MANAGEMENT FOR ADAPTATION TO CLIMATE CHANGE

TECHNICAL REPORT: AUGUST 2009 TO JULY 2010



Submitted to the Royal Norwegian Embassy

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Total LandCare

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ACRONYMS AND ABBREVIATIONS

ACE Agricultural Commodity Exchange

ADP Agricultural Development Program, Min. of Agriculture & Food Security

APS Annual Program Statement
BERL Bio-Energy Resources Limited

CARE International

CBNRM Community-Based Natural Resources Management

CBO Community-Based Organization

CHIA Chia Watershed Management Project, USAID

CISANET Civil Society for Agricultural Network

COMPASS Community Partnerships for Sustainable Resource Management, USAID

CRS Catholic Relief Services

CIMMYT International Maize and Wheat Improvement Center

DA District Assembly

DEC District Executive Committee
DFC District Field Committee
DMC District Management Committee

DMC District Management Committee

DNPW Department of National Parks and Wildlife

EAD Environmental Affairs Department

EPA Extension Planning Area

EU European Union

FAO Food and Agricultural Organization of the United Nations

FD Forestry Department GHG Green House Gases

GIS Geographical Information System

GOM Government of Malawi

GTZ German Agency for Technical Cooperation

GVH Group Village Head Person

ICRAF International Centre for Research in Agroforestry

ICRISAT International Centre for Research in the Semi-Arid Tropics
IDEAA Initiative for the Development of Equity in African Agriculture

IITA International Institute for Tropical Agriculture

MACC Management for Adaptation to Climate Change, Norwegian Government

M&E Monitoring and Evaluation

MoAFS Ministry of Agriculture and Food Security
MSMEs Micro, Small and Medium Enterprises

NASFAM National Smallholder Farmers Association of Malawi

NGO Non Governmental Organization

NRB Natural Resource Based
NRM Natural Resource Management

PA Protected Area

PLWHA People Living With HIV/AIDS
PSC Project Steering Committee
RNE Royal Norwegian Embassy

SSLPP Small Scale Livestock Promotion Project

TA Traditional Authority
TLC Total LandCare

USAID U.S. Agency for International Development

VNRMC Village Natural Resources Management Committee

VS&L Village Savings and Loans

WESM Wildlife and Environmental Society of Malawi

EXECUTIVE SUMMARY

Introduction and Organization of the Annual Report

The overall goal of the MACC Project is to improve the livelihoods of rural communities in the central watersheds of Lake Malawi. A key focus is to reduce their vulnerability and risk to climate change by building capacity to increase food security, diversification, and income generation consistent with sound management of land and water resources.

This Annual Report covers the financial year from August 2009 to July 2010. Generally the year has been good as regards the implementation of project activities but with some challenges here and there. The main challenge faced was the erratic onset of the rains which negatively affected certain programs, notably Crop Diversification, Tree Planting and Vetiver Nursery Establishment. However, because the project's ultimate goal is to equip community members with capabilities to mitigate and adapt to climate change, such conditions were taken in stride and provided insights on how best to tackle such challenges.

A different challenge we faced was the presence of other NGOs whose approaches are in conflict with that of Total LandCare which does not subscribe to the provision of free handouts. This affected the take up of our irrigation program with treadle pumps because organizations like Income Generation Public Works Program and Concern World Wide provide these treadle pumps for free.

The structure of the report is organized as follows:

- ➤ The Technical Report covers field results from August 1 2009 through July 31 2010. In order to provide an in depth of results achieved for the year, each result area is presented separately following the order of the report template.
- ➤ Baseline Survey Report of Farmer Clubs in the MACC Project Area: A report with the baseline survey results was produced and submitted to the RNE with the semi-annual report of MACC.

Start-up Activities

A comprehensive description of start-up activities was presented in the 2008/09 Annual Report and therefore is not reiterated here. This included details on staff recruitment, procurement of equipment, TLC's operational framework and extension approach, and the organizational structure of the project which is being facilitated through management committees at different levels.

Meetings and Collaborative Activities

- Project Annual Review Meeting: A meeting was held on November 25 between TLC Management staff and officers of the Royal Norwegian Embassy a) to review results from the first year 2008/09 and the workplan for 2009/10, and b) to evaluate weaknesses with the project and how these could be addressed. The minutes of this review meeting were prepared and signed by both parties. Key points on areas for improvement were 1) to more effectively document participation by women, 2) to demonstrate how the project is reaching out to households affected by HIV/AIDS, and 3) to document impacts of interventions in terms of improvement in people's livelihoods and general well being.
- Project Audit Report: The timeframe for Graham Carr to undertake the annual audit report of the project was discussed. It was agreed that the audit should be done between February and April 2010.
- Other Norwegian funded Projects: TLC continues to liaise and share experiences with 3 other key projects in Malawi: The FAO Food Security Project, NASFAM and the Malawi Lake Basin Project with the SCC. Collaboration with these projects offers insights on the value and effectiveness of different interventions and approaches to improve upon or

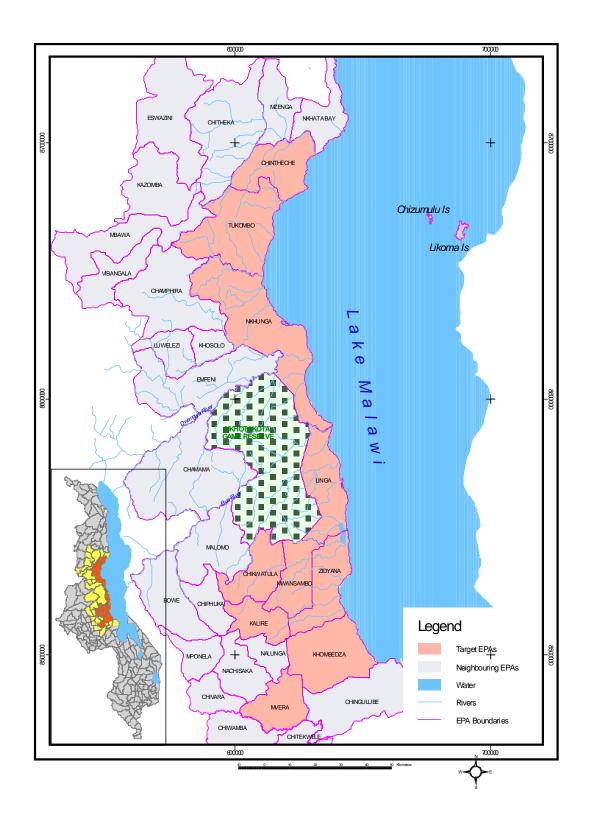
broaden our respective programs. TLC acknowledges and appreciates the strong interest and participation of the Royal Norwegian Embassy through Ms Marita Sorheim-Rensvik and Dr Augustin Chikuni to facilitate this type of collaboration.

- Conservation Farming Unit, Zambia: Mike Mailloux and Dutch Gibson of the CFU visited Malawi several times to discuss a joint program to scale up the adoption of Conservation Agriculture in Malawi with funding from the Norwegian Government. A proposal will be prepared over the next few months with support from TLC and NASFAM to submit to the Norwegian Embassy Representatives in Zambia and Malawi. A follow-up meeting was called by Marita Sorheim-Rensvik to discuss the way forward with CA in Malawi. This meeting involved key stakeholders and partners with the RNE including TLC, NASFAM and Irish Aid which also funds NASFAM activities in CA. Minutes of this meeting were produced and circulated by the RNE.
- Stakeholder Engagement: A major aim of MACC is to coordinate its programs with other interested parties and organizations to strengthen our respective activities and to share experiences, knowledge and lessons. In order to identify potential collaborators, several group and individual meetings were held to determine common areas of interest and to define the specific roles and activities appropriate for each organization to maximize the resources available, human and physical. To facilitate collaboration, meetings are being held with a broad range of organizations from Government, donor projects, NGOs and private firms to with the aim to more fully engage relevant parties in the project. Collaborative relationships of this nature will complement our comparative strengths to increase effectiveness and impacts of project activities. Details on collaboration with other parties were presented in the 2008/09 Annual Report.

