

Douentza Circle in Crisis

Improving Household Resiliency to Food Security Shocks in Mali

January 2006 – December 2007

Final Project Evaluation Report



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March 31, 2008
Written for CRS/Mali

Cover photograph: Cowpea seeds dried through solar heating technique, 6 months after harvest in Kiro (see Box 7 and 8 in this report), by *Erika Styger*

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Acronyms

AE	Agro-enterprise
CRS	Catholic Relief Services
DCC	Douentza Circle in Crisis
FFS	Farmer Field School
FP	Farmer Practice
ICM	Integrated Cowpea Management
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IER	Institute of Rural Economy (Ministry of Agriculture)
ISM	Integrated <i>Striga</i> Management
PIA	Participatory Impact Assessment
RP	Researcher Package
SF	Seed Fairs
SILC	Savings and Internal Lending Communities
SSSA	Seed System Security Assessment
WFP	World Food Program

Exchange rate: FCFA (1USD = 420 FCFA, March 2008)

Acknowledgments

This report could not have been completed without the help of many people, most importantly the technical and administrative staff of CRS Mali and ICRISAT who provided invaluable technical input, administrative support, and other help: Karen Kent, Moussa Sangare, Abderahamane Bamba, Chery Traore, Jeremy Diarra, David Arama (all CRS/Mali), Eva Weltzien and Tom van Mourik (ICRISAT), Tom Remington and Joseph Sedgo (CRS/WARO). I would like to thank particularly those who worked with me to collect the field data and helped analyze the information: Abderahamane Bamba, Hamidou Guindo, Sow Wassa Diarra, Siriman Diarra, Wari Urbain Dakouo, and Cheickné Niang. Their knowledge of the situation on the ground was critical for design of the questionnaire, the choice of areas to survey, local participants to interview, and in the interpretation of the data. Finally, I would like to express my gratitude to villagers in the Douentza Circle who welcomed us into their villages and their homes, and who took the time to share with us the many aspects of their lives, which is the foundation of this report.

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Executive Summary

The locust invasion and accompanying drought of 2004 destroyed most of the crops and grazing grounds in the Douentza Circle of the Mopti region, one of the hardest-hit areas in Mali. This resulted in high levels of food insecurity, and in problems with seed availability and access. In order to survive, people sold off many of their productive assets, leaving them highly vulnerable in view of future shocks. CRS, partnering with ICRISAT and WFP, developed an 18-month emergency response program with funding from the Bill and Melinda Gates Foundation. The goal of the Douentza Circle in Crisis project (or DCC) was to improve short- and long-term food security for households affected by the 2004 drought and locust invasion in Douentza Circle. The two primary objectives were i) to replenish the productive assets of targeted households and ii) to improve resiliency in the face of future shocks.

To this end, the project carried out three activities: i) seed fairs (SF) in ten out of 15 communes of the Douentza Circle, reaching 10,000 households, or 45% of the Douentza population, providing access to seeds, animals, and other agro-pastoral inputs via vouchers of USD 40/household; ii) farmer field schools (FFS) and the agro-enterprise (AE) program, through which 300 farmers were introduced to new agricultural techniques and agro-marketing skills; and iii) savings and internal lending communities (SILC), through which 75 women's groups were trained in savings, investment, and the diversification of income. The latter two activities were knowledge-based and focused on agricultural recovery and capacity strengthening in households. The project received a 6-month no-cost extension in order to carry out a Participatory Impact Assessment. During that time, ICRISAT financed a second season of FFS, building on the work of the first season that was funded by the Gates Foundation.

Seed Fairs

CRS's support was by far the most important direct support that farmers received during the crisis. The seed fairs were well organized and reached the 10,000 targeted households. The timing of the seed fairs was right, just before the 2006 cropping season, when the need for food, seeds, and tools was most pronounced. The quality of products was good, and the range of offered products was appropriate and sufficient, according to farmers. Participants appreciated being able to make individual product choices that best suited their respective situations. Most importantly, millet seed, the single most important good at the fairs, was predominantly offered in local varieties. This was of great importance, as the adaptation range of millet in Douentza is very narrow. Identification of products to be included at the fairs was based on the Seed System Security Assessment (SSSA) that CRS and ICRISAT undertook prior to the seed fairs. This made it possible to identify seed needs, seed availability within the region, and the existing seed access mechanisms applied by farmers.

Over 90% of the people involved purchased millet, most often a 100-kg bag, which was complemented by some small agricultural tools, seeds from other crops, animal fodder and, to a lesser extent, agricultural chemical inputs. Less than 2% bought a small

ruminant. Additionally, every household received 45 kg of rice in order to prevent the seeds from being consumed as food. The offer of small ruminants was an innovation, and should directly assist in asset restoration. It was also the driving factor behind increasing the seed voucher value to USD 40/household. Food insecurity was the primary reason why only very few people bought animals. Thus much of the local millet seed (70-90%) obtained at the fairs was probably consumed as food, with only 10-30% being used for planting. Although this was not initially intended by CRS, the outcome for the farmers was positive. The considerable amount of millet (seed and food) that could be acquired at the fairs allowed farmers to stay home and cultivate their fields. It is the farmers' agricultural production that is the key to reestablishing food security and laying the foundation for asset restoration.

