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Terminal Report

FAO/GOVERNMENT COOPERATIVE PROGRAMME



SUPPORTING CONSERVATION AGRICULTURE FOR SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT (CA FOR SARD), PHASE II

AFRICA REGION
KENYA AND UNITED REPUBLIC OF TANZANIA

PROJECT TERMINAL REPORT (JULY 2007-MARCH 2011)

PROJECT FINDINGS AND RECOMMENDATIONS

Report prepared for
the participating governments
by
the Food and Agriculture Organization of the United Nations

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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LIST OF ABBREVIATIONS

ACT	African Conservation Tillage Network
AESA	Agro-eco-system Analysis
ASDP	Agriculture Sector Development Programme (URT)
ATDC	Agricultural Technology Development Centres
CAADP	Comprehensive Africa Agriculture Development Programme
CA	Conservation Agriculture
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology, Arusha, Tanzania
CBO	Community Based Organization
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CIMMYT	International Maize and Wheat Improvement Centre
CSD	Commission for Sustainable Development
DAP	Draught animal power
DM	Dry matter
FAO	Food and Agriculture Organization (of the United Nations)
FAPEAGRO	Fundação de Apoio à Pesquisa e ao Desenvolvimento do Agronegócio
FFS	Farmer Field School
HIV/Aids	Human Immunodeficiency Virus/Acquired Immuno Deficiency Syndrome
IAPAR	Instituto Agronômico do Paraná (Brazil)
IFAD	International Fund for Agricultural Development
JKUAT	Jomo Kenyatta University of Agriculture and Technology, Kenya
KARI	Kenya Agricultural Research Institute
KIM	Knowledge and Information Management
LoA	Letter of Agreement
LTU	Lead Technical Unit (of FAO)
MAFC	Ministry of Agriculture, Food Security and Cooperatives (The United Republic of Tanzania)
M&E	Monitoring and Evaluation
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NPC	National Project Coordinator
NT	No till(age)
PRSP	Poverty Reduction Strategy Paper
RIASCO	Regional Inter-Agency Coordination Support Office
SARD	Sustainable Agriculture and Rural Development
SARI	Selian Agricultural Research Institute (The United Republic of Tanzania)
SCAP	Smallholder CA Promotion in western and central Africa
SLM	Sustainable Land Management
SRA	Strategy for the Revitalization of Agriculture (Kenya)
SSA	Sub-Saharan Africa
SUA	Sokoine University of Agriculture (URT)
TDV	Tanzania Development Vision
URT	United Republic of Tanzania
VICOBA	Village Community Bank

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Decreasing soil productivity, inadequate soil moisture and erratic rainfall, have resulted in rural poverty and lack of food security for many smallholder farmers in sub-Saharan Africa. These problems are prevalent in rural communities of Kenya and Tanzania, and concern a large part of the rural population in both countries. In order to survive, people tend to overuse natural resources, which form the basis of their livelihoods. Secondly, inappropriate tillage practices are applied. As a result soil fertility is declining and soil erosion increasing. Thirdly, due to the negative impacts of climate change, which are quite pronounced in both countries, drought periods are occurring more often, last longer and rainy seasons are getting increasingly erratic.

The Conservation Agriculture for Sustainable Agricultural and Rural Development (CA for SARD) phase II was a Project implemented in Kenya and Tanzania from July 2008 up to March 2011. The project aimed to contribute to the promotion of growth and improved food security in Kenya and Tanzania through the scaling up of conservation agriculture as a sustainable land management tool. CA is based on three fundamental principles: (i) minimum soil disturbance (ii) adequate soil cover at critical periods of the growing cycle, and (iii) diversified crop rotations. CA addresses several key constraints that are challenging agriculture in Africa: reducing farm labour requirements; sustaining the natural resource base (by reversing land degradation, re-building of soil health through build-up of soil organic matter through minimum soil disturbance and soil cover/cover crops); contributing to mitigating the effects of climate change; and reducing the vulnerability of farm incomes.

The project was funded by the Government of the Federal Republic of Germany and executed by the Food and Agriculture Organisation (FAO) of the United Nations. The regional coordination and administration functions were performed by the African Conservation Tillage Network (ACT).

In the promotion of CA, the CA-SARD II Project stimulated, facilitated and empowered rural small-holder subsistence farmers to adopt and adapt for their own use, farming practices that help to mitigate the negative effects of climate change on food security and rural livelihoods. Through an increase in the numbers of CA farmer field schools (FFS), the project was able to expand the adoption of profitable CA practices by smallholder farmers in the two East African countries. To facilitate the scaling out process the Project enhanced the supply and availability of CA equipment for farmers by stimulating private sector participation in the manufacture, retailing and hiring of equipment.

1.2 OUTLINE OF OFFICIAL ARRANGEMENTS

The CA SARD II project was a regional multi-stakeholder programme whose key implementation players (FAO, ACT, and the national Governments) shared collective responsibility in the overall programme implementation. The project management and administration rested with the FAO/LTU in close collaboration with the Regional office for Africa and the National FAO Representations. However, the project was also designed to

provide maximum opportunities for institutional capacity building in the local participating institutions and in ACT. ACT executed the key regional coordination and administrative roles in close collaboration with FAO and national participating organizations.

The management structure was also designed to facilitate open and transparent collaboration between the partners, and to establish clear lines of communication and responsibility. Project implementation arrangements were modified and refined to take into account the many lessons learnt from the first phase of the project (2004 – 2006). Implementation arrangements were primarily designed to underpin the following principles:

- i. Empowerment and capacity building in local institutions, especially government departments, for the management of the project.
- ii. Institutionalizing and strengthening local ownership of the project thrust to ensure sustainability in the momentum and dynamics of promoting SLM/CA.
- iii. Institutionalization and alignment of the project thrust to and within local government initiatives and programmes on SLM and agricultural sector growth.

In this regard, the project was implemented through existing government structures including the farm level agricultural extension and research organizations. At the end of the project, support for these structures had made them capable to continue and sustain the thrust on SLM/CA promotion in the participating countries. This element was, in a way, part of the local co-financing component and participating governments contributed to the project implementation through elements like staff salary costs while the project contributed by topping up national staff payments.

National, regional and international interactive components are distinguished in the overall set-up and functioning of the project's management and implementation arrangements. At the national level, KARI and SARI for Kenya and the United Republic of Tanzania (URT) respectively assumed the day-to-day project implementation responsibilities. This also ensured local institutionalization of project implementation.

Each country (Kenya and URT) nominated a National Project Coordinator and an Assistant to the project coordinator that ensured Government ownership of the project and integration into national programmes and activities. At Regional level, ACT through its secretariat took the project coordination functions including support to farmer capacity building and regional training plus knowledge, information, monitoring, evaluation and reporting. Table 1 gives further details

Table 1. Details of the project implementation modalities:

Institution		Responsibilities	Key functions
International	FAO – HQ	Lead Technical Unit as well as operational unit and budget holder	<ul style="list-style-type: none"> - Overall project management - Donor linkages support - Agri-business and input supply chain development support - SARD linkages and streamlining - Technical SLM/CA backstopping
	FAO RAF	Operational unit and budget holder	<ul style="list-style-type: none"> - Operational and administrative unit

	IAPAR; FAPEAGRO, Brazil	Facilitation of South-South linkages between South America and East Africa	<ul style="list-style-type: none"> - Facilitated linkages to CA equipment industry between East Africa and Brazil - Facilitated negotiations between FAO and manufactures for training courses and study tours
Regional	African Conservation Tillage Network (ACT) – contracted by FAO	Regional Project Coordination responsibilities	<ul style="list-style-type: none"> - Workplan design and coordination of implementation and support to national teams - Knowledge and Information Management - Technical backstopping of country teams - The Project M&E and curriculum support - Key training support
		Knowledge and Information Management:	<ul style="list-style-type: none"> - Support and knowledge synthesis and documentation from on-farm M&E - Documentation of CA soft (website) and hard copy materials - Maintaining project webpage - in ACT website)
Kenya	MoA (KARI HQ)	National Counterpart (KARI)	<ul style="list-style-type: none"> - Government ownership - Project national focal person - Link to other government and non-government initiatives in Kenya - Streamlining CA in national strategies and plans
	KARI-NARL	<ul style="list-style-type: none"> i. Project Facilitation - ii. District Facilitation iii. Village/Group Facilitation 	<ul style="list-style-type: none"> - day-to-day management of the project in the country - Liaison with other players within the project and beyond - Technical and administrative support to the district/group facilitators
Tanzania	MAFC	National Counterpart	<ul style="list-style-type: none"> - Government ownership - project National focal person/desk - Link to other government and non-government initiatives in the country - Streamlining of SLM/CA in national strategies and plan, e.g. the ASDP
	SARI	<ul style="list-style-type: none"> i. Project Facilitation unit ii. District Facilitators iii. Village/Group Facilitators 	<ul style="list-style-type: none"> - day-to-day management of the project in the country - Liaison with other players within the project and beyond - Technical and administrative support to the district/group facilitators

The National FAO Offices: The national FAO offices (Kenya and Tanzania) were independently, but in liaison with FAO – Rome and with Regional Office support, oversaw project budget functions in the two countries. This was through interactions with country Project Facilitators directly.