Good progress continues to be made to actively engage Government Departments, District Assemblies, communities, other donors, projects, and NGOs with project activities. This engagement is critical to increase opportunities to reach more people, to improve effectiveness, and to maximize impacts. Two projects in particular are noteworthy: 1) the GEF World Bank project to support the management of the Nkhotakota Wildlife Reserve, and 2) the USAID Kulera Biodiversity Project led by TLC with communities around the protected areas of Nyika-Vwaza, Nkhotakota Wildlife Reserve, Ntchisi Forest Reserve and Mkuwazi FR. The latter 3 PAs all fall within the project area of MACC, hence collaboration is essential to share resources and costs for greater efficiency and effectiveness.

- Capacity building / training continues with District Assemblies, Government Agencies, collaborating NGOs and projects, CBOs, and targeted communities.
- Mid-Term Review: An independent 3 person team was selected by the RNE to conduct a 2 week review of the MACC Project in mid September. The evaluation team met with TLC on several occasions and spent nearly a week the field with the project manager, Richard Museka, and his field staff. At the end of the review, the evaluation team presented a summary of their findings to TLC before meeting with the RNE. A final report will be produced by early October for comments by TLC and for discussion with the RNE during the annual review meeting scheduled for October 29 2010.
- Impact Surveys: Three surveys have been conducted during the past 3 months: 1) An adoption survey of CA with TLC and CIMMYT which included interviews of CA practitioners and those who are not participating; 2) a more specific CA survey of farmers with Amos Ngwira (Ph.D student with Norwegian funding) to better understand the interests, challenges and best practices of CA in Malawi, and 3) a comprehensive impact survey of all MACC interventions with a sample of 330 households across project sites. The results of these surveys are being analyzed and written up into separate reports which are expected to be finalized by November 2010.

Map 1: Geographic Coverage of MACC showing Districts and EPAs



1. INTRODUCTION

1.1 **Purpose**

The aim is to improve the livelihoods of rural communities within a context that develops and secures the capacity of rural communities for adaptation to climate change in a manner that is productive and sustainable. The underlying principles entail an integrated holistic approach with a three-point thrust:

- To reduce risks and vulnerability from erratic and unpredictable changes in climate.
- ➤ To improve food security, nutrition¹, and general well-being of rural communities.
- To assist farm households in making the transition from subsistence survival to a business oriented mind-set that promotes self-sufficiency and growth.

1.2 **Key Objectives**

The elements outlined above will be implemented to achieve the following objectives using TLC's successful model of extension and training:

- ➡ Reduce deforestation by improving the economic use and management of natural resources to supply wood energy and construction materials to meet farm and household needs on a sustainable basis focusing on the following interventions:
 - Tree planting with a concentration at the household level to build self-sufficiency.
 - Sustainable management of natural woodlands and trees.
 - Introduction of energy-saving stoves to reduce wood use.
- → Improve household food security, nutrition (see footnote above), and incomes by increasing and diversifying farm productivity with low input costs through a) crop diversification, b) winter irrigation, and c) integration of livestock.
- → Develop opportunities to establish and operate rural-based enterprises with strong links to sound markets to increase opportunities for self-sufficiency and prosperity.

All interventions are being implemented using sound land and water management practices to ensure sustainability. The benefits realized by communities will accrue from the synergistic effects of a holistic approach involving diverse interventions. This will reduce vulnerability and risks to climate change. Impacts will attract participation among adjacent communities, and will help to draw attention for buy-in from other donors and organizations to expand the scale of the program to other areas of Malawi.

1.3 Target Areas

The project covers an area of nearly 6000 km² in the 5 districts of Salima, Dowa, Ntchisi, Nkhotakota and Nkhata Bay with diverse farming systems and agro-ecological zones (see Map 1). The districts and EPAs targeted are shown below (Note: Khombedza was split to include Mtosa; Malomo replaced Chikwatula in Ntchisi and Nachisaka replaced Mvera in Dowa due to other TLC projects in these EPAs).

Nkhata-Bay District: Chintheche and Tukombo EPAs

Ntchisi District: Malomo and Kalira EPAs

Nkhotakota District: Nkhunga 1 & 2, Zidyana, Linga and Mwansambo EPAs

o Salima District: Khombedza and Mtosa EPAs

Dowa District: Nachisaka EPA

¹ In the absence of specific measures/indicators of improved nutrition, TLC is using proxy indicators of greater diversification in the production of food crops, either under rainfed conditions or under irrigation or both. In addition, household interviews will include questions about the greater range of food items in the diet and impacts on the general health of the family and especially children.

2. TRAINING AND COMMUNITY SENSITIZATION

After identifying key skill gaps among Government, NGO and project staff, trainings were organized to better equip them for training communities. In addition, new field staff received training on all project interventions. Sensitization meetings with communities were initiated to explain the purpose and objectives of the project before full fletched implementation. This is necessary because it provides an opportunity for expansion to new villages and to provide opportunities for more people within existing villages to participate to change their attitude and start adopting new technologies being promoted. These meetings were conducted at different levels: District Commissioners, Traditional Authorities, Group Village Headmen, Village Heads, and community members. Sensitization meetings were followed by training which included field days and field tours. This enables them to acquire the skills to manage the activities properly to realize the intended benefits. Field days and tours stimulate sharing of knowledge and skills among villagers within and outside the project area so as to increase awareness and adoption. Ultimately, community trainings are geared to build sustainability of project activities after the project phases out.

Table 1 provides a detailed breakdown of all training activities and sensitization meetings.

3. FIELD RESULTS

3.1 Community Participation

Participation involves 42,004 households which matches the target for year 2. Community participation in terms of villages and households is presented in **Table 2**. These reflect cumulative figures to date which includes those reported in the last report and new villages and households for the current reporting period. Interventions are being implemented with farmer/producer clubs and associations on a significant scale in all targeted districts.

Table 2: C	Table 2: Community Participation under MACC for 2009/10										
OVERALL TOTAL	Previous Report	New for this Period	Total								
# Villages	1,979	339	2,318								
HH Participation											
Male	16,501	4,705	21,206								
Female	17,645	3,153	20,798								
Total	34,146	7,858	42,004								

3.2 Results on Interventions and Impacts

Overall results against targets are presented in **Table 3** for Years 1 and 2. This includes production and income figures from the 2008/09 season as well as results on activities to date for 2009/10. In many cases, targets were achieved. Exceptions are explained in the narrative for each component described below.

Enterprise development activities were also affected due to observed challenges with low levels of production, business management skills and marketing. Scaling up enterprise development was therefore limited to a few selected individuals who demonstrated capabilities to manage the enterprise. The rationale before scaling up further is to evaluate the challenges related to low production, business management, and marketing of the targeted products. These assessments are vital to provide direction on the types of intervention that show most promise and the approach to scale up successfully.

Impacts of different interventions on livelihoods and general welfare will be assessed after designing appropriate survey instruments that will produce reliable, accurate and useful information. The design of the surveys will be completed next semester.

The 2008/09 Report included photos of interventions so are not included in this report.

