
Fish farming in Kenya

• Small scale fish farming has had many false starts
• Poor economic return on cash and labour
• Low fish yields at subsistence level only
• Fifty year history but potential not realised

but...

Recent transformation in success 
facilitated by Moi University Fish Farm
Moi University

- Established in 1984 to meet science and technology needs
- Mandated to train via teaching, research and outreach
- Recognised need for locally proved methods
- Now hosts largest teaching and research fish farm in East Africa
Fish farm objectives

• To support training of aquaculture students
• To promote fish farming amongst community leaders, Government officials and entrepreneurs
• To serve as a regional centre for research and development of culture methods
• To supply juvenile fish to farmers in the region
• To provide research facilities for faculty members and visiting scientists
Fish farm design

- Farm comprises hatchery, quarantine unit and fish ponds
- Groundwater supply via 1.2 ha spring-fed reservoir
- Ponds
  - Filled by gravity inflow
  - Fully drainable
  - Effluent intercepted by papyrus swamp
- Total pond area 2.5 ha
  - 25 x 100 m²; 6 x 300 m²; 4 x 1000 m²; 2 x 2000 m²
Funding

• Moi University capacity development fund
• Lake Victoria Environment Management Project (LVEMP) - World Bank
• Aquaculture Collaborative Research Support Program (CRSP) - USAID
• Department of Fisheries, GoK – Fisheries personnel training funds
• Canadian International Development Agency (CIDA)
Fish farm construction

- Constructed by manual labour
  - Employment and income
  - Experience and involvement
  - Ready market for fish produced
- In-house project management for staff development
- 2001: 22 ponds completed and feeder pipes started
- 2002: Reservoir and remaining ponds completed
Start of digging
Digging in progress
Completed ponds
Header reservoir
Pond drainage - outflow pipe
Pond drainage - outflow channel
Predator exclusion
Participatory projects* - SCIENCE

- Economically feasible feeds for tilapia using local agriculture by-products
- Production of catfish fingerlings as baitfish for Lake Victoria Nile perch longline fishery
- Growth, reproduction and production of different tilapia strains
- Enterprise budget, business plan and economic risk analysis for tilapia production in Kenya

*These projects funded by Aquaculture Collaborative Research Support Profram
Participatory projects - OUTREACH

• Aquaculture training for
  – fisheries officers
  – undergraduates
  – extension workers
  – fish farmers

• On-farm trials for evaluation of alternative aquaculture technologies by local farmers
EXAMPLE - Community benefit

- Employment for >80 young workers during construction
- Fish available for the local market

- Wages of 6000 Ksh enabled a 22 year old girl to pay a debt of 4000 Ksh to release previous school examination results
EXAMPLE - Research extension

• Induced spawning of African catfish
• Quality catfish fry now available for fish farmers
• One farmer raising 10,000 fingerlings in 8 m x 12 m pond
• Sold as baitfish for Nile perch longline fishery of Lake Victoria
• Income greater than any other type of farming available in the neighbourhood
EXAMPLE - Training

• Lack of technical training cited as reason for poor success of aquaculture
• Three-week training sessions provided for more than 200 officers of Kenya Fisheries Department
• Courses focus on pond design, construction, management and business planning
• Fisheries officers cascade expertise to fish farmers
• Five education days provided annually in which up to 100 farmers and extension workers participate
EXAMPLE - On-farm trials

• Logical step in transferring research results to fish farmers
• Able to assess costs and benefits under local conditions
• 28 pond sites stocked following pre-trial workshops
• Average annual production = 7.4 t ha\(^{-1}\)
• 80% participants achieved improved results
• Feeding and fertiliser techniques were most important
EXAMPLE - On-farm trials continued

- Over 1000 people observed trials and 24 farmers in the region began culturing fish
- e.g. Jimmy Nabwera expanded his two-pond operation to include a reservoir, new ponds and a hatchery

Participants in an A-CRSP sponsored course were shown Nabwera’s facilities during a field trip in May 2003
Success measures

• Subsistence aquaculture turning into profitable small-scale enterprises
• Adoption of improved technologies
• Low-yield fish ponds transformed into productive units
• i.e. increased
  – income
  – knowledge
  – food
Lessons learned

• The participatory approach has enabled
  – Information transfer
  – Collaborative funding
  – Stakeholder support
  – Best practice
  – Social welfare
  – Economic growth
Delivering Community Benefits Through Fisheries Partnerships

The participatory approach used by Moi University has shown potential benefits which should be applicable to any community development initiative - whether it be a fish farm in Africa or an urban fishery in Italy.
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