A smaller voucher may have created a disruptive situation during the field cultivation period, when people had to abandon their fields to find money elsewhere to buy food. This would have resulted in the cultivation of smaller surface areas, translating into lower agricultural production and reduced food availability for the rest of the year. Had that occurred, farmers would have been obliged to take up credits to secure food. When facing indebtedness, farmers dedicate surplus production and income to pay interest and repay debts, which makes it difficult to restore assets. This is exactly the situation encountered in the villages of the Mondoro commune, which was not part of the DCC intervention zone and where people received hardly any outside assistance.

Thus, the seed fair was able to improve the productive capacity of the farmers during the critical time of field establishment. But have the assets been restored to pre-crisis levels? In general, food and seed availability has been fully restored, agricultural tools and transportation equipment have been partially reconstituted, but animal stocks have not yet been reestablished. Restoration will still need some time, and depend on the quality of the agricultural season, the level of indebtedness, and non-agricultural income-generating opportunities, among other things.

Farmer Field Schools

CRS established collaboration with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Institute d'Economie Rurale (IER) to identify and test new agricultural techniques for the zone with the goal of improving agricultural productivity and thus increasing the resilience of the farming system when facing shocks in the future. The approach to the implementation was a cluster-based farmer field school implemented in the two communes Dangol-Bore and Haire. In total 300 farmers received training and tested new techniques themselves in their fields. Women comprised 7.7% of the participants. Two researcher packages (RP) were designed: i) integrated cowpea management, and ii) integrated *Striga* management, and compared with farmers' practices (FP). Through the researcher package, many new themes and techniques were introduced, which varied in complexity and potential suitability to the local environment. Reporting on the results was based on agronomic and economic data. In the first year, the FP performed better than the RP, but this result was reversed in the second year. Among

the reasons could be i) climate variability, ii) the technical design of the RP, and iii) the complexity of the tested packages.

As technical advice is rarely available in the region, there was a high level of interest in and strong commitment to the FFS program on the part of participating farmers, although the approach may have been a bit too demanding on them. For those farmers who had little available labor at home, it translated into a loss of production. Demand for compensation was made but was not addressed at the time. Compensation should if possible be avoided, as it is not sustainable. It is rather recommended that the approach is developed together with farmers and adapted to their particular time constraints and local inclinations. This demands flexibility from the project, a quality that needs to be integrated into its design. Flexibility is also needed if more women are to be included among FFS participants, as time constraints and interests often differ between men and women.

In a short-term crisis intervention, it is recommended that the project works with techniques that can be easily learned or implemented to create quick results. Activities can be diversified beyond the cropping season into the dry season, aimed at improving household economy and integrity (by avoiding migration). Possible themes could be: i) improved storage of crops; ii) transformation of crop and livestock products; iii) improved livestock production; iv) gardening, where water is available; and v) management of wild food production resources. Techniques should preferably be climate-independent. As climate variability is very high in this zone, initiatives that are influenced by climate may fail in years when conditions are not favorable (for instance fertilizer application).

In a longer-term development project, a good mix of simple techniques with short-term impact and more complex techniques that need longer-term testing is desirable. The FFS approach is recommended, but the project should have sufficient flexibility to adjust its approach according to farmers' inclinations, and further adjust it by applying separate models for women and men if needed. Adaptation to climate variability should be integrated into all technical development. It is also recommended that farmers play a key role in guiding field experiments and that researchers become advisors to farmer-innovators. Monitoring of the learning process and technical field observations should become as important as reporting on agronomic and economic results.

Agro-enterprise activities

Introduced through the FFS program, agro-enterprise (AE) training aimed at providing farmers with skills that would give them the capacity to broaden their livelihood strategies from subsistence farming to improved response to market forces. Unfortunately, the project time frame was too short a) to perform a good diagnostic and b) to implement the activities. The project undertook studies of promising value-chain and market opportunities, and identified potential partners. These studies should be published, and the results should be made available at the Douentza Circle level. Nevertheless, three group projects were piloted in the 2006 season with mixed results.

The work accomplished and the experiences obtained provide an important basis for future work. Agro-enterprise development may not have been the best approach for this short-term emergency relief operation, but would be better suited for a long-term resiliency build-up intervention.

SILC

SILC (or Savings and Internal Lending Communities) has the purpose to provide savings-led financial services to communities that have no access to formal financial services. Members save money that becomes a source of loan capital for members of the group. When the amount of group savings is sufficient, any group member can borrow from the internal fund, committing to repay the loan with interest. The SILC activity exceeded all expectations the project had for it, with 1961 active members at the end of the project compared with the targeted figure of 405. The SILC approach is most likely to continue by itself, as evidenced by the independent work of the village animators, and by the creation of a self-organized SILC network. SILC activities helped to increase income and diversify income-generating activities, and had many social impacts at the household level such as improved nutrition and the ability to pay for schooling fees. It also reinforced solidarity among women and increased their social status within the community. SILC groups can become independent from training and assistance within a 12-months period. It is therefore an excellent activity to introduce in a crisis situation and in a short-term project.

Improved resiliency

Within the very short time frame of 18 months, the project contributed to improved resiliency in the face of future shocks. This was due to the very innovative combination of the various approaches and activities, most importantly by building on the impact of the seed fair with the introduction of the internal savings and lending approach SILC, the testing of improved agricultural techniques at the village and farmer field levels, and by piloting some agro-enterprise activities. This allowed participants to improve their access to capital, diversify and increase their revenues, and reestablish the basis of agricultural production with access to seeds of diverse crops and varieties. Although productive assets have not yet been restored completely, project participants have acquired knowledge pertaining to financial management and agricultural technical improvements and developed a system of savings and loans, all of which represent important skills in terms of recuperation of assets and livelihood improvement.