	Tab	le 3: Tar	gets vs. I	nitial Res	sults for	2008/09 a	and 2009	/10	
				2008-2009		2010	(Aug 09 to J	ul 10)	
PERFORMANCE INDICATOR	INDICATORS OF PERFORMANCE	Baseline ¹	Targets	Results	% Achieved	Targets	Results	% Achieved	Remarks
OVERALL	No. of Participating Villages	2 939	1 000	1 979	198%	2 000	2 318	116%	
PARTICIPATION (latest figures are	No. of Participating Households	33 380	20 000	34 146	171%	40 000	42 004	105%	Result is on target
cumulative)	Female Participation	No Baseline	7 000			14 000	20 798	149%	Strong female participation; reasons to
	% Female Participation	No Baseline	35%			35%	49.5%	141%	be explored
	No. of Community NRM Associations Formed & No. of Associations with	14	4	1	25%	2	4	200%	This indicator no longer relevant due to new system with the Depts of NP&W & Forestry for one umbrella
COMMUNITY- BASED NRM	Constitutions & Bye Laws	19	4	0	0%	2	4	200%	association with each PA
ASSOCIATIONS	No. of Participating Villages	309	1 000	108	11%	500	67	13%	# Villages not included in Kasakula
	Female Participation % Female Participation	TBD TBD		No Target		TBD TBD	TBD TBD	TBD TBD	To be assessed based on Chia Data which was not included in baseline
	Ha of Village & Individual Forest Areas Demarcated for Cons. &	193	200	904	452%	200	822	411%	Result is for only half the year
	No. of Regenerating Natural Trees	307 630	250 000	741 544	297%	250 000	1 233 435	493%	Conservative estimate - sample surveys to be conducted in July-Sept
	Quantities of Harvestable Products ⁴	100	NYD	NYD	NA	NYD	NYD	NYD	Not Yet Determined-Need Resource Assessments
	Sales and Income of NR Products ⁴	2 000	NYD	NYD	NA	NYD	NYD	NYD	Not Yet Determined-Need Resource Assessments
	No. of Tree Planting Clubs	602	1 000	632	63%	1 000	1 166	117%	On target
	No. of Participating Households	22 503	15 000	21 215	141%	15 000	24 079	161%	High interest by HHs
VILLAGE FORESTRY	No. of Nurseries Established	506	1 000	652	65%	1 000	1 099	110%	On target
PRACTICES	No. of Tree Seedlings Raised	4 253 146	2 500 000	2 512 720	101%	2 500 000	3 272 607	131%	Exceeded targets
	No. of Tree Seedlings Planted	3 756 173	2 000 000	1 999 117	100%	2 000 000	2 591 797	130%	Data available thru mid January; tree planting will continue thru February
	No. of Bamboo Seedlings Planted	29 760	50 000	0	0%	50 000	0	0%	No bamboo seed available; TLC is exploring potential sources
	No. of Tree Seedlings Surviving	1 260 483	2 000 000	1 999 117	100%	1 600 000	TBD	TBD	Surveys to be conducted in July-Sept
	No. of Bamboo Seedlings Surviving	11 790	40 000	0	0%	40 000	0	0%	No seedlings planted
	No. of Regenerating Nat Trees on farm	No Baseline				No Target	TBD	TBD	Surveys to be conducted in July-Sept
	No. of Improved Kitchen Stoves Built	535	1 000	833	83%	1 000	2 858	286%	Appears to be popular among women; impact surveys to explain benefits
	No. of Farmer Based Associations	4	0	0	0%	0	0	0	No new associations formed. Work continues with existing ones
	No. of HHs Participating in CA (minimum tillage)	1 922	2 500	1 158	46%	1 500	3 296	220%	HH demand exceeds our budget to support expansion of CA. Need to
	Area under CA (ha)	495	750	260	35%	450	1 092	243%	discuss how to scale up.
IMPROVED	Maize Yields under CA (kg/ha)	1620	3 500	4 517	129%	3 500	4 952	141%	Results for based on data averaged across farmers in 5 sites under the
SUSTAINABLE LAND & WATER	Maize Yields under CA with Leg Intercrop (kg/ha)	1620	3 500	4 612	132%	3 500	5 155	147%	MACC Project with application of fertilizer at the recommended rate for
MANAGEMENT PRACTICES	Maize Yields under Trad Practice (kg/ha)	1620	3 500	3 954	113%	3 500	3 973	114%	all plots.
ADOPTED	No. of HHs Planting Improved Fruit Trees	680	750	70	9%	750	163	22%	Fruit trees limited to 4744 seedlings concentrated in selected villages
	No. of HHs adopting Vetiver & Silt Traps	19160	1 000	1 819	182%	1 000	760	76%	Physical challenges with planting material and actual planting
	No. of HHs using Organic Manures	No Baseline	No Target	0	0%	No Target	4 625	œ	Need to assess baseline and targets
	No. of HHs intercropping with AF Species	2684	500	1 300	260%	500	951	190%	Includes all Agroforestry practices

	Table 3: T	argets vs	s. Initial R	esults fo	r 2008/0	9 and 20	09/10 (pa	ge 2 of 3	3)	
				2008-2009		2010	(Aug 09 to J	ul 10)		
PERFORMANCE	INDICATORS OF PERFORMANCE	Baseline ¹	Targets	Results	% Achieved	Targets	Results	% Achieved	Downseles	
INDICATOR	Area under Kilombero Rice (ha)	2 610	250	445	178%	400	398	100%	Remarks Includes seed distributed in previous	
	Yield of Kilombero Rice (tons)	3 255	625	1 001	160%	800	892	112%	seasons; area with new seed is 140 ha; poor start to the rains affected area;	
	Area under Kalima & Sugar								yields to be assessed in June	
	Beans (ha) Yield of Kalima & Sugar Beans	3 130	125	125	100%	150	29	19%	Production data not complete as the crop is a winter crop on residual soil	
	(tons)	1 627	150	156	104%	200	13	7%	moisture Limited seed for legumes due to	
	Area under Grain Legumes (ha)	16 280	200	63	32%	200	202	101%	demand for Govt subsidy program	
CROP DIVERSI-	Yield of Grain Legumes (tons)	16 100	300	95	32%	300	85	28%	Harvest data not complete at time of report and exclude pigeon peas	
FICATION	Area under Paprika / Bird's Eye Chillies (ha)	796	40	112	280%	50	426	852%	Demand for both spices much higher than anticipated	
	Yield of Paprika / Bird's Eye Chillies (tons)	586	30	123	411%	30	22	73%	Production data not complete; more will be available under irrigation	
	Area under sweet Cassava (ha)	6 809	250	56	22%	100	226	226%	Includes area under multiplication	
	Yield of Cassava (tons)	67 411	5 000	1 027	21%	2 000	116	6%	Production not complete to be finalized in Nov/December	
	Area under Irrigated Vegs, Spices & Cereals (ha)	680	225	227	101%	250	314	126%	Includes area under rice irrigation	
	Yield of Irrigated Vegs, Spices & Cereals (tons)	1370	450	908	202%	450	TBD	TBD	Harvest of winter crop will be available Dec/Jan	
ENTERPRISES									avanusie Beejsan	
	No. of Clubs Participating in Bee Keeping	108	50	53	106%	30	42	140%	Focus on the better producers to bette assess potential. This is an importan	
	No. of HHs Active in Bee Keeping	1 653	500	475	95%	300	544	181%	period to evaluate and address	
Bee Keeping	Quantities of Honey Harvested (kg)	1 141	5 000	1 406	28%	1 500	854	57%	production and marketing constraints before scaling up	
	Honey Sales and Income (MK)	390 400	1 125 000	405 340	36%	202 500	311 459	154%	Targets lowered due to uncertainty over market linkages and prices	
	No. of Cages in Use for Fish Cage Culture	8	30	9	30%	30	11	37%		
	Quantities of fish harvested (kg)	800	7 500	748	10%	5 000	360	7%	Fish cages produced food harvest and incomes, but farmers face challenges	
Cage Culture &	Fish Sales and Income (MK)	27550	825 000	284 316	34%	500 000	167 290	33%	to restock and provide feed. A few fish ponds were productive, reasons for the	
Fish Farming	No. of Ponds Built and Stocked for Fish Farming	115	30	17	57%	20	21	105%	others under investigation. Careful selection of HHs for undertaking these	
	Quantities of fish harvested (kg)	11 487	7 500	291	4%	3 000	1 149	38%	enterprises is needed along with strong technical, financial and business	
	Fish Sales and Income (MK)	141 650	825 000	44 964	5%	300 000	325 838	109%	management support	
	No. of HHs with improved	***	200	Not Yet	Started	100	143	143%	No baseline due to low no. of HHs with	
Livestock	Livestock No. of improved livestock	0	2 000	Not Yet	Started	1 000	2 414	241%	livestock Includes young animals/chics	
Production	distributed to HHs Animal Sales and Income (MK)	0	2 000 000	Not Yet		1 000 000	551 315	55%	All poultry related; others have not	
	No. of HHs Active in Mushroom	1 653	40	71	178%	20	41	205%	reached maturity	
	production									
Mushroom Production	No. of Mushroom Houses Built Quantities of Mushroom	37	20	3	15%	20	12	60%	Production and interest is low due to poorly established markets / links to	
(Domestic)	Harvested (kg)	1 132	3 000	311	10%	1 500	263	18%	buyers and uncertain prices	
	Mushroom Sales and Income (MK)	109 000	1 080 000	97 125	9%	540 000	131 220	24%		
	No. of Individuals Active in Mushroom Collection	1 653	40	71	178%	2 000	2 941	147%	Most wild mushrooms are consumed	
Mushroom Collection (Wild)	Quantities of Mushroom Collected (kg)	1 132	3 000	311	10%	3 000	157 165	5239%	with only limited sales, but these exceeded the estimated targets	
	Mushroom Sales and Income (MK)	109 000	1 080 000	97 125	9%	1 080 000	1 677 360	155%	exceeded the estimated targets	