1.3 OBJECTIVES OF THE PROJECT

The development objective of the project was to promote *improved socio-economic growth, food security, and livelihoods in Eastern Africa through Conservation Agriculture based interventions.*

This objective corresponds with the major policies and strategies of Kenya and Tanzania and meets the priority needs of the rural population in both countries. It was to be achieved through three Intermediate Objectives:

1. Adoption of profitable conservation agriculture practices by smallholder farmers in Kenya and Tanzania expanded.
2. Supply/availability of CA tools and equipment to farmers in target districts in East Africa enhanced in general and specifically through improved networking from Brazil to East Africa (by stimulating and facilitating private sector interest and capabilities in manufacture, retailing and hire of CA tools and other inputs – and through facilitating enhanced private sector interaction between East Africa and Brazil).
3. Strengthen institutional mechanisms (including consolidating ACT) to stimulate and sustain knowledge sharing and to foster active government support, farmer innovations and in general up-scaling of CA in the two project countries, in the Region and beyond.

The project was implemented in both participating countries with a similar range of activities, designed to achieve the following core outputs:

1. CA FFS participating farmers are experimenting with CA using the FFS approaches and are applying adapted CA practices in their own plots.
2. Farmers are more knowledgeable on CA and are learning and applying CA practices into viable farming enterprises.
3. CA FFS graduate farmers organized in CA-SLM innovation networks stimulating collective SLM/CA responsibilities, enhanced social learning and widespread CA adoption (scaling out).
4. Local artisans and farm implement manufacturers are willing and able to fabricate CA tools and equipment.
5. Service providers, including local traders and suppliers, support CA adoption through the supply of CA required inputs (seed and equipment).
6. More farmers accessing CA equipment through local hire-services.
7. ACT's institutional networking capability strengthened (knowledge management expertise, more contacts and membership in the region including at farmer level; active links to NEPAD, focal persons in Kenya and Tanzania governments, etc) as a framework for enhanced CA knowledge generation and sharing.
8. CA-SARD II lessons and evolving knowledge on CA adaptation / innovation processes and technological best practices including impact / effects on livelihoods and environment captured and shared.
9. Governments of Kenya and Tanzania expressing active support for, and commitment to, CA/SLM promotion.

1.4 PROJECT MANAGEMENT AND OPERATION

CA-SARD II is one of the projects that ACT is coordinating since 2007 in both Kenya and Tanzania. The project was funded by a German Trust Fund through the Food and Agriculture Organization of the United Nations, FAO. The direct implementation of the project was by the Kenya Agricultural Research Institute (KARI) and Selian Agricultural Research Institute (SARI) on behalf of the Ministries of Agriculture in Kenya and Tanzania. The role of ACT in the project was to undertake regional technical and administrative coordination of project monitoring and evaluation; and knowledge and information management.

The project was managed by specially set-up national coordination offices (one in each country) and national project coordinators (NPCs) and their assistants were contracted by FAO in liaison with the Governments of Kenya and the United Republic of Tanzania.

In Kenya, the project was hosted by the Ministry of Agriculture through the Kenya Agricultural Research Institute (KARI) in Nairobi. The five project pilot districts selected were Laikipia, Mbeere, Nakuru, Bungoma and Siaya; each district team of facilitators was headed by a district coordinator, often assigned to the project (at about 50% of their time) from the District Ministry of Agriculture offices.

In the United Republic of Tanzania, the project was hosted at Selian Agricultural Research Institute in Arusha. The NPC was based in the Ministry of Agriculture and Food Security, Dar-es-Salaam, while national and assistant facilitators were based in Arusha and the district facilitators of the six project Districts namely Arumeru, Karatu, Babati, Moshi and Hanang.

The African Conservation Tillage Network (ACT), through a Letter of Agreement with FAO, provided technical regional coordination between the two project countries, staff (facilitators) training and backstopping support in CA and development and management of the project's integral learning and impact assessment monitoring and evaluation (M&E) process. ACT roles and responsibilities were in both technical backstopping and the regional overall management of the project. At field level, the project's FFS groups were supported by Facilitators and District coordinators, all of whom were staff members of the local government agricultural extension systems.

2.0 RESULTS AND CONCLUSIONS

CA-SARD Project Phase II has focused on promoting intervention practices such as zero tillage, availing CA equipment, training of artisans and forging links with the private sector. Based in 5 districts in both Kenya and Tanzania, farmers involved in the project were grouped into Farmer Field Schools (FFS). FFS formation gave farmers a chance to experiment with the CA technologies and reflect on their various merits and make decisions on the need to adopt them.

Results and conclusions from this project demonstrate the impact and usefulness of CA towards achieving broad-based agricultural growth and development.

2.1 Objective 1: Adoption of profitable conservation agriculture practices by smallholder farmers in Kenya and Tanzania expanded.

Output 1: CA FFS participating farmers experimenting with CA using the FFS approaches and applying adapted CA practices in their own plots.

Indicator: Area under CA has further increased by at least the following: 200ha by end of year 1; 450ha by end of year 2; 1000ha by end of the project, i.e. year 3

Results: The area under Conservation Agriculture has increased by 1600ha by the end of project. This has been due to increased adoption by members of FFS and CA promotion initiatives.

Indicator: No. of farmers practising CA at end of year 1 > 800; end of year 2 > 2600 and > 4000 at end of year 3)

Results: A total of 282 farmer field schools (FFS) groups, the overall number of farmers practising CA at the end of the project period was registered at 8460.

Indicator: Percentage of farmers participating in CA FFS that are applying promoted CA options (year 1 > 75%; year 2 > 80%; year 3 = 85%)

Results: About 47% of the FFS farmers have taken up elements of CA in their own farms, and an estimated 75% of FFS group members are aware of the benefits of CA. Though uptake is below the target of 85% it is still considered high compared to diffusion rate of other agricultural technologies. Constraints include: cultural barriers; rigid mindsets; consecutive severe droughts in some districts and shortage of CA equipment.

Output 2: Farmers more knowledgeable on CA and learning and applying CA practices into viable farming enterprises.

Indicator: 70% of Farmers can explain and interpret farming related land degradation cause-effect issues.

Results: More than 85% of farmers in the established FFS groups have enhanced understanding of the three CA principles. Farmers are now able to relate the benefits contributed by CA as compared to the land degradation caused by conventional farming. In

all districts farmers have assimilated the CA principles into their own local undertakings. They are able to compose dramas, poems and role-plays, which they present at key functions such as farmer field days.

Indicator: Target farmer groups and communities streamline SLM/CA among their priority development issues and are demanding/highlighting appropriate government/donor support in related programmes. Number of CA-FFS requests to district development plans for assistance and support in SLM/CA issues is doubling up to year 2 and tripling at year 3.

Results: Due to enhanced knowledge and understanding of CA technologies, more than 500 FFS participating farmers trained non-FFS neighbours on CA related farming. 80% of the FFS in Kenya and 65% in Tanzania had commercial plots for income generation. Vegetables, seed amaranth and maize were some of the crops under CA in the diversified enterprises.