I. INTRODUCTION

During the summer of 2004, invasions of desert locusts destroyed the crops and vegetation north of the Sahelian 14th parallel. The most concentrated swarms reported from Mali impacted the Mopti, Timbuktu, and Gao triangle. In Mopti, Douentza was among the most severely affected circles with an estimated loss of 46,844 ha of crops, or an equivalent of 78% of the cultivated area, in addition to considerable loss of pasture resources for livestock. This calamity was followed by a drought, affecting everything else that escaped the locusts. Following this crisis, CRS implemented an emergency response project, funded by the Bill and Melinda Gates Foundation and the Marisla Foundation, offering seed fairs before the 2005 cropping season in the most severely affected regions of Mali, Burkina Faso, and Niger. In Mali, 8,500 households benefited from seed fairs that were held in the circles of Tenenkou, Youwarou, Douentza, Koro, and Djenné, with seed voucher values of USD 20 per household.

The following cropping season in 2005 was not a good agricultural year either, achieving only 55% of normal millet yields. At harvest, CRS/Mali conducted a Rapid Rural Appraisal, which revealed that, of an estimated 24,000 households in the Douentza Circle, a minimum of 50% were in need of assistance. There was a high level of food insecurity, which was characterized by a shortage of food availability at the household level, and a lack of access to food from local markets due to extreme losses in purchasing power. At that time, the prices of cereals peaked at more than double the average prices, and the value of livestock plummeted to less than a third of average prices. The most common coping mechanisms employed by households were selling valuables and productive assets, migration of productive household labor, eating ‘hunger foods,’ and obtaining credits at high interest rates. With the depletion of their productive assets and heightened food insecurity, households in Douentza had not overcome the crisis, and remained very vulnerable to future food security shocks.

Based on this situation, CRS/Mali partnered with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the World Food Program (WFP) and developed the “Douentza Circle in Crisis” (DCC) project supported by the Bill and Melinda Gates Foundation with 915,696 USD. Within an 18-month period, the goal of the project was to improve short- and long-term food security for households affected by the 2004/5 drought and locust invasion in Douentza Circle. The two primary objectives for targeted households in Douentza were i) replenishing their productive assets and ii) improving their resiliency in the face of future shocks. To this end, the projects carried out three main activities:

- 1) Livelihood fairs for replenishing productive assets: Fourteen livelihood fairs were conducted in ten communes of the Douentza Circle in May and June 2006 for 10,000 households, providing access to seeds, animals, and other agro-pastoral inputs in order to partially restore lost assets.
- 2) Farmer field schools (FFS) and agro-enterprise (AE) development for sustainable capacity building: These programs provided training for 300 farmers to improve agricultural techniques and agro-marketing skills during the 2006 planting season.

- 3) Savings and internal lending communities (SILC): This program provided support for the formation and training of 75 SILC groups in participating villages in three communes, covering principles of savings and investment as well as diversification of income.

The innovation characterizing this project lies in looking beyond immediate crisis remediation, which was addressed by the seed fair activity, by integrating innovative, knowledge-based activities into the response in order to assist with agricultural recovery and to improve households' capacity to withstand future food security shocks (FFS, AE, and SILC activity). Originally planned as an 18-month intervention, CRS received a 6-month no-cost extension in order to carry out a Participatory Impact Assessment (PIA), allowing those implementing the project to learn from project activities and assess their impact on rural communities.

II. METHODOLOGY OF FINAL EVALUATION

The objective of this final evaluation was to assess the performance and impact of project activities in achieving project objectives, to identify lessons learned and to provide recommendations for future interventions. The detailed terms of reference are reported in Annex 1. The evaluation took place over the course of 25 days (from February 29 to March 31, 2008). The program of the evaluation and the people met can be found in Annex 2. The four stages of the evaluation process consisted of i) consultation on documentation, discussion with project staff, and questionnaire design; ii) conducting the field survey and interviews of focus groups in selected villages in Douentza; iii) data analysis; and iv) report writing. A presentation of the preliminary findings was given to the senior project team following data analysis. The project staff had the opportunity to comment on the final draft report.

Two methods were chosen for data collection: i) a field survey administered in 232 households to acquire quantitative data, and ii) focus group interviews in 11 villages to obtain an improved understanding of project impact and livelihood issues. This information was used to evaluate the accomplishments of indicators, outputs, and outcomes as specified in the project results framework or PROFRAME. The PROFRAME and the achievements for indicators are presented in Annex 3. The questionnaires were designed by the final evaluator in collaboration with the head of Monitoring and Evaluation CRS/Mali. They are attached in Annex 4. Four surveyors were hired to conduct the household survey. The focus group interviews were undertaken by the final evaluator with the help of a translator.

The evaluation distinguished five categories of beneficiaries depending on the implementation arrangement of the three main activities: i) SF+SILC+FFS/AE, ii) SF+SILC; iii) SF+FFS/AE; iv) SF alone; and v) a control, which did not benefit from the project. For the quantitative survey, 20 villages were reached in nine communes (Table 1). Although the surveyors tried to integrate an adequate number of women who act as heads of household, only 2.7% or 5 out of 188 project beneficiaries interviewed were

women. This was less than the 12% of women heads of household that benefited from the seed fairs. In the two control communes, all of the interviewed heads of household were male. For the focus group interviews, 11 villages in five communes were visited (Table 2). Focus group interviews were held in public places. The village chief was contacted upon arrival, who then summoned people for the interview (according to project category). Most often additional people joined the sessions. People were interested in and readily available for participating in the discussions. In all, 208 people assisted the focus group discussions, of which 60, or 29%, were women.