Table 3: Targets	s. Initial Results for	2008/09 and	2009/10 (page 3 of	3)
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				2008-2009 I	1	2010	(Aug 09 to J				
PERFORMANCE INDICATOR	INDICATORS OF PERFORMANCE	Baseline 1	Targets	Results	% Achieved	Targets	Results	% Achieved	Remarks		
	No. of Entrepreneurs Identified	0	3	2	67%	3	0	0%			
	No. of Cassava Graters Distributed on Loan	0	2	2	100%	1	0	0%			
	No. of Cassava Chippers Distributed on Loan	0	2	3	150%	1	0	0%			
Agro-Processing 5	No. of Grain Mills Distributed on Loan	0	1	1	100%	1	0	0%	Technical, financial and business management support is still needed for		
Agro-Processing	No. of Seed Oil Presses Distributed on Loan	0	1	0	0%	1	0	0%	Agro-Processing		
	No. of Grnut Shellers Distributed on Loan	0	4	4	100%	4	0	0%			
	No. of Solar Driers Distributed on Loan	0	2	2	100%	1	0	0%			
	Sales & Income from Processing (MK)	0	NYD	Not Started	NA	NYD	Not Started	NA			
	No. of Participating Villages in Eco-Tourism	1	3	4	133%	3	11	367%			
	No. of Households	50	100	72	72%	100	162	162%			
	No. of Tour Managers Trained	2	4	4	100%	2	0	0%			
	No. of Tour Guides Trained	6	6	3	50%	2	12	600%			
	No. of Cultural Centres built	1	1	7	700%	1	8	800%	Technical, financial and business		
Eco-Tourism ⁶	No. of Hiking/Biking Trails Constructed	0	7	0	0%	2	1	50%	management support is still needed to promote eco-tourism as a truly viable		
	No. of Boats Constructed	1	1	0	0%	1	1	100%	livelihood/business venture		
	No. of Hides Constructed	1	2	1	50%	1	2	200%			
	No. of 4x4 Tracks Built for Access	0	1	0	0%	1	0	0%			
	No. of Visitors	4	No Target	7	NA	No Target	59	NA			
	Income Generated per Club	0	No Target	7 000	NA	No Target	37 000	NA			
	Average Income per year	40036	25% increase	NYD-Need Survey	NA	NYD	NYD	NYD	Impact surveys on households for each intervention were implemented in		
PROGRAM	% of Households Food Secure Year-round	26	20% / year	NYD-Need Survey	NA	NYD	NYD	NYD	September and are being analyzed. Results will be available for the next		
IMPACTS MONITORED	% Households Wood Secure ⁷	24	None 7	NYD-Need Survey	NA	NYD	NYD	NYD	semi-annual report. Methods and scientists to undertake NR Monitoring		
	Natural Res Monitoring ⁸	TBD	NYD	NYD	NA	NYD	NYD	NYD	is being assessed.		
NOTES											

NYD=Not Yet Determined; NA=Not Applicable (at present)

- 1. Baseline surveys were conducted in Nov/Dec 2008 and figures were filled in, but some gaps remain to be resolved
- Targets in subsequent years may change based on results, costs and response by communities.
 Baselt figures will be specified in semi-annual and annual reports January and June of each year.
- 4. Figures depend on resource assessment and mgt plan to identify products, sustainable harvest levels, prices & markets.
- 5. Targets on outputs & sales not yet established due to need for information on productivity, harvest levels, & markets 6. Targets on outputs & sales not yet established due to need for information on the nature & potential of tourist markets
- 7. There is a lag time of at least 3-5 years before planted trees are large enough to harvest wood
- 8. Cannot be predicted, need benchmark indicators (planned) to monitor change over the project's life time

3.3 Community Based NRM and Farmer Associations

The formation of new CBNRM associations with co-management agreements has been affected by the institution of a new system with the Departments of National Parks & Wildlife and Forestry. This system involves establishing an umbrella association for each protected area in the country to coordinate all village/community based structures for that PA. This means that all previously registered CBNRM associations that include co-management agreements in a protected area will fall under this umbrella association. Villages that wish to enter into such agreements must sign up with the umbrella association which is managed by an executive committee comprising leaders from the border zone of the PA in question and representatives from the Government Department in charge of managing the PA.

The structure is in the process of being harmonized between the two mentioned Departments above. Legal registration of these entities with the Registrar General under the Ministry of Justice takes time, but good progress is being made in terms of organizing the associations for each PA with management plans, constitutions and bye-laws.

Despite the above situation, the NRM associations formed previously are still functioning and are presented with the farmer associations in **Table 4** below.

3.4 Fisheries Management Associations at Chia Lagoon and Lake Chikukutu

The MACC Project has continued to support the management of the Chia Lagoon Fisheries Management Association which comprises 12 BVCs with 841 members, and 143 fish vendors from 17 villages.

Fish catches and sales by fishers from the Lagoon are shown for each 6 month period and overall in **Tables 5a-c**. The income per fisher is reasonable at MK 26,251. Sales at the Chia Fish Market are presented in **Tables 6a-c** for the same periods. In contrats to the fishers, the vendors clearly make a very good living with an average income of MK 102,829.

The Ngala Fisheries Association at Lake Chikukutu will comprise the following structure (also included in **Table 4**).