Three districts in Tanzania and 2 districts in Kenya have mainstreamed CA concept in their annual district work plans with allocation of supporting resources. The MAFC in Tanzania and ACT continued to support 15 districts with power tillers equipped with rippers and no till seeders beyond the CA SARD. Another 400 farmers from 100 FFS will be supported with inputs and training to set up 0.5 acre CA plots.

Indicator: Farmers' organisations and private sector investors detoxify and eventually process cover crop seeds (mucuna) to add value for livestock feeds and the backward linkages stimulating scaling up of CA.

Results: ACT engaged the Department of Animal P ATDC roduction of Sokoine University of Agriculture (SUA) to carry out feeding trials of chickens with feeds containing different levels of mucuna extruded at different temperatures. The results and recommendation of the first batch of trials on different safety levels are:

- Extrusion of mucuna beans at 165°C and 20 rpm reduced the L-Dopa content by 84 – 91% to < 1.0g/100g which is the maximum tolerable level
- Increasing the residence time to 10 rpm (at 165°C) reduced the L-Dopa content by 92.5 - 95.6% to < 0.4g/100g DM

The on-going feeding trials on chicken and mice will be concluded by the end of July 2011 and findings produced in August 2011.

Indicator: Treadle pump assisted drip irrigation demonstrated for production of high value and multiple crops under CA.

Results: During the project drip irrigation equipment was procured and delivered to 10 FFS in Kenya and 8 in Tanzania to increase access to water for crop irrigation. Follow up training on the treadle pump assisted drip irrigation was undertaken. The benefits on the use of the equipment are still being evaluated by farmers and a concluding report produced in August 2011.

Output 3: CA FFS graduate farmers organized in CA-SLM innovation networks stimulating collective SLM/CA responsibilities, enhanced social learning and widespread CA adoption (scaling out).

Indicator: 90% of the graduated FFS groups are organised by themselves into self-sustaining farmer innovation/learning national networks. This means > 100 FFS groups in year 2 and > 200 FFS groups at year 3.

Results: Out of the established 282 FFS-groups in both countries, 180 participants graduated during the project span. In Tanzania, more training was provided to those who graduated on savings and credit and utilising the facility of Village Community Banks (VICOBAAs). FFS groups have been facilitated and encouraged to join the existing farmer networks namely: MVIWATA in Tanzania and KENFAP in Kenya. The CA-FFS in Bungoma District have subscribed themselves to the district FFS network, whereby they are entitled to loans and credits for CA inputs from revolving funds managed by the district network. During the project period several FFS groups hosted local and international visitors with whom they shared their success and constraints on CA experiences.

2.2 Objective 2: Supply/availability of CA tools and equipment to farmers in target districts in East Africa enhanced in general and specifically through improved networking from Brazil to East Africa (by stimulating and facilitating private sector interest and capabilities in manufacture, retailing and hire of CA tools and other inputs – and through facilitating enhanced private sector interaction between East Africa and Brazil)

Output 4: Local artisans and farm implement manufacturers are willing and able to fabricate CA tools and equipment.

Indicator: Demand for CA tools (various types) satisfied at affordable prices and in good quality by local private sector.

Results: Local artisans acquired the capacity to produce adequate and quality ox-drawn rippers, sub-soilers, shallow weeders and manually-pulled sprayers. The increased demand for CA implements outside CA SARD districts, as a result of the increased awareness creation by the project, was partially satisfied through sales of imported implements directly by Brazafric and also ACT.

Local artisans and farm implement manufacturers are willing and able to fabricate CA tools and equipment. Eight local manufactures/artisans empowered by the project have produced up to 6163 units of a range of CA implements. Fourteen regional representatives mainly drawn from the East African manufacturers/artisans, policy makers and project coordinating team toured Brazil and held discussion with Brazil CA manufacturers for possible technology transfer. As a result one of the companies (Brazafric) has increased importation of CA implements and regional manufacturers/artisans have integrated CA implements into their production systems.

Indicator: Production of CA implements and tools within the region reaches at least 300 units at project midterm (1.5 years) and 1000 units by end of the project period.

Results: Eight of the 10 local artisans who participated in the Brazil tour in 2008 continued to manufacture CA equipment to fulfil emerging demands and business interest. The project also facilitated training of 6 technicians from EA manufacturers in Brazil and Paraguay in 2010, further building the local capacity resulting in increased cumulative units of 6163 CA implements units produced and sold in the region, as per table 1 below. Through expanded project activities, CAMARTEC, Intermech, JKUAT and Ndume are involved in development and testing of no till power tillers and tractor rippers. Initial bench and on-station test reports show that the no till seeders drawn by single axle tractors are an efficient and low cost option for direct seeding of crops. Extensive on-farm validation of the equipment is on-going and will continue for the rest of the coming planting season.

Table 1. Cumulative local manufacturing of CA Equipment within East Africa										
Grand Total Production of CA Equipment by type by East African Workshops										
No	CA Equipment	2007	2008	2009	2010	Total				
1	Ripper	355	328	1000	1600	3283				
2	Ripper attachment	515	42	200	0	757				
3	Ripper Planter	28	16	45	0	89				
4	Subsoiler	52	12	25	0	89				
5	Subsoiler attachment	500	0	200	0	700				
6	Jab planter	208	359	256	308	1131				
7	DAP Direct seeder	18	27	19	25	89				
8	Chopping roller	2	20	0	0	22				
9	Pedestal sprayers	0	0	3	0	3				
						6163				
Total Production of CA Equipment by type and manufacturer										
		Ripper	Ripper attachment	Ripper Planter complete	Sub-soiler	Sub-soiler attachment	Jab planter	DAP Direct seeder	Chopping roller	Pedestal sprayers
1	SEAZ	283	57	29	34		106	25	22	
2	Nandra	3000		60	55		600	49		
3	Femoworks						50			3
4	LoTech									
5	ATDC Kenya						222			
6	Ekima		700			700				
7	Artisan Nakuru	0	0	0	0	0	38	0	0	0
8	Intermech						115	15		
		3283	757	89	89	700	1131	89	22	3

Indicator: Appropriateness of design and quality of locally manufactured CA implements and tools confirmed including through farmer/user satisfaction.

Results: Most local workshops working with the project have designated artisans who were trained and exposed to CA equipment by the project. FEMO works of Kenya was particularly engaged and specialized in production of jab-planters by investing in making moulds for plastic injection moulding. ACT worked closely with FEMO works to improve and certify the quality of the planters.

Indicator: More (>20) local private sector manufacturers/traders seeking information on CA equipment supply from/through the project >10 targeted companies (large and small) start producing/supplying CA equipment by end of the project's 2nd year.

Results: All of the 8 East African manufacturers/artisans supported by the project to the Brazilian tour contacted ACT asking for supply orders, current prices of Brazilian equipment or technical production aspects. These are Nandra, SEAZ, Intermech, ELMI and CAMARTEC of Tanzania specializing in production of rippers, sub soilers, jab planters and knife rollers. Others from Kenya are Femo Works; EKIMA engineering, LO-TECH ventures, ATDC's and district based trained artisans. ACT coordinated the training of the 6 CA

implement manufacturers from both Kenya and Tanzania in Brazil and Paraguay. The six technicians, from Nandra, Intermech, Ministry Agriculture (MAFC), FEMO works, LO-TECH Ventures and Babati district Council, completed their four weeks study tour to Brazil and Paraguay in August 2010 on CA implement manufacturing, field application and maintenance. Two trainees (from Nandra and Intermech) have been promoted to senior CA equipment development positions in their respective companies since their return from the training.

Output 5: Service providers including local traders and suppliers, support CA adoption through the supply of CA required inputs (seed and equipment).

Indicator: 20% of local commercial stockists in target villages are supplying CA equipment, tools and other CA relevant inputs, e.g. cover crop seed.

Results: While improved maize seeds were readily available from local stockists, cover crops seeds (Dolichos lablab, pigeon peas and butter beans) were not. They are made available to farmers informally by fellow farmers and through KARI and SARI. The project also established the percentage of commercial stockists providing CA services to be about 5%.

Indicator: CA equipment available on local markets at affordable prices.

Results: Due to capacity building rendered to the local equipment manufacturers, farmers now are able to access some of the CA equipment (especially DAP rippers) through the local markets at affordable prices.