The most important ethnic groups among the households interviewed were Fulani with 39%, Dogon with 36%, and Bambara with 15%. Other groups, such as the Rimaïdé, Dimadjo, Mossi, Tamacheekh, Minianka, and Sonrhäi were minorities with less than 5% representation each. In the control communes, Dogons represented 74% of the people interviewed, followed by Sonrhäi with 23% and Fulani with 3%.

Table 1: Villages, communes, and number of households selected for the quantitative household survey according to project activities (categories)

Number	Category	Village	Communes	Households
1	SF, SILC FFS*	Kiro	Dangol-Boré	15
2	SF, SILC FFS	Touperé	Hairé	15
3	SF, SILC FFS	Youna	Hairé	15
4	SF, SILC	Wakere	Djaptodji	11
5	SF, SILC	N'Gouma	Djaptodji	11
6	SF, SILC	Boré	Dangol-Boré	11
7	SF, SILC	Boni	Hairé	11
8	SF, FFS	Ibissa	Dangol-Boré	11
9	SF, FFS	Gniminiama	Dangol-Boré	11
10	SF, FFS	Gaye	Hairé	11
11	SF, FFS	Tega	Hairé	11
12	SF	Dallah	Dallah	11
13	SF	Debere	Debere	11
14	SF	Koubewel	Koubewel Koundia	11
15	SF	Fombori-Do	Dianweli	11
16	SF	Segue	Djaptodji	11
17	Control	Pétaka	Pétaka	11
18	Control	Alamina	Pétaka	11
19	Control	Tiguila	Mondoro	11
20	Control	Sambaladjo	Mondoro	11
Total Numbers		20	9	232

* SF: Seed Fairs; FFS: Farmer Field Schools, SILC: Savings and Internal Lending Communities.

Table 2: Villages and communes selected, and number of people interviewed during focus group discussions according to project activities (categories)

Number	Category	Village	Commune	Number people	Number Men/Women
1	FS, SILC, FFS	Kiro	Dangol Bore	21	8/13
2	FS, SILC, FFS	Youna	Haire	9	5/4
3	FS, SILC, FFS	Touperere	Haire	10	8/2
4	FS, SILC	Wakere	Ngouma	33	0/33
5	FS, FFS	Doumbara	Dangol Bore	25	25/0
6	FS, FFS	Ibissa	Dangol Bore	3	3/0
7	FS, FFS	Gaye	Haire	34	30/4
8	FS, FFS	Tabi	Haire	3	3/0
9	FS	Segue	Ngouma	12	8/4
10	Control	Tiguila	Mondoro	50	50/0
11	Control	Alamina	Petaka	8	8/0
<i>Total</i>				208	148 / 60
				100%	71% / 29%

III. EVALUATION RESULTS, CONCLUSIONS AND RECOMMENDATIONS

1. Zonal description

The Douentza Circle is an administrative unit in Mali, covering 18,903 km², which makes it the biggest circle in the Mopti region. Figure 1 shows the relative position of Douentza and its communes within Mali.

The Douentza Circle is part of the Sahelo-Saharan climate zone, and includes the limits where rainfed agriculture is possible. Yearly rainfall is highly erratic, on average between 300 and 500mm. Planting season runs from June to September. Depending on rainfall amounts, agricultural production is highly variable. Three agro-ecological zones are recognized in Douentza:

- *Seno* occupies the central and southern areas, where soils are predominantly sandy and where pearl millet cultivation dominates the agricultural system.
- The *Cliffs Zone* forms the extension of the Bandiagara cliffs and is also dominated by pearl millet cultivation. In some locations associated with the cliffs, where springs and water reserves are available, horticulture is possible during the off-season.
- The *Delta-Zone* of the Niger includes rainfed millet cultivation and areas that are annually flooded with overflows from the Niger River, where recession agricultural and rice cultivation is practiced.