No. of Villages: 9 Leaders (all male): 10

Fishers:

 Male
 1164

 Female
 76

 Total
 1250

Association Status: Registered

Constitution: Yes

Management Plan: No

Management Agreement: No

		-	Table 4: Status of Community Based N	IRM and Far	mer Association	ns Under th	e MACC Pro	ject to Dat	е			
Name of Association (community)	Names of Villages/TAs and Number of Villages	Area (Ha)	Purpose	Key Product(s)	Constitution & Bye Laws Registered (Yes/No)	Mgt Plan (Yes/No)	Participation # Villagers # Leaders			hip Partici Gender Female	pation by	Remarks/Comments
Natural Resource Mar	 nagement				(fes/No)		# Village 13	# Louders	Widie	Terriale	Total	
Nyenje	34 Villages in GVH Chinthankwa.TA Mwansambo	TBD	Conserve resources on Nyenje Hill and the surrounding areas	TG, T,H,W,M	Yes	Yes	TBD	54	42	12	54	Draft management plan is in place.
Mtaya	7 Villages. SGVH Namakwati. TA Malenga Chanzi	9.05	To gain access to and to sustainably manage and use natural resouces from village forests and protected areas	W,M,TG, H, MH.	Yes	Yes	134	34	22	12	34	
Chia Lagoon Fisheries	17 Villages. SGVH Chongole, Ngalauka, Chikwawe, Namakwati, Kalimanjira, Mtanga, TA Malenga Chanzi	1700	To sustainably manage use and market fishery resources	F	Yes	Yes	974	21	20	1	21	
Lake Chikukutu Fisheries	9 Villages under GVH Khufi	TBD	To sustainably manage use and market fishery resources	F	Yes	No	1240	10	10	0	10	Registered with a constitution but a management plan and agreement remains to be done
Kasakula NRMA	TA Kasakula (no. of Villages to be verified)	TBD	To gain access to and to sustainably manage and use natural resouces from village forests and protected areas	W,M,TG, H, MH.	Yes	Yes	106	12	10	2	12	Draft constitution and management plan in place. Need capacity and registration
Total	67	NA	Various NR Products specified	above	4	4	2454	131	104	27	131	See above
Farming Associations	<u> </u>		<u> </u>		•	,	,					
Chintheche Farmers Association	48 villages	TBD	To promote productn & collective bargaining power	S, Mz, R, B	Yes	Yes	668	37	TBD	TBD	TBD	Not yet registered
Mwansambo Farmers Association	51 Villages, TA Mwansambo	52	Spice, paprika	S	No	Yes	338	180	TBD	TBD	TBD	The association is growing in membership because of
Mpamantha Farmers Association	14 villages. GVH Nkhongo, Mapulanga, Kachitosi, Chopera, Kaulungu, Nthondo. TA Malenga Chanzi	60.7	Production and marketing of Agricultural produce	R	Yes	No	598	22	TBD	TBD	TBD	Harvested rice in June. (100 tons) 60 Mk/ kg. 75 will be sold
Bua	25 Villages. SGVH Chitambo, Pendwe. TA Mphonde	218	Production and marketing of Agricultural produce	R	Yes	No	604	20	TBD	TBD	TBD	harvested rice (75 tons). Selling 50 tons. 60 Mk/kg
Total	152	330.7	Various crops	R, M, S, B	3	2	2208	259	TBD	TBD	TBD	See above
Codes for Products:	W=Wood		M=Mushrooms	B=Beans	V=Vegetables		R=Rice					
	TG=Thatching Grass			Mz=Maize	GN=Groundnuts		SS=Sesam	е				
	H=Honey		MH=Medicinal Herbs	S=Spices	SB=Soya Bean	S	O=Other (Ir	nsert details	as relevar	nt)		

Table 5a: Fish Catches from Chia Lagoon from August 2009 to January 2010 *

Species	Catch (kg)	Price / kg	HH Use (Kg)	Total Sales (Kg)	Total Sales (MK)	Avg HHI (MK) **
Chambo	303	153	30	273	41 609	49
O/Tilapia	26 383	132	2 638	23 745	3 143 467	3 738
Kambuzi	37 864	80	3 786	34 077	2 711 563	3 224
Kampango	16 767	102	1 677	15 090	1 543 291	1 835
Mlamba	37 661	119	3 766	33 895	4 017 939	4 778
Others	37 563	124	3 756	33 807	4 183 051	4 974
Totals	156 541	111	15 654	140 886	15 640 921	18 598

^{*} August - October includes the period of south easterly winds (mwera) during which fish are scarce when prices go up and catches fluctuate

Table 5b: Fish Catches from Chia Lagoon from February - July 2010

Species	Catch (kg)	Avg Price/kg	HH Use (kg)	Total Sales (kg)	Total Sales (MK)	Avg HHI (MK)
Chambo	347	374	35	312	116 808	139
O/Tilapia	16 077	119	1 608	14 470	1 723 271	2 049
Kambuzi	7 536	61	754	6 782	416 968	496
Kampango	573	26	57	515	13 219	16
Mlamba	20 323	126	2 032	18 291	2 299 412	2 734
Others	14 525	143	1 453	13 073	1 866 518	2 219
Totals	59 381	120	5 938	53 443	6 436 197	7 653

^{*} The catches were affected by Mwera winds from April to July

Table 5c: Fish Catches from Chia Lagoon from August 2009 - July 2010

Species	Catch (kg)	Avg Price/kg	HH Use (kg)	Total Sales (kg)	Total Sales (MK)	Avg HHI (MK)
Chambo	650	271	65	585	158 417	188
O/Tilapia	42 461	127	4 246	38 215	4 866 737	5 787
Kambuzi	45 399	77	4 540	40 859	3 128 532	3 720
Kampango	17 340	100	1 734	15 606	1 556 511	1 851
Mlamba	57 984	121	5 798	52 185	6 317 352	7 512
Others	52 088	129	5 209	46 880	6 049 570	7 193
Totals	215 922	114	21 592	194 329	22 077 118	26 251

The number of fishers may have changed (Fisheries Bulletin No: 60), but Chia results are not distinguished from the district total, whose number has decreased by 3.4% since 2003 from moving out of the fishery

Table 6a: Fish Sales at Chia Market by Vendors from August 2009 to January 2010

Fish Type	Main Species	Price/Kg (MK)	Total Sales (Kg)	Total Sales (MK)	Average HHI (MK)			
Fresh *	Chambo	757	2 808	2 126 957	14 874			
	Kampango	274	822	225 103	1 574			
	Mlamba	255	710	181 255	1 268			
	Others	759	1 606	1 218 672	8 522			
Tota	al Fresh	631	5 946	3 751 986	26 238			
Dried	Chambo Kampango Mlamba	NA: Sun drying not normally done for chambo, kampango and mlamba						
	Others	587	1 080	634 002	4 434			
Tota	al Dried	587	1 080	634 002	4 434			
Smoked	Chambo Kampango Mlamba Others	670 306 271 717	2 498 556 182 1 410	1 673 644 170 384 49 157 1 011 292	11 704 1 191 344 7 072			
Total	Smoked	625	4 647	2 904 477	20 311			
Total	All species	625	11 673	7 290 464	50 982			

Table 6b: Fish Sales at Chia Market by Vendors from February-July 2010 **

		Price/Kg		Total Sales	Average HHI			
Fish Type	Main Species	(MK)	Total Sales (Kg)	(MK)	(MK)			
Fresh *	Chambo	651	1 583	1 006 171	10 540			
	Kampango	178	925	155 576	1 497			
	Mlamba	121	673	178 029	1 447			
	Others	558	2 092	1 160 330	12 506			
Tota	al Fresh	474	5 273	2 500 106	25 990			
Dried	Chambo Kampango Mlamba	NA: Sun drying not normally done for chambo, kampango and mlamba						
	Others	0	7	6 643	91			
Tota	al Dried	1 000	7	6 643	91			
Smoked	Chambo	555	1 515	918 707	9 857			
	Kampango	206	205	30 114	322			
	Mlamba	51	327	154 779	1 498			
	Others	771	1 928	1 307 757	14 088			
Total	Smoked	606	3 976	2 411 357	25 766			
Gra	nd Total	531	9 256	4 918 106	51 847			