Indicator: 4 commercial contract arrangements in preparation between CA equipment manufacturers in Brazil and suppliers/manufacturers in East Africa for the importation and supply of CA equipment in East Africa to supplement local manufacturing.

Results: None of the East African Manufacturers has a CA equipment importation contract with Brazil. However, there are three contracts from importers, being:

- a. Brazafric with Fitarelli, Werner, Vence Tudo and Baldan for the whole range (hand, animal, tractor) of equipment.
- b. Farm Engineering (Kenya) with Baldan, for tractor mounted seeders.
- c. Tanzania Farm Service Centre, agents for Baldan's CA equipment.

Output 6: More farmers accessing CA equipment through local hire services.

Indicator: At least 30 private DAP and tractor equipment hire service points/units functioning at the end of Year 1 and 20 annual additional ones in Years 2 and 3 in DAP/tractor active communities

Results: Nineteen farmers are providing DAP hire services to neighbours at a fee using ripper/direct seeders supplied to the FFS groups. Training on CA equipment hiring systems and entrepreneurship was provided to 63 DAP hire service providers. These had access to CA equipment facilitated to them on credit from the project to enable them serve neighbours commercially. After agribusiness and CA equipment hirers' trainings to the selected entrepreneur farmers, the opportunities for farmers to access CA equipment services such as planting, animal powered ripping/direct seeding and herbicide spraying have increased.

Indicator: At least 5 private tractor-hire service points/units functioning with commercial hiring services at the end of year 1 and 5 annual additional ones in years 2 and 3

Results: Besides Lengetia farm, which continues to provide no till seeding services to neighbouring smallholders using the CA SARD tractor seeder and the Ndume walking tractor seeder, Nakuru district has the highest number (11) of 2 and 3 row tractor rippers hired to smallholders. During the reporting period, ACT procured 4 no till tractor rippers. Three were sent to Tanzania, where they have been used to in no till seeding of 75 acres on an experimental basis, but eventually moving to commercial agriculture. ACT did also supply to the Tanzania CA equipment hirers, no till seeders and herbicide applicators also sold to commercial CA service providers as per Annex 5.

Indicator: Number of farmers accessing CA equipment through commercial hiring schemes is doubling by the end of year 2 and has further increased by the end of year 3. In absolute numbers this means: The numbers of commercial hire schemes increase from 1 per project district to 2 in year 2 and to 3 in year 3.

Results: CA SARD acquired 4 prototypes of no till seeders for 2WTs (from ACIAR, John Morrison of University of Tennessee USA, Ndume and Dong Feng of China) modified them with local manufacturers (Ndume, Intermech cluster and CAMARTEC) and supported acquisition of proven models to hirers. To date 2214 farmers implementing CA technologies have benefited from services offered by these entrepreneurs.

2.3 Objective 3: Strengthen institutional mechanisms (including consolidating ACT) to stimulate and sustain knowledge sharing and to foster active government support, farmer innovations and in general up-scaling of CA in the two project countries, in the Region and beyond

Output 7: ACT's institutional networking capability strengthened (knowledge management expertise, more contacts and membership in region including at farmer level; active links to NEPAD, focal persons in Ke/Tz governments, etc...) as a framework for enhanced CA knowledge generation and sharing.

Indicator: Membership to ACT from within the region (East Africa) rises by at least 300% by the end of the project. (from currently 200 to 400 by end of first year to 600 at the end of year 2 and >800 by end of year 3.

Results: With the unveiling of the new ACT online membership registration, ACT has managed to recruit 4500 network members (farmers, extension staff and individual champion farmers) during the project period. This is a rise of more than 300%, made possible through the website and sensitization done during meetings and conferences.

Indicator: Networking interactions between CA-SARD II and other CA initiatives through participation in at least 3 workshops/events per year (organised by CA-SARD or other institutions).

Results: ACT and the National CA-SARD project coordinators and facilitators participated in numerous networking events (workshops, conferences, seminars, study tours, agric shows) – refer Appendix 2.

Indicator: Additional staff (knowledge management and IT personnel) engaged at project regional office.

Results: Knowledge and Information Manager and IT specialist were engaged from early 2008 and continued to enhance and strengthen ACT human capacity until the project end of March 2011.

Indicator: Quarterly meetings between ACT and Ke/Tz government focal persons

Results: The project organised quarterly meetings and events between government focal persons from Kenya and Tanzania. They include exchange visits, monitoring and evaluation meetings, CA/FFS training courses and joint field visits as detailed in Appendix 2.

Indicator: Record of interactions of ACT with NEPAD and resulting actions; especially: Nepad/TerrAfrica related projects jointly carried out (3 meetings per year)

Results: The ACT regional body is now recognized as an affiliate of AUC-NEPAD and is sitting in the Agriculture Climate Change Management committee. The organization is spearheading a number of CA initiatives in collaboration with national, regional and international partners across the continent. These are: the sida funded, regional scoping study to build the framework for scaling out conservation agriculture with agroforestry in Africa; the EU funded agro-ecology based aggradation-conservation agriculture (ABACO); the EU funded Conservation Agriculture in Africa: Analysing and FoReseeing its impact – Comprehending its Adoption (CA2AFRICA). ACT participated in the Stakeholder Validation Workshop for the Comprehensive Africa Agriculture Development Programme (CAADP) Pillar 1 Framework held at Bamako Mali in February 2010. ACT did also participate in the AU coordinated COMESA meetings to scale CA in Kenya, Uganda, Tanzania and Zimbabwe and the Region at large.

Indicator: Approx 500 persons per year participate in organized exchange programmes.

Results: ACT facilitated and organised many regional exchange visits for farmers, champion farmers, policy makers, CA equipment manufacturers and the hosting of international visitors. As an example: 36 champion farmers from Mozambique and Zimbabwe visited Swaziland in 2009; about 80 farmers from Kenya and Tanzania exchanged visits; 9 CA facilitators from West Africa visited East Africa in 2009; several FFS groups hosted local and international visitors with whom they shared experiences. Details are presented in Appendix 2. ACT invited and hosted a high level delegation of Directors from the Ministries of Agriculture and Forestry of the Government of Southern Sudan to CA sites in Kenya and Tanzania. ACT conducted two international training courses on conservation agriculture for southern Africa in Lesotho and Zimbabwe. This was done in collaboration and support with other partners including FAO Southern Sudan and FAO- RIASCO office in South Africa.

Output 8: CA-SARD II lessons and evolving knowledge on CA adaptation/innovation processes and technological best practices including impact/effects on livelihoods and environment captured and shared.

Indicator: Farm level participatory M&E systems integrated in farmers' FFS learning processes and 65% of FFS group members applying the system in their own private fields in year 1; 80% in year 2, 90% in year3.

Results: At least one M&E/technical backstopping mission was conducted by ACT jointly with the NPCs in each quarter of the project lifetime. The M&E data checklists were analysed by ACT and the results shared with stakeholders through publications, and information sharing meetings.

Indicator: CA adaptation/innovation processes and technological best practices documented. Information shared in specific targeted forms (including electronic, dedicated literature materials, in farmer discussion/learning fora, etc.) reaching 1000 persons in y1, 3000 persons in y2, 9,000 in year 3.

Results: ACT has used the results of the CA-SARD project to develop posters and leaflets and the promotional products are widely shared by ACT members and partners. Specifics were:

- 3000 CA manual were printed with partial contribution from CTA.
- 500 CA case study books distributed to visitors to the CA-SARD II project, and field partners.
- Designed, printed and distributed the following publications with numbers of copies in bracket: CA-SARD brochure (8,000); ACT brochure (10,000); Jab planter manual (3000) Animal drawn manual (2,500); Magoye Ripper manual (2500), SCAP brochures (7,000), CA poster (10,000) and sub-soiler manual (2,500) and information leaflets (5000).

Output 9: Governments of Kenya and Tanzania expressing active support for, and commitment to, CA/SLM promotion.

Indicator: Governments of Kenya and Tanzania prioritise sustainable natural resource management, in line with CA principles documented in official government strategy and policy papers. Governments recognise CA in the efforts to revitalise agriculture in addressing food insecurity, poverty and environmental degradation documented in official government strategy and policy papers. CA/SLM (incorporating in related NEPAD/ TerrAfrica objectives) streamlined into Government food security, poverty alleviation and environmental management strategies, e.g. in the ASDP, PRSP, and TDV2025 in Tanzania and the SRA in Kenya.