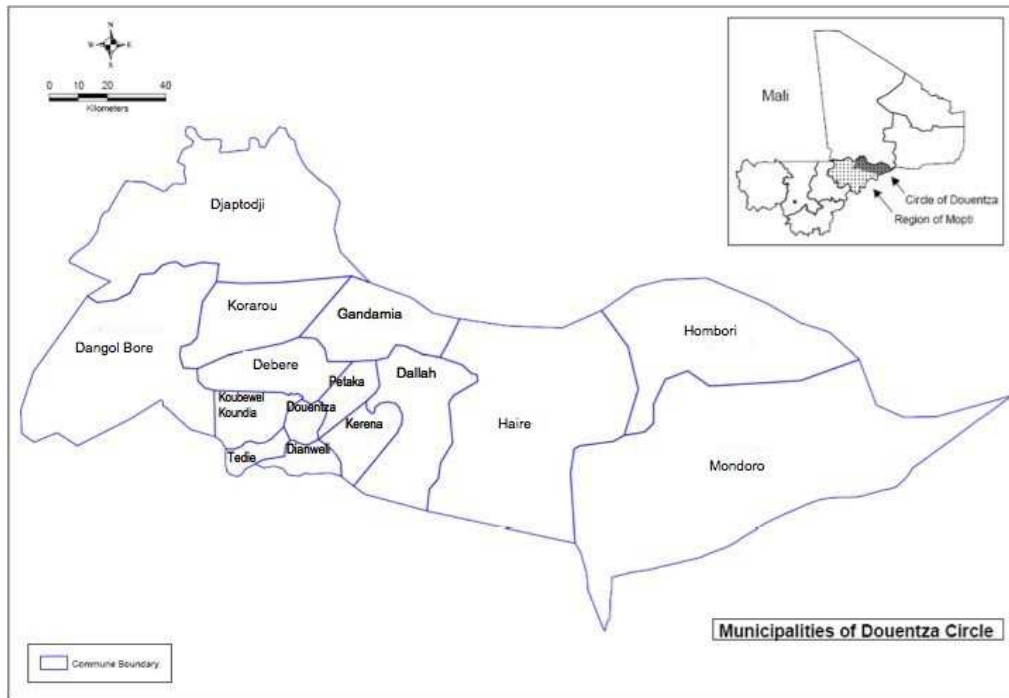


Figure 1: Map of the Douentza Circle

Pearl millet dominates crop production, covering about 80% of the production area, and proves particularly important in the higher-stress areas. Nevertheless, there is a large variety of crops grown next to millet, such as sorghum, cowpeas, peanuts, bambara groundnuts, sesame, 2 types of *Hibiscus* sp (roselle, et oseille de guinee), gombo, various kinds of rice, and a variety of horticultural crops such as cabbage, carrots, onions, and peppers. Livestock production plays an important role in the circle, with impressive animal numbers especially for goats (378,000), cattle (177,000), and sheep (172,000). Donkeys, camels, and horses are also raised in the circle. The sale of live animals, meat, skins, and livestock products (e.g., butter) proves to be a key resource for buying food and addressing primary livelihood needs. Agricultural by-products such as crop residues are important fodder resources.

Population estimates for the circle are between 160,000 and 170,000 people, with a range of population groups represented: Fulani, Dogons, Songhois, Bozos, Tuaregs, Bellas, and Bambara. These figures are only suggestive, as several of these groups may lead a nomadic lifestyle. Economic activities in the Circle include farming alone, mixed crop/livestock farming, and pastoralism. Douentza represents the northernmost zone, where rainfed agriculture is possible, and where the various livelihood options coexist. A bit further north, pastoralism becomes the main livelihood option. Poverty levels in Mopti are among the highest in the country, with more than 75% of the population living below the poverty line.

2. Achievements of strategic objective 1: Restoration of productive assets by targeted households in Douentza

This section will report on the achievements of the first strategic objective. The objective, intermediate result, output and the monitoring indicators are presented in Box 1. The summary of achievements in relation to SO1 is provided in Annex 3. As a result of the crisis of 2004 (locust invasion and drought), people in the Douentza Circle lost many of their productive assets, mostly due to having to sell them off in order to buy food. The analysis in this section looks at how well households have recuperated from the crisis. Have they regained the standard of living they experienced before the crisis or not? And, in relation to the project, what was the impact of the seed fairs on this recuperation process?

Box 1: Strategic Objective 1

Targeted households in Douentza have replenished/reconstituted their productive assets.

Impact Indicator: By project end, 90% of targeted households have increased their productive assets

- Intermediate Result 1.1: Targeted households use seeds, animals, tools, and other inputs acquired during the seed fair to produce.

Monitoring indicator: 90% of targeted households report having used inputs acquired at seed fairs for intended productive use.

- Output 1.1: Targeted households have access to appropriate seeds, animals, tools, and other inputs
- Monitoring indicator: 95% of targeted households have used their vouchers to purchase goods at seed fairs.

2.1. The implementation of livelihood fairs

The major activity undertaken to achieve this SO was conducting of a series of livelihood fairs. The objective of the livelihood fairs was to facilitate the access of 10,000 households to seeds, small livestock (goats and sheep), and other agro-pastoral inputs (agricultural tools, fodder, fertilizer, and pesticides) in order to partially reconstitute lost productive assets. Offered seeds were, most importantly, local millet, some exotic millet seeds (from Segou and San), and seeds for sorghum, cowpeas, peanuts, and bambara groundnuts.

The approach consisted of providing vouchers to each beneficiary valued at 21,100 FCFA (or USD 40). These vouchers could be spent on various items during a daylong fair. A total of 632 local merchants and producers offered seeds and other products for sale during 14 fairs across 10 communes in the Douentza Circle, just before the start of the rainy season. At the same time, the World Food Program (WFP) distributed 45 kg of

rice to each of beneficiary for immediate consumption. This was aimed at preventing consumption of seeds obtained at the fair as food. The project's innovation in regards to the seed fair approach was the inclusion of small livestock and animal feeds. Seed fairs typically provide only seeds and tools to vulnerable farmers with which to start the growing season on time. Given the level of asset depletion along with the severely reduced resiliency of the target populations, access to small livestock should assist households in asset restoration. To that end, the vouchers were increased from the 20 USD that was applied during the seed fair conducted in 2005 to 40 USD per household under this project.

The locust crisis and drought affected all of the communes in Douentza. CRS collaborated with local officials, food security committees at the circle level, representatives of civil society, and the WFP to identify 10,000 rural households. Ten out of 15 communes in the Douentza Circle were selected for the fairs: Hombori, Hairé, Dallah, Gandamia, Dianweli, Korarou, Koumbewel-Koundia, Dangol Boré, Diaptodji, and Débééré (Table 3). The communes that weren't considered are: Mondoro, Pétaka, Tédjé, Kerena, and the Urban Commune of Douentza. Out of Douentza's 251 villages, 190 were selected for the fairs. With 10,000 participants, 76,000 direct and indirect beneficiaries were reached, equal to 45% of the population of the circle. Twelve percent of the participants were female heads of household, typically a very vulnerable group. Out of the 10,000 people, only 42 were not able to participate in the fairs. Local leaders therefore selected replacements. This resulted in achieving the goal of 10,000 beneficiaries.