Table 6c: Fish Sales at Chia Market by Vendors from August 2009-July 2010

		Price/Kg		Total Sales	Average HHI					
Fish Type	Main Species	(MK)	Total Sales (Kg)	(MK)	(MK)					
Fresh *	Chambo	713	4 391	3 133 128	25 414					
	Kampango	218	1 747	380 678	3 071					
	Mlamba	260	1 383	359 284	2 714					
	Others	643	3 698	2 379 002	21 028					
Tota	al Fresh	557	11 220	6 252 092	52 228					
Dried	Chambo	NA: Sun dr	ving not normally don	e for chambo	rampango and					
	Kampango	NA: Sun drying not normally done for chambo, kampango and mlamba								
	Mlamba	iiiaiiiba								
	Others	590 1 086		640 645	4 525					
Tota	al Dried	590	1 086	640 645	4 525					
Smoked	Chambo	646	4 014	2 592 351	21 561					
	Kampango	263	762	200 498	1 513					
	Mlamba	401	509	203 936	1 842					
	Others	695	3 338	2 319 049	21 160					
Total	Smoked	616	8 623	5 315 834	46 077					
Gra	nd Total	583	20 928	12 208 570	102 829					

^{*} Includes frozen fish

^{**} Fish sales were affected by the impact of Mwera winds on catches from April to July

3.5 Forestry

Table 7 provides details of forestry activities undertaken during the year. 3,272,607 tree seedlings were raised against a target of 2,500,000. Of these, only 2,591,797 were due to the sporadic start of the rains which had serious dry spells. The number of participating villages was on target at 1099 vs. the target of 1000. Households numbered 24,079, and women participation in all practices ranged from 28-45%. No bamboo was planted due to the lack of seed from the synchronized flowering and seeding by bamboo once in a lifetime, usually after 20+ years. Efforts are being made to source bamboo seed from other species.

Promotion of natural regeneration in village and individual forest areas totaled 607 ha and 215 ha respectively with an estimated 1.23 millon trees. Figures on the number of natural trees on farms have not been established yet. Women participation in individual forest areas was 80%. 2858 households had improved kitchen stoves most of which were constructed by women.

3.6 Sustainable Agricultural Practices

Table 8 gives a breakdown of different practices undertaken with numbers of villages, individuals by gender and households. Results with key practices included:

- 1) Conservation agriculture on 1092 ha in 505 villages with 3296 households,
- 2) Legume intercrops and rotations on 50 ha by 169 households,
- 3) Interplanting 26,611 soil improving trees by 624 households,
- 4) Agroforestry perennial intercrops on 399 ha with 251 households
- 5) Agroforestry fallows on 29 ha with 76 households
- 6) Planting vetiver hedgerows over a length of 29,690 m by 758 households,
- 7) Production and application of organic manures on 538 ha by 4,625 households. Participation by women averaged over 36%.
- 8) Gulley reclamation efforts on 782 gulleys with 410 households

3.6.1 Conservation agriculture

CA deserves a special note based on maize yields under CA with and without legumes vs. the standard farmer practice of land preparation, ridging, and hand weeding. Farmer managed demo plots included the following:

- 1. **Control:** Standard practice with land clearing, ridging 75 cm apart and hand weeding.
- 2. **CA Maize Pure Stand:** Crop residues spread & retained on the surface; planting on the flat or old ridges without tillage. Round-up + harness / bullet applied at pre-emergence.
- 3. **CA Maize + Legume Intercrop:** (Ppea, Cowpea, Tephrosia). Crop residues spread & retained on the surface; planting on the flat or old ridges without tillage followed by direct sowing of intercrop. Round-up was applied at planting, and harness/bullet after the legume crop germinated, or not at all due to risk of affecting germination of the legume.

All plots were 0.1 ha in size and were treated with the same amount of fertilizer, crop variety, seed rate and plant spacing. The data for 2010 are based on 30 farmers who have been undertaking the practice now for 5 years, which are compared with results from the previous 4 years (see **Figs. 1a & 1b**). It is clear that despite the erratic and lower rainfall in 2009/10, yield differences were higher. Perhaps more significant is the fact that labor costs were cut dramatically for tasks that are physically demanding, namely land preparation, ridging and hand weeding. Labor savings are shown in **Table 9**. Impacts on reducing child labor are expected to be significant but this requires verification through surveys.

Table 7: For	estry Practices	Across EPA	s for the	Period A	ugust 20	09 to July	<i>,</i> 2010

		Total Qty	# of	Individ	ual Partic	cipation	HH F	articipat	ion *
Forestry Practice	Unit	(Ha or #)	Villages	Male	Female	Total	Male	Female	Total
Nursery Production									
Nurseries Constructed	# Nurseries	1 099	1 166	13 675	10 404	24 079	19 191	4 888	24 079
Tree Seedlings Raised	# Seedlings	3 272 607	1 100	13 0/3	10 404	24 079	19 191	4 000	24 079
Fruit Tree Seedlings Raised	# Seedlings	6 346	16	21	9	30	26	4	30
Outplanting - Trees									
Farms	# Trees	348 001	435	2 984	2 464	5 448	4 394	870	5 264
Communal Lands	# Trees	1 669 143	969	11 173	8 727	19 900	14 424	3 821	18 245
Homesteads	# Trees	569 275	802	6 175	3 221	9 396	7 408	1 550	8 958
Total Fruit Trees	# Trees	5 378	97	117	46	163	134	29	163
Total Outplanting - All Trees	# Trees	2 591 797	1 166	13 675	10 404	24 079	19 191	4 888	24 079
Outplanting - Bamboo	# Bamboo	0	0	0	0	0	0	0	0
Natural Regeneration									
Village Forest Areas									
Area	Ha	607	98	1 302	939	2 241	1 732	264	1 996
Regenerating Trees	# Trees (estimate)	910 545	90	1 302	939	2 241	1 732	204	1 990
Individual Forest Areas									
Area	Ha	215	20	33	140	173	39	39	78
Regenerating Trees	# Trees (estimate)	322 890	20	33	140	173	39	39	70
Natural Trees on Farm									
Area	Ha	27	54	161	104	265	32	21	53
Regenerating Trees	# Trees	TBD	J 4	101	104	200	32	<u> </u>	55
Improved Kitchen Stoves ²	# Households		219				2 022	836	2 858

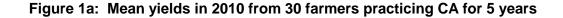
^{*} The semi-annual report shows this as households when in fact it was a gender breakdown of individuals

¹ Bamboo seed remains unavailable as explained in the semi annual report; hence no planting took place

² In 2 EPAs, the semi-annual report included counts of some people from the same household. This has been corrected above

	Table 8: Sustainable Agricultural Practices, August 2009 to July 2010											
		Total	# of	# of	Maize	Individ	ual Partic	ipation	НН	Participa	tion	
Practice	Unit	(Ha or #)	Villages	Clubs	Yield	Male	Female	Total	Male	Female	Total	
Conservation Agriculture	Ha	1,092	505	172	710,778	2,239	1,057	3,296	2,706	590	3,296	
Legume Intercrops/Rotations	Ha	50	62	19	NA	71	98	169	142	27	169	
Agroforestry												
Interplanting Soil Improving Tree	# Trees	26,611	95	42		392	232	624	428	196	624	
AF Perennial Inter-Crop ¹	Ha	399	71	20	NA	181	70	251	199	52	251	
AF Fallow ¹	Ha	29	23	11		44	32	76	65	11	76	
Soil & Water Conservation												
Vetiver Hedgerows	length (m)	29,690	70	28		468	290	758	638	120	758	
Organic Manure ²	Ha	538	264	60	NA	2,841	1,784	4,625	3,488	1,137	4,625	
Silt Traps	#	3	1	1		1	1	2	2	0	2	
Gulley Reclamation												
	# Gulleys	782										
	# checkdams	74	119	20	NA	296	114	410	321	89	410	
	m reclaimed	295										
¹ AF Species include Tephrosia	¹ AF Species include Tephrosia, P Peas, Sesbania, Crotalaria, Acacia, Albizia and other species											
² Organic manure includes anir												