Results: The national project coordination offices participated in key government meetings, conferences and workshops within the national government frameworks. The capacity of ACT has also been strengthened and within the project period the organization was able to participate in the world food day event. The Government of Tanzania through the Agriculture Sector Development Program (ASDP) has allocated funds for promotion of CA (training of farmers, extension officers and demonstrations) in 16 Districts. District councils have also allocated funds to train farmers and extension. CA activities are factored in the Tanzania national budget of the Ministry of Agriculture, whereby ACT is also recognized as a key partner during implementation. CA-SARD II national offices have managed to design and produce a number of promotional materials which include posters and leaflets and are able to share with and inform policy makers at level government levels.

2.4 Effects and impact

Most farmer groups now understand the positive impact of Conservation Agriculture. The main advantages in comparison to traditional farming are:

- Generally higher yields.
- Lower production risks; at least some yield in years with extreme drought (whereas traditional plots may fail completely).
- Less labour due to minimum tillage and weed control with herbicides.
- Additional revenues from soil covering legumes that can be sold as a cash crop (e.g. seed of pigeon pea (*Cajanus cajan*) and *Dolichos lablab*).
- Better nutrient supply through ground covering legumes.
- Rehabilitation of degraded land (mainly through sub-soiling and ground covering legumes).

CA adopters reduce the workload (due to no-till and to herbicides) and increase their crop yields (due to better soil-fertility management).

2.5 Factors Influencing CA Adaptation/Adoption

Several local factors seem to have influenced which CA options were adopted. These are considered below:

Increased Knowledge sharing: The FFS methodology proved to be a suitable and successful farmer-driven approach in the learning requirements of the CA concept. The FFS methodology builds a platform conducive to the exploration of new and traditional farming approaches with self- and group-learning exercises, experimentation and local empowerment as key features. In addition, ACT has formed a knowledge sharing platform and through its website farmers, researchers and agricultural extensionists are able to access information on conservation agriculture practices in Africa and worldwide.

Increased availability of CA equipment and tools: Through the linkages formed during the project period more CA equipment and tools were made available to farmers allowing them to experiment and appreciate the effectiveness of various CA equipments. Also, the increase in numbers of local artisans has led to innovation in developing cheaper designs for local farmers.

2.6 Environmental and Socio-economic Impact and Sustainability of Impact:

The effects of climate change have become quite pronounced in both countries: drought periods are occurring more frequently, they last longer and rainy seasons are getting increasingly erratic. The CA concept offers an appropriate technology not only to adapt to climate change (according to records, CA plots performed better under drought conditions than neighbouring conventional plots) – it also fosters sustainable utilization of natural resources and, through agricultural intensification, also offers better economic prospects to smallholder farmers. Especially the labour reduction aspect makes it suitable also for female farmers. The critical issue for the sustained success of CA remains the availability of seeds and equipment as well as maintenance and repair services.

2.7 Gender Equity in Project Implementation and Results:

The project has fostered gender mainstreaming in two ways: in project management, two women are in responsible positions (the Deputy Project Facilitator in Tanzania, and the Project Coordinator in Kenya). In project implementation, the project has achieved near gender parity in many FFS groups (women are actually a majority in several groups); the reduced labour requirements have enabled some women farmers to increase their production and also take over parts of the cultivation cycle (land preparation) which used to be a male domain. Time savings are also reportedly used by women to engage in small-scale businesses, thus improving their income. The project has been less successful in documenting these experiences systematically; an analysis of the gender dimension in possible changes in access to, and control over, resources has not been conducted.

2.8 Cost-effectiveness:

CA is potentially more profitable than conventional agriculture, and there is evidence to the effect that this applies also to the CA-SARD project. However, model calculations (even those done by the project) vary, and there are some caveats when it comes to incomplete application of CA principles. In one (not uncommon) interpretation, CA may actually increase dependence on external inputs (especially herbicides).

2.9 Sustainability and Scaling-Up

In order to improve the sustainability and enhance upscaling of CA technology with a view to increasing food security and alleviation of poverty an upscaling proposal has been made seeking funding to:

- Enhance knowledge sharing;
- Ensure implements are available to farmers; through facilitating private sector involvement in implement importation, manufacturing and distribution (as well as cover crop seed production).

2.10 Challenges

The following were challenges faced during the promotion of CA practices:

- Competition for crop residues (livestock fodder vs. soil cover) remains a major problem, particularly in the drier districts.
- Use of cover crops is limited due to the non-availability of seed.
- Partial adoption of CA practices in FFS farmers own plots.
- Cost of CA implements is high leading to low demand by independent farmers.
- Formal collaboration between Brazilian and local manufacturers has not materialized
- Ready availability of most CA implements is limited to major urban centres; the more expensive implements (e.g. DSAP NT planters) will only be produced against a firm order.

- Most District Agricultural Officers in the project areas are well versed with the principles of CA; however, among extensionists in CA-SARD districts, CA-compliant staff are a small minority.
- Ministries as well as District Departments of Agriculture in both countries continue to send out conflicting messages: programmes promoting ploughing (e.g. the extension programme in Kenya and the Power Tiller programme in URT co-exist with CA programmes, creating confusion.

3.0 RECOMMENDATIONS & CONCLUSION

Conservation Agriculture (CA) has gained wide interest among farmer groups, development NGOs and Government institutions in Kenya and Tanzania. The CA-SARD project has contributed significantly to this development. Adoption rates by farmers and diffusion of CA messages among extensionists appear to be higher in Tanzania as compared to Kenya.

In the initial phase of Conservation Agriculture in Africa, CA-SARD contributed to: a) creating demand among farmers and local governments for support of CA, b) introducing CA to national agricultural policies, programmes and projects, c) developing the African Conservation Tillage Network (ACT) and making it an independent NGO, and d) enabling FAO to keep CA alive over a number of years in which CA faced lot of opposition both internally and externally.

The CA technology as defined by FAO is technologically consistent, innovative and promises a significant improvement in combining sustainability with productivity in agricultural production. The use of herbicides as promoted in several project locations remains a controversial topic: the standard approach taught to many FFS groups promotes the initial use of herbicides, to be gradually replaced by biological (e.g. ground covering legumes) and mechanical (e.g. surface scraping with hand hoes) options

The extension of CA in the 11 intervention areas of Kenya and Tanzania has been successful and most targets of the project have been achieved or even surpassed, such as the number of Farmer Field Schools experimenting with CA, the percentage of farmers testing this technology on their land, and the increased knowledge by farmers about this new technology.

At the same time, farmers face several constraints in applying CA: lack of seeds limits the application of ground covering legumes, one of the key elements of CA. This concerns Kenyan sites in particular. Secondly, the limited availability of CA equipment – notably animal drawn planters – restricts the extension of CA on larger acreages.

Nevertheless, Conservation Agriculture is a complex technology and demands fundamental changes in agriculture. This requires a change in the mindset of farmers, advisors, scientists and politicians. It requires also thorough adaptation and site-specific development of a technology, which is still in evolution. Both take time and require a long-term development perspective. With the high interest of the two governments and various donors willing to invest in future CA projects, necessary continuity should be secured. CA-SARD has accumulated a store of knowledge and experience, from which future projects could profit.

