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## QUARTERLY TECHNICAL REPORT

October 1 - December 30, 2007

**Title of project:** Sustaining famine mitigation through integrated aquaculture-agriculture in Traditional Authority Mavwere, Mchinji District in Malawi.

**Project Number:** SF-1005-AwF

**Principal Investigators:**

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Joseph Nagoli – Project leader.

**Summary**

The Mavwere Area of Mchinji District experienced rapid expansion of fish ponds after the 2002 WorldFish Integrated Aquaculture-Agriculture (IAA) dissemination initiative. Due to the high increase in numbers of farmers within a very short period, support services, especially regarding supplies of fingerlings and extension, became highly limiting and resulted in poorly sited and constructed ponds stocked with very poor fish species (*Haplochromis species*). With funding from Aquaculture Without Frontiers (AwF), technical support from the WorldFish Center in Malawi and active participation of the local communities a project was designed and implemented to help increase the availability of good fingerlings and institutionalise a reliable community based extension service. The main objective was to **promote sustainable integrated aquaculture-agriculture that will help the local communities to achieve their goal of reducing poverty and improve food security, nutritional status and increase household incomes.**

The beneficiaries were provided with IAA training for growing tilapias, vegetables and crops besides poultry and livestock. Local fingerling producers and extension providers were selected by the communities themselves and trained in pond based hatcheries and extension delivery skills respectively. Thirty eight (38)

fingerling production units are now operational with a current production of over 218,000 fingerlings worth Malawi Kwacha 654000 (USD 4300). There are currently 457 ponds that are stocked with quality fingerlings with an expected productivity of over 2000kg/hectare. The area now has its own trained extension providers (71) working on a voluntary basis.

The availability and accessible quality fingerlings and good extension service provide a sustainable way to increase fish production that will improve nutritional security to households that would otherwise rely on government and non-governmental safety nets programs for survival.

The project has demonstrated that beneficiaries have the ability to drive development and achieve the Millennium Development Goals (MDGs) of reducing hunger and malnutrition through IAA. This initiative rapidly increases per capita income through improved technical efficiency for fish and crop production.

## **A. Progress on the project**

### **1. Project goal:**

The overall goal of the project is to improve livelihoods of rural people by using IAA as a sustainable famine mitigation measure. The delivery of integrated agriculture-aquaculture (IAA) farming systems can improve food security, reduce natural resource degradation and enhance rural economic development in T/A Mavwere. Fishponds also serve as important water harvesting function, and enable farmers to cultivate vegetables and winter maize around the ponds. Water in the fish ponds is also important for animals. To promote IAA the project specifically intends to achieve two main objectives:

- 1 To improve fingerling availability and accessibility through the identification and training of specialised village fingerling producers.
- 2 To promote capacity building of small-scale farmers on the farmer-to-farmer extension concept to improve and sustain extension services at local level

### **2. Achievements in the quarter (October – December)**

#### **2.1 New pond construction**

213 new ponds were constructed during the October – December period. This high achievement was triggered by the presence of many sources of fingerlings which was a major bottleneck to aquaculture production in Mavwere as in other areas of Mchinji District. The table below summarises the achievements per location (Group Village Headman). To date 513 ponds have been constructed or renovated out of which 452 ponds have been stocked with quality fingerlings.

Location ( Group Village Headman)	Constructed ponds	Stocked Ponds (end of December)
Guwende	37	17
Malemia	20	14
Mtanga	42	24
Manthalu	72	66
Mpani	21	17
Mzingo	13	8
Ungwe	8	6
<b>TOTAL</b>	<b>213</b>	<b>152</b>

## 2.2 Fingerling production

During the period 17 new fingerling producers received training by the District Fisheries Office and by Village Extensionists. This followed a demand by farmers after noticing the profits fellow farmers were making. There are now 38 fingerling producers currently with over 218,000 fingerlings ready to be acquired by farmers. These fingerlings if sold at an accessible price of USD 0.02 will earn the farmers a total revenue of \$4360. If the same fingerlings were sold at the current government hatchery price of \$0.07 would result in revenues of over \$15000. However the current fingerling price coupled with the distances where these hatcheries are located has been a major set back to aquaculture development. Many farmers can not afford this and as a result the fry are bought and distributed to farmers by NGOs, which is not sustainable. The table below identifies these producers and the estimated production for each location in the project area.