Table 3: Beneficiary numbers and communes for livelihood fairs

Commune	Date	Number of villages	Number of beneficiaries			Percentage of men and women	
			Total	Men	Women	Men	Women
Haire I	May 27	14	750	709	41	95%	5%
Haire II	May 28	18	750	668	82	89%	11%
Hombori I	May 29	8	843	672	136	80%	16%
Hombori II	May 30	13	407	361	43	89%	11%
Dallah	May 31	12	750	710	40	95%	5%
Gandamia	June 2	7	750	615	135	82%	18%
Dianweli	June 3	8	750	632	118	84%	16%
Korarou	June 4	10	600	482	118	80%	20%
Débééré	June 5	6	600	553	47	92%	8%
Koubewel	June 7	14	800	763	37	95%	5%
Diaptodji I	June 9	26	750	673	77	90%	10%
Diaptodji II	June 10	22	750	572	178	76%	24%
D.Boré I	June 11	16	659	616	43	93%	7%
D.Boré II	June 12	16	841	734	107	87%	13%
TOTAL		190	10,000	8798	1202	88%	12%

With the choice of this type of commodity distribution via seed fair, CRS was targeting i) the empowerment of beneficiaries to make choices appropriate to their own situations; ii) the injection of capital into the local economy as commodities were purchased from local vendors as opposed to bringing in products from farther away; iii) allowing market forces to prevail (e.g., supply and demand); and iv) the promotion of biodiversity and the conservation of locally adapted seed varieties that were available for sale.

2.2. Seed System Security Assessment

Prior to the seed fairs, CRS and ICRISAT conducted a seed system security assessment (SSSA) in the Douentza Circle (Sperling et al, 2006) that provides an in-depth analysis of local seed systems. More specifically, the study i) identified the seed needs of the targeted communities, ii) assessed seed availability within the region and at the local level, and iii) tried to understand the seed access mechanisms applied by farmers. The assessment also examined how the local seed markets work, the seed varieties and quantities needed at that time, and the capacity of the local market to meet these needs. This analysis served as a baseline for supporting a decision-making process in choosing products to include in the seed fairs.

An important finding of the SSSA was that, in this very marginal agricultural zone, only local millet varieties are adapted to the climatic and soil conditions of the area. The range of adaptation of these local varieties is very narrow (as narrow as 30-40 km). Thus, while varieties from dry areas may be adapted in somewhat more humid areas, the reverse is not true. This was a key finding for the seed fairs, indicating the need to provide seeds of local origin. As for the other crops, varietal specificity is not nearly as strong as it is for millet. CRS/Mali and ICRISAT included seeds from secondary crops, offering local and a few improved varieties, allowing farmers to reconstitute their seed stocks, and to test some new varieties according to their interests.

2.3. Impact of the crisis on households

With the locusts arriving during the grain-filling phase of millet production, most of the harvest was destroyed, and many farmers have not harvested any of their millet or only insignificantly low quantities. This provoked a food crisis and also created a problem of seed availability. Seeds for different crops and varieties were lost at the household and community levels. Not only crops but also pastures and trees were devastated by the locusts. Livestock had problems foraging. Many animals were sold off very cheaply, and farmers bought food for the money they earned. Some animals were sent off to find grazing areas outside of the Douentza Circle, but often didn't return. Some animals died from hunger, and some from insecticide intoxication used against the locusts.

2.4. Farmers' strategies for dealing with the food crisis

In order to face the food crisis, farmers applied multiple strategies. Most important was the selling of assets in order to buy food. This included animals (small ruminants, cows, draft oxen, donkeys, camels, and poultry), transportation equipment such as carts and bicycles, and agricultural tools such as plows and hoes (*dabas*). Women sold their gold and silver jewelry, other household items, and some of their nice clothes. Men emigrated from the area to find work and money elsewhere, and sent money back for food. Some of the young people who had left at that time stayed away. Another strategy was finding wage labor in the surrounding larger centers such as Boni, Bore, and Douentza. People also concentrated on the local production of goods, independently from agriculture, such as the making of clay pots or mats, and the weaving of cloth. Where water was available, gardening was a main strategy for overcoming the impact of the crisis, producing vegetables, manioc, sweet potatoes, and rice, which were either sold at market or self-consumed. Collection of goods from the wild, either for income generation or for food, played a very crucial role in people's survival. People collected firewood or medicinal plants and sold them in the larger towns and centers. In most of the villages visited, people admitted that they were able to survive thanks to the fruits of *Boscia senegalensis*, its leaves, and other wild foods they could collect and consume. Wild food helped also to extend millet ration availability over a longer time period. According to villagers, this may have prevented deaths and serious illness due to starvation. Taking up credits was the last strategy, which many farmers were forced to adopt.