APPENDICES

4.1 Appendix 1 - PROJECT STAFF

Title	Name	Comment
International		
Lead Technical Unit	Director, AGS, G. C. Mrema	Up to December 2009 it was AGST
Lead Technical Officer	Josef Kienzle, Agro-industries Officer	AGS
Budget Holder	Joachim Laubhouet	FAORAF
Regional		
Regional Project Office Desk	Saidi Mkomwa, Executive Secretary, African Conservation Tillage Network (ACT) -	Nairobi; works for Project through LOA agreement – no direct salary
Regional Knowledge Management Consultant	Mzoba Hamisi Dulla	Nairobi; partly through FAO, partly through ACT
M&E Officer	Tom Apina	Nairobi,
IT Consultant	Alfred Namu	Nairobi; salary from FAO
Tanzania		
National Project Coordinator	Richard Shetto	(Government Counterpart) – no project staff
National Project Facilitator	Wilfred Mariki	Senior Researcher Selian Agricultural Research Institute (SARI) – with top-up salary
Assistant National Facilitator	Marietha Owenya	SARI, Social Scientist – with salary top up
Driver/field assistant	Gabriel Mhina	FAO Tanzania staff
Kenya		
National Coordinator – Policy/strategy	Jane Wamuongo	KARI – Assistant Director – with salary top-up
National Coordinator -	Barrack Okoba	KARI Senior Researcher – with salary top-up
Driver/field assistant	Philip Mwangi	FAO Kenya staff

4.2 Appendix 2: TRAINING AND OTHER MAJOR EVENTS

January – March 2011

1. Training workshops

- Training of farmers courses in Kenya and Tanzania on drip irrigation and the use of treadle pumps for CA plots and high value vegetables

2. Meetings and Conferences

- CA SARD end of project workshop, Laikipia Kenya, 24 – 26 march 2011.

July- December 2010

3. Training workshops

- One CA SARD National Project facilitator (NPF) participated in the training of 20 CA facilitators for the SIMLESA CA Project in Tanzania from 26 September to 1 October 2010, conducted in Arusha. Topics covered included, soil degradation, soil cover and cover crops, weed control, crop livestock issues, soil fertility and conservation Agriculture with trees (CAWT).
- CA SARD NPFs (Wilfred Mariki and Marietha Owenya) participated in CA ToT training, conducted in Lindi by Aga Khan Foundation Tanzania to 35 extension officers from Lindi and Mtwara regions in southern Tanzania. The training was conducted from 11th to 18 December 2010. The purpose of the training was to equip the extension officers with CA knowledge so that they can train the farmers to start practicing CA in their own farms.

4. Meetings and Conferences

- CA SARD NPF for Tanzania (Wilfred Mariki) attended climate change effects in Agriculture and food security (CCAFS) Workshop at Safari Park Hotel, Nairobi 26-27/8/2010.
- During the reporting period one facilitator from Arusha council, Lucy Mvungi and WADEC NGO Director, Helen Bradburn attended a Sustainable Technologies write shop in Nairobi which was conducted in August 2010 for sustainable (Report with Tom Apina).
- COMESA CA initiatives (Development of CA country investment programmes) where ACT participated in developing programmes for Kenya, Uganda, Tanzania and Zimbabwe.
- Development of CAWT initiative - the SIDA supported initiative to assist setting up the platform for continental scaling up of CA.
- CA promotions factored in the national budget of the MAFC Tanzania – where ACT is also a partner.
- Two international training courses on conservation agriculture for southern Africa region namely Lesotho and Zimbabwe, this was done in collaboration and support from FAO-RIASCO office in South Africa.

Jan – June 2010

Field visit

- Field mission to Mbeere district by Kenya NPF and ACT in the company of LTU and BH
- Regional M&E field mission to project districts in Kenya and Tanzania in April/May 2010
- Technical Field back stopping mission to Kenya by Senior Crops officer from FAO Rome
- Technical Field back stopping mission to Kenya and Tanzania on cover crops by senior cover crop specialist/scientist from KARI – Dr Joseph Mureithi
- Field visits for agronomy backstopping to Mbeere and Laikipia by FAO LTU Dr Theodor Frederich

Workshop/seminar/conference

- ACT, represented by Hamisi Dulla (ACT KIM) and Zakaria Mkoga (ARI Uyole CA Researcher) organised and led a team of 24 Extension Staff from NGOs and MOA Tanzania to a Conservation Agriculture study tour to Zambia from 31st to 7th February 2010.
- ACT held a Regional CA-SARD District Coordinators meeting on 18 June 2010 in Nairobi.

- Consultative meeting on situation analysis of integrated crop management technologies in Kenya, March 29, 2010 convened DAI Consulting firm and ACT on behalf of the Bill and Melinda Gates Foundation.
- Tom Apina and Saidi Mkomwa attended the scaling up CA in Western Kenya Project Inception workshop conducted by SUSTAINET EA and ACT in Kisumu Kenya, 10-11 May 2010.
- Tom Apina a member of CA-SARD team participated in GTZ – SNRD Africa General assembly held in Ouagadougou Burkina Faso in June 2010
- The ACT Executive Secretary attended the Carbon Measurement, Reporting and Validation (MRV) workshop held at the ICRISAT/ICRAF compound in Bamako Mali entitled “Towards Enhanced MRV Capability in Mali”. The workshop was organised by ICRAF WCA/Sahel and supported by WWF and the Rockefeller Foundation.
- The ACT Executive Secretary participated in the Stakeholder Validation Workshop for the Comprehensive Africa Agriculture Development Programme (CAADP) Pillar 1 Framework held at Bamako Mali in February 2010.
- Saidi Mkomwa (ACT ES) participated in the COMESA Climate Change Programme Review Meeting held at Lusaka Zambia 17-18 May 2010.
- ACT, through Saidi Mkomwa and Hamisi Dulla, participated in the AU coordinated COMESA CA stakeholders’ workshops to chart out the best way forward for up scaling CA in Dar es salaam Tanzania (4-6 March); Kisumu Kenya (17-18 June); Harare Zimbabwe (29-30 June); and Kampala Uganda (12-13 July).
- Wilfred Mariki presented a paper entitled CA in Tanzania: The case of Mwangaza B CA FFS.

Annexed reports

Kenya

1. Annex 1: Input support to farmers
2. Annex 2 BTOR 1: Field visit – March 2010
3. Annex 2 BTOR 2: Field visit to Mbeere with LTU and BH
4. Annex 2 BTOR 3: Backstopping of FFS, to Mbeere and Laikipia, 13-18 April 2010.
5. Annex 3 DAP Hirer training consultant report
6. Annex 4 CA equipment demand schedule
7. Annex 5 FFS information summary sheet
8. Annex 6 Brief report on DAP hirers course and equipment demand

Tanzania

9. Annex 7 Farmer facilitators training report
10. Annex 8 BTOR During Dr Joseph Mureithi’s cover crop back stopping mission to Tanzania
11. Annex 9 Back to office report, Josef Kienzle’s visit 26th - 29th March 2010
12. Annex 10 Tanzania CA Story, Mwangaza B CA FFS Karatu

Regional

13. Annex 11 Photographs of the Intermech No Till seeder for 2WTs based on the ACIAR and John Morrison designs
14. Annex 12 Field test report of the No Till seeders for 2WTs, John Morrison
15. Annex 13 CAMARTEC and FAO Tanzania contract with ACT as third party, for testing of No Till seeders
16. Annex 14 Contract between JKUAT and ACT for testing of No Till seeders
17. Annex 15 List of participants to visit Brazil and Paraguay CA equipment manufacturers
18. Annex 16 Regional Monitoring and Evaluation field mission report
19. Annex 17 BTOR on the Kenya Investment Framework for up scaling Conservation Agriculture
20. Annex 18 MOU ACT-DAP SUA contract
21. Annex 19 Contract ACT-DAP SUA on processing of mucuna
22. Annex 20 Mucuna Monograph, Sokoine University of Agriculture
23. Annex 21 Cover crops Backstopping Mission Northern Tanzania
24. Annex 22 Cover crops Backstopping Mission Kenya

July – Dec 2009

Field days/exhibitions

- Five CA field days in Bungoma- Attended by all FFS representatives in larger Bungoma districts,
- CASARD project team together with the FAO country office participated in the Nairobi International Trade Fair.
- 16/07/09 A joint field day was conducted by SARI, Karatu district council and farmers in Karatu

Field visit

- Two exchange visits – one inter-country study tour of Kenyan farmers to Tanzania (30 people) and an exchange visit between farmers of Laikipia to Nakuru district (36 farmers).