NA = Not Applicable



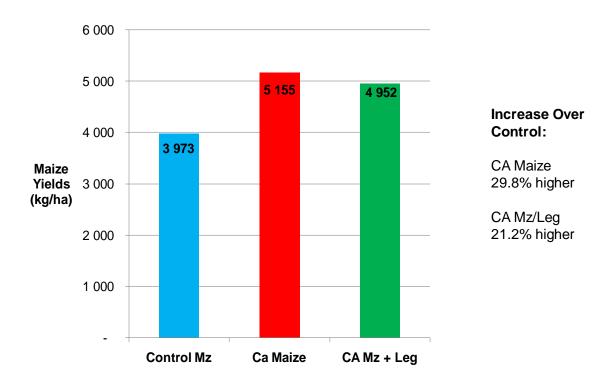


Figure 1b: Mean yields from 193 farmers over 4 Years (2006 - 2009)

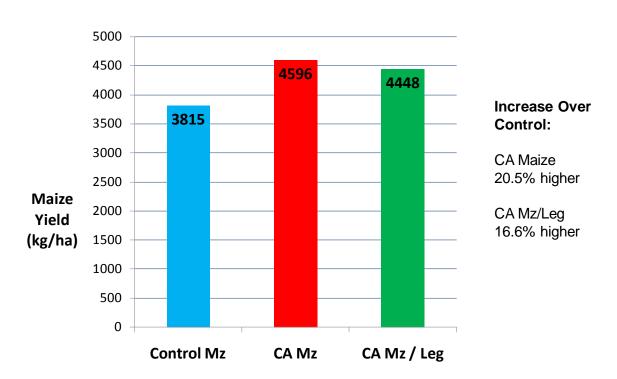


Table 9: Labor Savings with CA vs. the Standard Farmer Practice

Labor Costs (6 hr days)	Control	CA Maize	CA Maize +
Labor Costs (6 III days)	Maize	OA Maizo	Legume
Land Prep/Clearing	7.50		0.58
Ridging	28.61		
Laying Stalks		6.80	7.15
Planting Maize	9.44	10.08	10.08
Planting Legume Intercrop			13.50
Basal Dressing	12.28	12.60	13.56
1st Weeding	18.63		1.04
Top Dressing (CAN)	11.43	12.00	12.60
Drawing Water (herbicide use)		1.20	1.20
Herbicide Application		8.67	8.67
2nd Weeding/Banking	23.29	3.25	
Harvesting Maize	12.69	12.69	12.69
Harvesting Legume			11.42
Total Labor Costs	123.87	67.29	92.49
Labor Savings %	0%	46%	25%

An analysis of gross margins in **Figure 2** also shows distinct economic benefits of CA over the standard farmer practice.

Figure 3 shows the current number of TLC farmers involved with CA across TLC projects in Malawi, with the land area under CA and a breakdown on the source of inputs. Of special note are 2 points: 1) farmer interest in CA is demonstrated by their willingness to source their own inputs, and 2) TLC could have reached many more farmers if resources to purchase these inputs were not limited.

As mentioned in the introduction of this report, 3 surveys have been conducted with farmers to evaluate the adoption of CA in order to better understand the interests, challenges and best practices of CA in Malawi. The results of these surveys are being analyzed and written up into separate reports which are expected to be finalized by November 2010.

3.6.2 Conservation agriculture with Faidherbia albida

Finally, observations on a limited number of plots where CA was integrated with winter thorn trees (*Faidherbia albida*) shows that yields of 8 tons or more were possible due to the beneficial effects of this tree on soil fertility, organic matter, and the micro-environment. But the benefits work both ways. Farmers who grow maize under *Faidherbia but without* CA usually face serious problems with weeds because the tree not only promotes good crops, but also heavy weed growth. The result severely retards yield potential. The weed control provided with CA allows this yield potential to be realized. Therefore, it is strongly recommended to undertake CA where *Faidherbia* trees are found or planted.

Figure 2: Gross Margins with CA vs. the Standard Farmer Practice

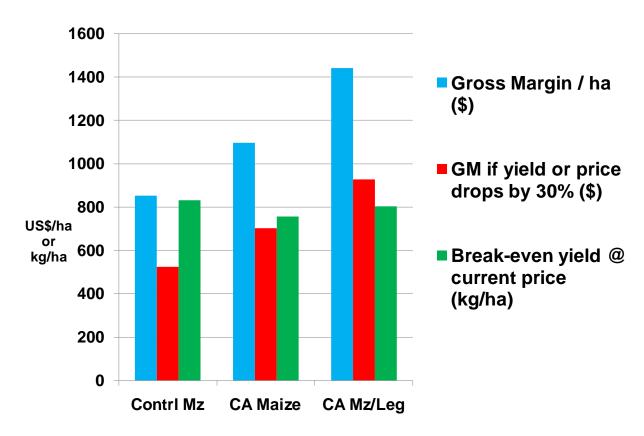
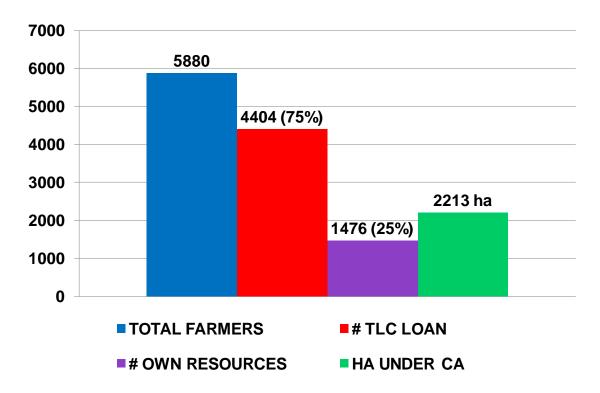


Figure 3: Numbers of TLC Farmers Involved with CA Across Malawi and Source of Inputs



3.7 Crop Diversification and Multiplication

Figures on production and sales for the 2008/09 season are included in **Table 3** since the data were not available at the time of producing the 2008/09 Annual Report.

Data by crop and variety for the 2009/10 season are shown in **Table 10**. Production data are not available for some crops such as spices, cassava, and pigeon peas due to the season of planting or their long term nature to reach maturity. Information on these crops will be provided after the harvest and sales in the next semester August 2010 to January 2011.

Women participation in crop diversification averaged 33.4% with a range of 18-55%.

3.8 Winter Irrigation for 2009 and 2010

The irrigation season started in June/July 2009 and continued through November 2009. Results for different systems of irrigation for the 2009 winter season are shown in **Table 11**. This included winter rice production from schemes with rehabilitated dams. Major crops included green maize, beans, tomatoes, leafy vegetables, onions, and paprika. The total area under irrigation was 323 ha and involved 2219 households, 28% of whom were women. Production of irrigated crops totaled 905 tons which is shown in **Table 3**.

The 2009/10 winter season started in May/June 2010. Irrigation undertaken to date for the 2010 season is shown in **Table 12**.

3.9 Livestock Production

The focus this period was on procuring and distributing different livestock to selected farmers who first received training on general animal care and production, the construction of suitable animal housing, and marketing. **Table 13** shows the number and type of livestock distributed to households.

Production and sales of animals and products has been limited to poultry, primarily the sale of eggs, due to the timeframe for producing the other animals. However, the general management, housing, condition, and health of the animals are excellent. This demonstrates 2 critical points for the success of this enterprise:

- a) There is strong interest and capability for managing and caring for the animals properly; this shows that raising animals is a familiar activity in Malawi farming; and
- b) markets are readily available for selling the animals and products locally, which is a key driver behind a successful enterprise.

3.10 Enterprise Development

The introduction of enterprises to new farmers or groups was limited to individual households who have demonstrated capabilities for successful production, business skills and marketing. Scaling up will await the results of a value chain approach to evaluate the potential of different enterprises and progress achieved to date.