2.5. Farmers' strategies to access seeds in normal years

Farmers use seeds mainly from personal stocks or markets. Among the beneficiaries, both strategies were pursued by over 70% of the farmers, whereas in the control group over 70% of the farmers used their own seeds, with only 34% acquiring seeds from the market. Gifts, bartering, and borrowing seeds were of minor importance with less than 5% of the farmers pursuing such strategies (Table 4). These results are confirmed by the SSSA (Sperling et al., 2006). Given the narrow adaptation range of cereal seeds, farmers aim to source their seeds mainly from home production (85%), complementing that with market seeds (10%) and seeds received through social networks (5%). For legumes (cowpeas, peanuts, and bambara ground nuts), in contrast, where significant storage constraints apply, farmers obtain seeds mainly from markets (80%), and only 20% are supplied by home production. Farmers constantly weigh the effectiveness of various strategies for sourcing seeds. Markets are well developed in this area to provide high quality seeds of locally adapted varieties.

Table 4: Seed access strategies by farmers in the project zone and the control communes

a) Beneficiary Communes									
Seed access	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	All farmers	
	----- % Farmers -----							Number	% farmers
Personal stock	64	84	58	100	91	85	36	145	77.1
Acquired at market	64	71	76	91	64	71	82	137	72.9
Troc	9	0	6	0	0	4	0	5	2.7
Gift	0	3	12	0	0	0	0	6	3.2
Borrowed; credit	0	2	0	0	9	0	0	2	1.1

b) Control Communes				
Seed access	Petaka	Mondoro	All farmers	
	----- % Farmers -----		Number	% farmers
Personal stock	73	73	32	72.7
Acquired at market	18	50	15	34.1
Troc	5	0	1	2.3
Gift	0	0	0	0.0
Borrowed; credit	9	5	3	6.8

2.6. Farmers' strategies to access seeds during the crisis

Although most farmers had lost their crops and seeds in 2004, a seed stock from the previous year could be found in most villages. A few villagers usually retain seed stocks and the farmers were able to access these seeds in 2005 either within their own communities or in neighboring communities. Traders bought seeds from seed-producing villages such as Touperre and sold them on local markets. The population in Touperre was conscious of keeping a minimum stock for themselves, which was not sold. Nevertheless, for some villages, the seed stocks were nearly depleted, and some people were not able to plant the usual agricultural surface areas in 2005 for want of seeds. With a low harvest in 2005 due to unfavorable agro-climatic conditions, food insecurity prevailed in 2006, which also translated into a shortage of seeds. Although seeds were shared among the people, the CRS seed fair in 2006 played an important role in making it possible for people to obtain seeds. This analysis is confirmed by the SSSA (Sperling et al., 2006), showing that during the crisis farmers employed multiple strategies to access seeds. The people in Douentza view seed protection as of the utmost importance, acknowledging its role in overcoming a crisis situation.

2.7. Asset losses

Asset losses have not been quantified in this analysis, but were extensive in all the villages that were covered in the final evaluation. The poorer segment of the population in particular lost proportionally more than those who are better off within the communities. Some of the poor lost almost all their assets, including their animals. The wealthier villagers lost about half of their assets (including animals). It is the latter group that was better able to recover into the present time, compared with the poor, who still struggle in restoring their assets. Asset restoration was quantified comparing the assets before the crisis and today, and is reported in Section 2.13.

2.8. Outside assistance received during the crisis

Fifty-two percent of all beneficiary farmers claimed to have received support from other institutions in addition to CRS. For the control communes this figure was 57%. At the communal level, more than 80% of the farmers received additional aid, with the exception of those in Djaptodji, where only 6% of the population benefited. In Haire the figure was 32%, and in Dangol Bore 77%. In the control commune, Mondoro, only 23% of the farmers benefited from outside aid, whereas in Petaka the figure was 91% (Figure 2).

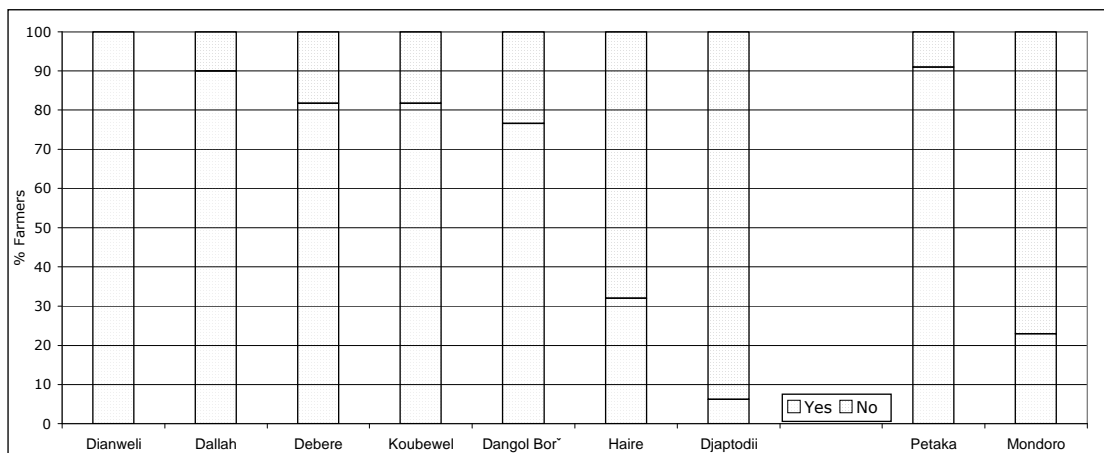


Figure 2: Outside assistance received by farmers (%) in the various communes after the locust invasion (for control communes, Petaka and Mondoro: total support received; for all other communes, support received in addition to CRS)

The type of assistance received is specified at the communal level in Table 5. Most of the additional support consisted in free food aid from the government. The amount varied slightly from village to village, but ranged between five and 10 kg/person of millet. In some villages a few kg/person of sorghum and maize was added. Villagers judged the aid as being highly insufficient in helping them bridge the crisis, sometimes tiding them over for only a week or a bit longer. Often, there are more people in a village than are registered with the government. Because people share, the amount of food per person was reduced.