- Farmer exchange visit was conducted between Kenya and Tanzania where 24 CA FFS farmers from Kenya visited Tanzania CA FFS groups in 13th to 18th September 2009
- The Tanzania National CA SARD Facilitators collaborated with the CARE international CA project in Morogoro to conduct exchange for 28 farmers from Morogoro,
- M&E and Documentation missions for Tanzania and Kenya

Workshop/seminar/conference

- CASARD project team participated in an international (East and Central Africa) fertilizer conference where CA –based banner and the CA equipment and inputs were displayed.
- CASARD team (Barrack Okoba) attended the Africa Soil Science Society conference in Cameroon November 23-27 2009 and presented the keynote on *CA in Africa – Linking the Initiatives under the African Conservation Tillage Network (ACT) and AU-NEPAD*
- ACT Executive Secretary participated in the Kwazulu Natal No Till farmers meeting September 8-10 2009 in South Africa. CA in commercial farming and new ACT membership from South Africa were key development
- CASARD team attended the AGRITECHNIC trade fair in Hannover Germany and presented a paper on effect of CA on crop yield and soil health
- Training workshop on the “Efficient use of crop residues” was conducted at Golden Rose Hotel Arusha to 24 CA FFS farmers from Naisulie, Tuamketuamke, Merikinoi, Kilimapunda Moto Mkali, Nduruma, Nalaari, Jitume and Mwangaza CA FFS farmer groups from Arusha Karatu and Meru with support from ASARECA. (17/7/2009)
- Training workshop on the “Efficient use of crop residues” was conducted in Babati district at Himiti village to 24 CA FFS farmers from Mwegea, Gidas, Majengo Tsamasi Mamire Nakwa Reroda villages with CA FFS farmer groups from Manyara region with support from ASERECA (06/10/2009)
- Training of CA FFS for Trainers of Trainer (TOT) was conducted to CARE international CA FFS Farmer facilitators in Kolero and Kasanga wards in Morogoro Rural district from 1st to 10th November 2009.
- ACT together with ICRAF responded to a call to present the Conservation Agriculture with trees proposal to the NORAD and the Norwegian Embassy at the Royal Norwegian Embassy in Dar es Salaam in October 2010.
- ACT Executive Secretary participated in the FAO organised trip to West Africa (Burkina Faso) on Sustainable Crop Intensification and Diversification involving many other natural resource management institutions such as the Govt of Burkina Faso, Embrapa, ICRAF, ILRI, African development bank, FARA, CORAF, CIRAD and University of Londrina.
- ACT participated as resource persons in the International Training course on Conservation Agriculture conducted at Sokoine University of Agriculture from Nov 9-14, 2009 and organised by CONCERN.
- CA Agribusiness training was conducted in Karatu from 23rd to 27th November 2009 to CA implements hire service providers farmers
- ACT participated and gave a presentation on the TGT/TCB review meeting for cotton and textile program on 2nd & 3rd Dec 09

Annexed reports

Kenya

23. CA implement agribusiness hire service provider training report from 5th to 17th Oct 09 – Annex 5
24. BTOR - Kenyan farmers' exchange visit to Tanzania 12th – 18th September 2009 – Annex 3
25. BTOR - Laikipia CA farmers tour to Nakuru district report on 17th Sept 09 – Annex 6
26. BTOR - Tanzanian Farmers exchange Visit to Kenya from 15th Sept 09 - Annex 4

Tanzania

27. BTOR - field trip to accompany the Kenya farmers exchange visits to the CA SARD II CA FFS farmers in Tanzania Annex 1
28. BTOR – Field visit to Hanang, Babati, Karatu, Meru and Moshi 26th August 09 to 5th September 2009 – Annex 10
29. BTOR – Training report for CA implements Agribusiness hirers and service provider in Karatu Tanzania from 22nd to 28th Nov 09 - Annex 8
30. BTOR – Field visit for documentation of CA SARD project CA FFS farmer groups CA sites and data taking from 13th to 23rd July 09

Regional

31. BTOR – Morogoro cluster initiative and Karatu training on CA implement service providers mission from 17th to 28th Nov 09 – Annex 13
32. BTOR - M&E and project documentation mission in Tanzania from 14th to 25th July 09 – Annex 16
33. BTOR - M&E and project documentation mission in Tanzania from 16th to 26th Sept 09 – Annex 15
34. BTOR - M&E and project documentation mission in Kenya from 9th to 21st Aug 09 – Annex 12
35. BTOR - M&E and project documentation mission in Tanzania from 14th to 25th July 09 – Annex 14

Jan – June 2009

1. Training workshops

- 1.1. CA implements refresher course was conducted in Babati to 22 trainees in May 2009 to CA implements users from the CA FFS groups, hire services providers and district Agro-mechanization officers from Hanang, Babati Karatu Meru council and Moshi districts.
- 1.2. Marietha Owenya and W Mariki conducted a CA FFS Training workshop to Monduli, Mbulu, Same and Kilindi district facilitators for new CA FFS groups supported by MAFC was conducted to 8 trainees in Monduli district

2. Meetings and Conferences

- 2.1 Saidi Mkomwa, Wilfred Mariki, Josef Kienzle, Tom Apina and Hamisi Dulla participated in the fourth WCCA held in New Delhi India in February 2009.
- 2.2 Tom Apina and Hamisi Dulla participated and presented CA to the agriculture donor working group in Kenya (March 2009)
- 2.3 Wilfred Mariki attended the inception workshop for the CARE International Tanzania CA project conducted in Morogoro on 11th April 2009
- 2.4 Saidi Mkomwa participated in the Southern Africa Regional CA tour to Zambia. ACT was commissioned to prepare the awareness materials and the workshop proceedings.
- 2.5 Saidi Mkomwa, Josef Kienzle participated in a regional workshop in agricultural mechanization in Arusha Tanzania in May 2009 (annexes 6 and 7).
- 2.6 Tom Apina and Hamisi Dulla participated in AUC-NEPAD's CAADP pillar 1 implementation stakeholder workshop in Nairobi Kenya.
- 2.7 Saidi Mkomwa made a presentation to the July Agricultural Working Group (Donors) Meeting at the World Bank in Dar es salaam titled "*Conservation Agriculture with Trees: Unleashing the Potential for Increased Food Productivity, Climate Change Adaptation and Mitigation in Africa*".
- 2.8 Saidi Mkomwa participated in the COMESA/EAC climate change conference held in Dar es Salaam June 2009 and made the presentation on Conservation Agriculture with trees.
- 2.9 Saidi Mkomwa participated in African Agricultural ministers meeting (AMCEN) in Nairobi June 2009
- 2.10 Marietha Owenya attended the Sustainet Steering Committee meeting in Nairobi conducted in April
- 2.11 Saidi Mkomwa and the Director of Mechanization MAFSC (Shetto) visited Bunda, Kishapu, Kwimba and Mwanza Districts to familiarize with CA activities for cotton and maize supported by the Tanzania Cotton and Lint Board in association with the Tanzania Gatsby Trust (TGT). The project with 24 demonstrations has managed to treble yields of both cotton and maize in the 2 seasons since it started.

3. Technical Backstopping

- 3.1 Theodor Friedrich from FAO Rome in the company of ACT and NPC backstopped FFS schools in Bungoma and Siaya (**Annex 4**).
 - 3.2 Back to office report for CA SARD LTU Josef Kienzle to Laikipia and Mbeere Districts - **Annex 8**.
 - 3.3 Back to office report for NPC Tanzania W Mariki and M Owenya in March 2009 – **Annex 9**.
 - 3.4 Back to office report for NPC Kenya in April 2009 – **Annex 10**.
 - 3.5 Back to office report for NPC Kenya in June 2009 – **Annex 11**.
 - 3.6 Back to office report for ACT for the Siaya and Bungoma district visits – **Annex 12**.
 - 3.7 Tanzanian FFS information data sheets and farmer expectations – **Annex 13**.
 - 3.8 Participants to leadership Training course Tanzania – Annex 14.
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July –Dec 2008

5. Training workshops

- a. The Kenyan Network for Dissemination of Agricultural Technologies (KENDAT conducted a trainer of trainers' workshop on CA equipment. The first training was conducted during the CA-FFS Training of Trainers course which took place between 10th and 28th September 2007 in Nakuru; and the second