Location (Group Village Headman)	Fingerling Producers	Estimated Production (end of December)
Guwende	8	25000
Malemia	2	38000
Mtanga	7	70000
Manthalu	7	33000
Mpani	6	24000
Mzingo	6	18000
Ungwe	2	10000
<b>Totals</b>	<b>38</b>	<b>218000</b>

## 2.3 Open days and farmers' learning tour

Farmers conducted open days and local learning tours on proper pond management and feeding. The activities were facilitated by the Village Extension Providers. During open days farmers were able to observe the differences in growth between fish from the demonstration ponds and those from poorly managed ponds. From the 12 demonstrating farmers witnessed productivity ranging from 1800 kg/hectare – 3200 kg/hectare. This was considerably more than they are used to getting from the same pond area, which was usually 800 kg – 1000 kg/hectare.

## 2.4 End of year project evaluation

Farmers convened an end of year evaluation meeting at the end of December 2007. The meeting was attended by local leaders from all the participating villages, all fingerling producers, all local extension providers, Group Village Headmen, the District Fisheries Officer and WorldFish representatives. The host village provided meeting space in a primary school classroom and food for all the participants.

The meeting evaluated both technical and management issues of the project and developed plans for 2008. Among the technical issues that were discussed and resolved were

- a Need for proper feeding for fish to improve growth
- b Threats of predation and local measures to control them
- c Improper pond locations that saw some ponds drying during the dry season
- d Access to quality fingerlings and need for marketing strategies
- e The impact of village extensionists and ways of honouring their hard work both cash and in-kind.
- f Access to loans

The meeting recognised the availability of fingerlings and extension system as primary for sustainable aquaculture production in the area even without donor support. The meeting, however, asked the Department of Fisheries and WorldFish to consider providing training in marketing skills, including the establishment of a cooperative or association.

## 3. Progress towards results

The table below gives status on progress towards project results as revised at the inception of the project.

Task	Expected results	Achievements to date
<b><i>Objective 1: Improved fingerling availability and accessibility</i></b>		
1.1 Conduct awareness meeting with ADC and VDC and identify beneficiaries	1 meeting	1 meeting conducted at ADC level and 6 meetings at VDC level
1.1. Identify and train local fingerling producers	21 producers	21 fingerling producers identified and trained. 38 farmers have since established hatcheries; Over 218 were produced by end of December. The new producers were trained by the District Fisheries Officer following a demand from the farmers.
1.3. Mount demonstrations	10 demos	12 demonstrations established on proper pond construction, stocking rates, water management, feeds

		and feeding and harvesting.
1.4 Conduct open days	10 open days	12 local open days conducted. 1 tour to Bunda College and other innovative farmers conducted.
1.5 Document small-scale fingerling distribution model	1 doc	A brochure of best practice for quality fingerling production from ponds developed. An analysis on the fingerling production and distribution will be done by WorldFish and the Department of Fisheries before a distribution model is developed. This will be done from WorldFish own resources.
1.6 Promote restocking with improved fingerlings	200 ponds	213 ponds constructed from October to December 2007 where 152 were stocked. To date 513 ponds have been constructed or renovated and 452 ponds stocked with quality fingerlings
<b>Objective 2: Capacity building of small-scale farmers to offer services at local level.</b>		
2.1. Identify lead farmers	21 farmers	71 farmers identified
2.2. Train lead farmers in aquaculture and extension delivery skills	21 farmers	71 farmers trained and working as rural farmer extensionists on voluntary basis.
2.3 Develop verifiable easy to monitor indicators with participation of all stakeholders in the target area (Community Based Monitoring and Evaluation (CBM&E))	1 meeting	Indicators developed by the communities. CBM&E established in every village. Reports are now being written to ADC based on the indicators
2.4 Facilitate community project monitoring and Extension	Monthly meetings	8 monthly CBM&E meetings done since the CBM&E concept was initiated for each VDC.
2.5 Develop guidelines for farmer led extension	Guidelines	A guide developed (Annex 1) but requires updating as more piloting and research are conducted.
2.6 In conjunction with farmer extensionists train farmers in IAA best practices	200 farmers	278 farmers trained in IAA Half of which have been trained by the farmer extensionists with support from WorldFish and Government fisheries staff
2.7. Promote fish and crop production through best practices of IAA	200 ponds	Over 268 ponds were integrated with winter maize and vegetable production during the July to October period.
2.8. Conduct technical backstopping visits	12 visits	17 joint visits by WorldFish and Department of Fisheries (Mchinji) conducted

2.9 Document and publish success stories on AwF website	At least 3	2 stories published on AwF webpage with the help of AwF Chairperson.
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#### 4. Outputs

Two main outputs were targeted for the project in the 12 months project life. The achievements to these outputs have been very good as explained below for each output:

##### ***a. Improvement in fingerling availability and accessibility through the identification and training of specialized village fingerling producers***

The availability of fingerlings is no longer a problem; the main problem now is the marketing of fingerlings and table sized fish. This therefore calls a coordinated marketing strategy for fingerlings and other products from the IAA. In their 2008 plans farmers themselves agreed to form a cooperative with small clubs at village level. The main achievements to this output are summarised as follows:

- The dissemination of appropriate fingerling production technology for use by 38 small-scale producers
- Increased availability of good quality fingerlings amongst farmers. Fingerlings in excess of 218,000 were available by close of this project and that 457 ponds were already stocked with quality fingerlings.
- The satisfaction of local demand for fingerlings that has created a need for a fingerling marketing system to other beneficiaries outside the Mavwere Community.