Key aims are:

- a) to identify points of intervention where there are clear weaknesses or gaps,
- b) to increase output levels through improved management,
- c) to target farmers based on available resources and capabilities to manage the enterprise as a true business, and
- d) to clearly define the structure of loans secured through the project or micro-finance institution to provide essential equipment and inputs needed for operating the enterprise.

			Table 10: C	Crop Div	versifica	ation and	d Multipli	cation fo	or 2009/1	0		
		Unit of		Area	# of	Р	articipati	on	Househ	old Parti	cipation	Remarks/Comments
Crop Type	Variety	Production	Production	(Ha)	Clubs	Male	Female	Total	Male	Male Female Total		Nemarks/Comments
Crop Diversificat	ion - Rainfed											
Rice	Kilombero ¹	kg	369 182	297	99	1 323	750	2 073	945	165	1110	Production affected by erratic rains
Beans	Kholopete	kg	TBD	69	31	155	67	222	169	38	207	Winter crop not harvested yet
Groundnuts	Chalimbana 2005	kg	12 596	29	16	54	63	117	87	28	115	Total production not quantified
Soya Beans	Nasoko	kg	9 000	22	14	43	41	84	70	14	84	Total production not quantified
Pigeon Peas 3	Various	kg	TBD	22	20	122	142	264	246	18	264	Long season crop not yet harvested
Paprika	Papri Queen ²	kg	TBD	120	78	721	164	885	779	103	882	Not yet harvested
Bird's Eye Chillies	Local ²	kg	21 835	306	95	1 155	452	1 607	1178	147	1325	Harvest not complete
Sweet potato	Local	kg	25	18	37	220	139	359	320	39	359	Long season crop not yet harvested
Cassava ³	Manyokola	kg	116 000	152	101	667	438	1 105	853	178	1031	Harvest not complete
Sesame	Local	kg	TBD	2	2	14	3	17	11	3	14	Not yet harvested
Crop		Unit (of	Amt of Seed	Area	# of	Р	articipati	on	Household Participation		cipation	
Multiplication	Variety	seed)	Given	(Ha)	Clubs	Male	Female	Total	Male	Female	Total	
Cassava	Manyokola	0 stick bundle	4 797	74	72	375	227	602	N	ot Applicat	ole	Not yet harvested

¹ Excludes winter rice (data not yet collected) using seed from previous season (Kilombero may be recycled 2-3 times)

² Most spices were distributed during the winter season under irrigation so production data is limited at this time

³ Production data for these crops not yet available due to long term for maturity

	# Kits/Input	#	Ha Pl	anted	Individ	ividual Participati	
Irrigation System	Packs	Villages	Total	Per HH	Male	Female	Total
Treadle Pumps	1102	306	218.44	0.56	867	235	1102
Treadle Pumps (old)	49	83	14.7	0.30	41	8	49
Stream Diversion		100	66.24	0.21	309	219	528
Dams/Reservoirs		51	91.41	0.08	418	170	588
Drip Kits	1	1	0.05	0.05	0	1	1
Totals	1152	541	390.84	0.39	1635	633	2268

Table 12: Irrigation to Date for the 2010 Winter Season ¹

	# Kits/Input	#	Ha PI	anted	Individual Participation			
Irrigation System	Packs	Villages	Total	Per HH	Male	Female	Total	
Treadle Pumps	304	197	126.73	0.42	247	54	301	
Treadle pump (old)	349	231	113.82	0.29	316	78	394	
Stream Diversion		52	59.10	0.18	203	120	323	
Dams/Reservoirs		7	14.50	0.12	79	44	123	
Drip Kits	1	0	0.05	0.05	0	1	1	
Totals	654	487	314.20	0.14	1635	633	2268	

¹ Data are broken down with participation by gender. Production & sales data will be available

	•	Table 13: Live	stock Pr	oduction	n and Sal	es with F	Participa	tion by G	ender			
Type of	# of Liv	vestock	Incom	e (Mk)		#	Individ	ual Partio	ipation	нн	Participa	tion
Livestock	Improved	Unimproved				Village				Male	Female	
	Breed	(Local)	Total	Per HH	# Clubs	S	Male	Female	Total	Head	Head	Total
Goats	38	64	0	0	0	32	26	12	38	33	5	38
Pigs	30	0	0	0	0	14	8	6	14	10	4	14
Poultry	2325	0	551 315	6 979	0	54	47	32	79	65	14	79
Guinea Fowls	21	73	0	0	0	12	9	3	12	10	2	12
Rabbits ¹	0	0	0	0	0	0	0	0	0	0	0	0

¹ Very little interest in rabbits with cultural issues over consumption and slaughtering these animals for food

	Table 14: Enterprise Development: Production, Sales and Participation by Gender													
					Income	e (Mk)			Individ	ual Partic	ipation	Househ	old Partic	ipation
	Unit of	Total	Unit for	Total			#	#				Male	Female	
Type of Enterprise	construction	Units	Harvest	Quantity	Total	per HH	Villages	Clubs	Male	Female	Total	Headed	Headed	Total
Bee Keeping (Honey)	# hives	317	kg	854	311 459	573	64	42	343	202	545	483	61	544
Mushrooms Domestic	# houses	12	kg	263	131 220	3 200	11	4	12	29	41	34	7	41
Mushrooms Wild	NA		kg	157 156	1 677 360	570	NA	NA	2559	382	2941		NA	
Fish - Cage Culture	# cages	11	kg	360	167 290	23 899	3	1	6	5	11	5	2	7
Fish - Ponds	# ponds	21	kg	1 149	325 838	1 352	18	11	135	126	261	213	28	241

In addition, the prototype biomass-powered food dryer designed in January-March of 2009 was modified during the period January to March 2010 to improve efficiency and cost. The consultant specialist has produced a report of the results on drying tests.

The current status of enterprises in terms of household participation, production and sales is presented in **Table 14**.

Of the enterprises, fish cages show the greatest revenue returns, but there is good potential for improving the production and sales of other enterprises when markets are identified or better developed and producers are linked efficiently to these markets. Investigations are ongoing and will be presented as soon as the studies are completed.

3.11 Eco-Tourism

7 clubs have been formed to undertake eco-tourism activities in 2 EPAs – Chinteche and Linga. The activities to date are summarized in **Table 15**. The main activities involve construction of cultural centers, hides for game viewing, and hiking trails. A small amount of income has been received mainly from visits to cultural centers. Realizing the potential of eco-toursim clearly requires substantial training and input from professional tour operators.

Table 15: Eco-Toursim Activities from August 2009-July 2010											
Features of the Activity	Cultural Centers	Hides	Hiking/Bike Trails	Boats							
Total Clubs #	5	2	1	3							
Total Members #	92	52	18	44							
% Female Participation	53%	48%	56%	41%							
No. Units Built #	8	2	1	1							
Visitors Received #	53	6	0	0							
Income Received (MK)	33 500	3 500	0	0							

3.12 Ecosystem Monitoring/Research & Development

Systems, methodologies and resources to monitor key aspects of the ecosystem are being identified and secured for quantitative assessments of impacts and change over time. Capabilities needed to institute effective systems of monitoring will be the focus of the next 12 months.

Key areas of study include a) land-use and land cover change, b) carbon sequestration in the vegetation and soils, c) frame surveys to enumerate fishing craft, gear owners, crew-members and fishing gear used in Chia lagoon and Lake Chikukutu, d) forest cover and biodiversity, e) water quality and sediment loads of key rivers and lakes, f) hydrographic surveys of Chia Lagoon and Lake Chikukutu to evaluate effects of siltation from runoff and erosion, g) water runoff and loss of top soil in representative sites across the watersheds, and h) feasibility assessments for developing carbon methodologies for potential long-term revenue streams.

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