- comprised of follow-ups and refresher training at the respective districts - Mbeere and Laikipia. The detailed report is appended in **(Annex 4)**
- b. Refresher TOT Training at Baraka Agricultural College, Molo from 2 – 8 November. There were up to 40 FFS facilitators and District coordinators trained in Molo Kenya including 5 from Southern Sudan who attended the training on special invitation by ACT. **(Annex 5)**
 - c. Conservation Agriculture – Farmer Field School Training of Trainers Report: Training of trainers' course conducted at Dofa Hotel Karatu from 23 Nov 2008 to 4 December 2008. This training course drew a total of sixteen (16) participants/trainees from Meru council (5), Moshi district (5), Karatu district (3), Selian Agricultural Research Institute (1) and the department of Mechanization, Ministry of Agriculture and Food Security (2). Trainers came from Selian Agricultural Research Institute, Babati council, Meru council, Ministry of Agriculture and a retired International Consultant (UK). The 16 trainees are new facilitators for additional 38 CA FFS farmer groups to be established in the 2009 crop season. **(Annex 6)**

6. Meetings and Conferences

- 2.1 Saidi Mkomwa, Barrack Okoba and Wilfred Mariki attended Soil Health Workshop conducted in Rome 22nd to 25th July 2008. 94 participants from Africa, Europe, USA, South America, Australia Middle East and Asia attended the workshop and presented different experiences in soil Health and CA including the CA SARD II from Tanzania and Kenya. The CA Communities of Practice (COP) framework was developed and launched.
- 2.2 Regional CA SARD II Team FAOTZ, MAFC, SARI meeting was held in Dar; 7 Participants discussed the budget and work plan for Tanzania and also the outcome from the East African CA implements manufactures study tour to Brazil in May 2008
- 2.3 Saidi Mkomwa, Tom Apina, Barrack Okoba attended International CA workshop in Nanyuki in July 2008.
- 2.4 Tom Apina participated in the FAO Emergence workshop for the development of regional CA proposal/programme in September 2008
- 2.5 Saidi Mkomwa and Tom Apina participated in the official launch of SCAP in Ouagadougou Burkina Faso in December 2008.
- 2.6 Tom Apina attended Africa Forum in Addis Ababa Ethiopia in September 2008
- 2.7 Tom Apina attended CA proposal writing in Montpellier France in November 2008
- 2.8 Hamisi Mzoba attended a banana conference in Mombasa in October 2008
- 2.9 Marietha Owenya attended SUSTAINET documentation meeting in Dodoma Tanzania

7. TECHNICAL BACKSTOPPING

- 3.1 M&E report for CA SARD II Tanzania Annex 1(a).
 - 3.2 M&E report for CA SARD II Kenya Annex 1(b),
 - 3.3 List of equipment procured for Tanzania and Kenya – Annexes 2(a) and 2(b).
 - 3.4 Back to office report for CA SARD National Coordinator Tanzania – R Shetto - Annex 3
 - 3.5 CA equipment training report – KENDAT – Annex 4
 - 3.6 Back to office report Brian Sims – Annex 5
 - 3.7 CA Training of FFS ToTs in Karatu – Annex 6
 - 3.8 ACT familiarization tour to CA-SARD Project sites in Kenya - Annex 7
- ACT familiarization tour to CA-SARD Project sites in Kenya - Annex 8

Jan – June 2008

8. M & E checklist development workshop

This was a regional workshop organized by ACT and attended by the national project coordinating teams from both Kenya and Tanzania. A total number of 18 project staff mainly Facilitators and District coordinators attended the workshop. The workshop report is available

9. Brazil study tour for East African delegation

This tour brought together 14 equipment dealers and government officials from Kenya and Tanzania. The tour was regionally coordinated by ACT and a comprehensive report is available in this regard

July – Dec 2007

Kenya

1. Regional M&E workshop report held in Nairobi Kenya (16th-18th Oct 2007); **Annex 11**
2. ToT training report held in Nakuru Kenya (10th-28th Sept 2007) ; **Annex 6**
3. Familiarization tour and selection of project sites and facilitators, casardii-kenya (Jul-Aug 2007) - **Annex 7**
4. Input and equipment distribution in Mbeere and Laikipia (Nov 2007)-**Annex 8**
5. Equipment and CAN distribution in Laikipia and Mbeere (26th-30th Nov 2007)-**Annex 9**
6. Assessing FFS status in Siaya, Bungoma and Nakuru (4th-17th Dec 2007). **Annex 10**
7. Literature review on potential legume cover crops in CASARD sites (Aug 2007). **Annex 15**
8. Cover crop germination test (Aug 2007). **Annex 16**
9. FAO-AGST Back-to-office report on project launch mission (4 – 12 July 2007)
10. FAO-AGST Back-to-office report for project planning and backstopping (12 – 17 July 2007)

Tanzania

1. ToT training report held in Arusha (20th-30th Aug 2007). **Annex 13**
2. Project Launching and FFS Graduation (12th Jul 2007). **Annex 17**
3. FAO AGST Back-to-office report for project launch mission (12 – 20 October 2007)
4. Monitoring and backstopping report by Dr Monsoor (8th-18th Nov 2007). **Annex 19**

Brazil

1. FAO-AGST. Back-to-office report on a mission to Brazil 25 August -10 September 2007. Josef Kienzle and Brian Sims

4.3 Appendix 3: MAJOR ITEMS OF EQUIPMENT PROCURED DURING PROJECT PERIOD

ASSET NO	QUANTITY	ITEM DESCRIPTIONS	LOCATION	Value (US\$)	Serial number	CURRENT CUSTODIAN	PROPOSED TRANSFER TO
420459	1	COMPUTER "DELL" GX320	KENYA	1,042	BPSCZ2J	KARI	KARI
420479	1	CAMERA "SONY" DSC-W20012.1 MEGA P	KENYA	541.97	SO1-8571920-I	KARI	KARI
420499	1	CAMERA "SONY" DSC-W20012.1 MEGA P	KENYA	541.97	SO1-8560586-0	KARI	KARI
420500	1	CAMERA "SONY" DSC-W20012.1 MEGA P	KENYA	541.97	SO1-8560589-R	KARI	KARI
423939	1	LASER COLOUR PRINTER "HP" MOD 1550N	KENYA	4426.92	JPSN87PGOM	ACT	ACT
424639	1	COMPUTER "DELL" OPTPLEX GX755-SFF	KENYA	1106.73	FBPRX31J	KARI	KARI
424659	1	COMPUTER "DELL" OPTPLEX GX755-SFF	KENYA	1106.73	HCPRX3J	ACT	ACT
424679	1	COMPUTER, LAPTOP "DELL" LATITUDE D630	KENYA	1342.58	45GC3J	ACT	ACT
424699	1	PROJECTOR "SONY" ES5	KENYA	655.13	S01-7033685-1	ACT	ACT
R500053939	1	TOYOTA HILUX 4x4 D/CAB PICK UP	KENYA	25,687	AHTFR22G80-6011639	KARI	ACT

4.4 Appendix 4: DOCUMENTS PREPARED DURING THE PROJECT

4.4.1 Kenya

Kenya

- Monitoring and impact evaluation study report for CA SARD Kenya – by Wellington Mullinge, 2010
- M & E Report for CA SARD Kenya – Saidi Mkomwa and Tom Apina, 2008

United Republic of Tanzania

- Monitoring and impact evaluation study report for CA SARD Tanzania – by Zakaria Mkoga, 2010
- M & E Report for CA SARD Tanzania – Saidi Mkomwa and Tom Apina, 2008

Regional

- Final report, CA SARD Evaluation, FAO Rome, 2011
- July – December 2007 six monthly progress report
- January – June 2008 CA SARD Progress report
- July – December 2008 CA SARD report
- January – June 2009 CA SARD Progress Report
- July – December 2009 CA SARD Report
- January – June 2010 CA SARD Progress report
- July – December 2010 CA SARD report
- CA SARD Terminal project report
- Report On Backstopping Mission Of CA SARD II Cover Crops Work in Northern Tanzania, Joseph Mureithi, 2010
- Report on Backstopping Mission of CA-SARDII Cover Crops Work in Northern Tanzania, Joseph Mureithi, 2010
- Project terminal report
- ACT (2008b). Linking Production, Livelihoods and Conservation; Proceedings of the Third World Congress on Conservation Agriculture, 3 - 7 October, 2005, Nairobi. African Conservation Tillage Network, Nairobi.
- Report on CA equipment hirers' workshop, Bungoma Kenya. 2010