##### ***b. Capacity building of small-scale farmers on the farmer-to-farmer extension concept to improve and sustain extension services at local level***

There is great improvement in the extension services in the areas. The contact farmers operating in these villages help farmers in constructing standard ponds (at least 200m<sup>2</sup> ponds), stocking fish with the appropriate stocking densities, identifying best species and providing advice on overall fish pond management. Through this project the partnership of WorldFish, farmers and the Department of Fisheries have:

- Established a local supported participatory extension system
- Strengthened farmer communication and networking through regular meetings
- Increased fish production where (from the 12 demonstrating farmers) productivity improved from 800 kg/hectare to an average of 2.3 t/hectare.
- An aquaculture production handbook in Chichewa language developed by WorldFish was disseminated to beneficiaries after training and a Participatory technology development and transfer guide has been developed.
- Institutionalised a Community based monitoring and evaluation system

## **5. Implications of Project Outputs and Achievements**

The remarkable achievements of the project demonstrate the potential of IAA to reduce food insecurity caused by frequent droughts in southern Africa. The increase in per capita income and the improvement in technical efficiency for higher fish and crop productivity can help achieve Millennium Development Goals regarding hunger and nutrition and should encourage governments and NGOs to support IAA. Specifically the project has demonstrated that beneficiaries have the ability to drive development and achieve these MDGs.

The project has improved access to extension and fingerlings, the main constraints to aquaculture development in Southern Africa. The availability of fingerlings and extension service will sustainably increase fish production that will improve nutritional security to households that would otherwise rely on government and non-governmental safety nets programs for survival. Youths trained in extension delivery will ensure continued extension services to new entrants after the project finishes. The understanding and support by the local leadership on the project will ensure that the activities are not only sustained but expanded to other surrounding villages. The income gains currently being observed imply high rates of return on the project funds by the end of the project, which is likely to boost local economic investments in the target villages. Economic empowerment will thus improve food security as agricultural inputs will easily be accessed on top of cheaper proteins obtained from on-farm fish production.

## **6. Bottlenecks**

No major problems were experienced in the implementation and management of the project in the reporting period.

## **7. Linkages with other programmes**

Sustaining famine mitigation through integrated aquaculture-agriculture in Mchinji District in Malawi is directly linked to other programmes running for the WorldFish Center in East and Southern Africa. The following are the important projects:

1. Determination of Recommendation Domains for High Aquaculture Potential areas in Africa that will provide a science based tool in identifying potential areas for pond aquaculture.
2. Famine mitigation and food security through IAA in Southern Africa which is funded by the OPEC Fund for International Development (OFID) and is currently in its second phase.

## **8. Collaborator**

The project is being implemented in partnership with Mchinji District Assembly and the Department of Fisheries in Malawi. The two institutions provided

personnel which assisted in capacity building, coaching of the lead farmers and daily monitoring of the activities.

## 9. Future Plans

To promote the integrated fish farming in the area, the leaders during the annual evaluation meeting agreed on the plan below. As a demonstration of independence and hard working the leaders agreed to both use their own resources and/or develop project proposals to other donors for the implementation of their plans.

ID	Activity	Indicators
1	Increase the number of ponds	2 ponds for every farmer
2	Increase production through new acquisition of new skills such as monosex cultures	1 refresher course
3	Create linkages with financial lending institutions or create a community revolving fund	Farmers access farming loans
4	Create an association for the Mavwere Traditional Authority	Association established
5	Conduct a study tour to a well organised farmers cooperative/Association	Study tour
6	Find markets for fingerlings, table fish and crops	Adverts to potential markets
7	Explore ways of remunerating hardworking farmer extensionists and local leaders (cash or in-kind)	1 ADC meeting

## 10. Budget

The overall budget spending was good. However because of the increased demand for integrated aquaculture-agriculture in the Mavwere area, operational funds were slightly short to complete all the planned activities. For example the final evaluation meeting was co-financed by the WorldFish and the beneficiaries themselves.

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