Table 5: Type of assistance received after the locust invasion in the various communes

a) Beneficiary Communes									
Aid received	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	All Farmers	
	----- % Farmers -----							Number	% Farmers
Food aid	90	32		82	73	77	100	92	49.7
Financial aid			3					2	1.1
Training			3					1	0.5
Food for work					9			1	0.5
Equipment/seed									

b) Control Communes				
Aid received	Petaka	Mondoro	All Farmers	
	----- % Farmers -----		Number	% Farmers
Food aid	77		17	38.6
Financial aid	4.5	14	4	9.1
Training				
Food for work		4.5	1	2.3
Equipment/seed	9	4.5	3	6.8

A limited number of people benefited from support offered by NGOs in the project zone, most importantly Afrique Verte, ALCOP, NEF, and PDI.

- Afrique Verte helped to establish some seed stocks at the village level. The amount of seeds provided was small, for instance 2 kg/family in Tiguila, and 4 kg/family in the village of Segue. Afrique Verte also put in place a revolving fund at the village level, from which seed can be borrowed at the beginning of the rainy season, and then be paid back with interest at harvest time. In some villages, this system has worked (Alamina), but in others the borrowed seeds were not reimbursed, as villagers claimed that their production was too low and they were struggling with a high level of food insecurity (Tiguila).
- ALCOP, financed by the Canadian Government, has been present in the Douentza Circle since the big drought of 1985. Currently the project focuses on supporting local initiatives in the domains of food security and environmental protection, and in supporting local capacity strengthening (Alphabetization, etc.).
- NEF is an American NGO, also present since 1984. It is active in the domains of micro credit, natural resource management, well construction, alphabetization, support for agricultural development, and decentralization at the communal level.
- PD HK/MELM is part of the Lutheran and Evangelical church in Mali, and has worked in Douentza since 1992. Their domains are well construction, maternal health, prevention of STD and HIV/AIDS, and capacity strengthening of the rural population (alphabetization, community organization, etc.).

These organizations intervened in only a few of the villages visited in this evaluation. It was not possible in this evaluation to obtain an accurate understanding of the geographic

coverage and the impact of these initiatives on rural development across the circle. Unfortunately, none of the visited projects (see Annex 2) were able to provide any written documentation on their activities or progress.

According to the focus group interviews, the CRS seed fair was by far the most important direct support farmers received during the crisis, especially in relation to improving food and seed availability. This was also confirmed by the PIA, conducted in 2007 in the three communes of Haire, Dangol-Bore, and Djaptodji (CRS, 2008).

2.9. Goods obtained at the seed fairs

Over 90% of the people involved purchased millet, most often a 100-kg bag, which was complemented by some small agricultural tools, seeds from other crops (sorghum, rice, cowpeas, peanuts, and bambara groundnuts), animal fodder and, to a lesser extent, agricultural chemical inputs. People preferred to buy local millet, even though it was a bit more expensive than exotic millet from San or Segou (100 CFA/bowl, compared with 80CFA/bowl, respectively). Only 157 households bought a small ruminant, which is 1.6% of the fair participants.

'If you are hungry and you don't have any food at home, you can't buy an animal, you buy food...'

Thus, only the few farmers who had already secured their food and seeds could buy an animal. Also, the end of the dry season is not the best time to buy an animal. There is considerable fodder shortage at this time, and farmers must either still have fodder reserves available or have money to buy fodder until the rainy season starts. People usually buy animals after the harvest, when plenty of fodder and also food is available and surplus money can be invested in the animals.

The quote presented above is also interesting insofar as it reveals the perception on the part of farmers that the 100 kg of millet purchased is also 'food,' although the seed fair's objective was to offer seeds. This discrepancy will be further analyzed below in Section 2.11.

Additionally, every household received 45 kg of rice in order to secure the millet and other seeds from being consumed before the rainy season started.

2.10. Appropriateness of seeds

CRS had put a lot of emphasis on assuring that appropriate goods are offered at the fairs (Output 1.1), which was one of the main reasons for undertaking the SSSA. In this evaluation, we questioned farmers about the appropriateness of the goods, focusing on millet seeds, the single most important good offered at the fair. For farmers, the appropriateness of seeds translates into 1) seed quality and 2) the adaptation of seeds to

the local environment, more specifically the availability of local varieties compared with exotic ones. 'Exotic,' in this context, means coming from another region in Mali, either San or Segou.

Satisfaction with seeds accessed at the fair was high, with 95.6% of the farmers saying they were content (Table 6). Seed quality was good when planted, and farmers commented that the majority of seeds at the fair were local varieties. Farmers planted only local seeds, and either used the exotic seeds as food or traded them later for local seeds. Local millet is preferred, not only as seed, but also for food. It is apparently much more filling than the millet from San or Segou. Nevertheless with the exotic seeds being a bit cheaper than the local variety, farmers were able to buy a combination of these two types according to their inclination.

Table 6: Appropriateness of seeds offered at the fair according to farmers' judgments

Seed appropriate?	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	All Farmers	
 % Farmers							Number	%Farmers
Yes	100	97	93	100	100	96	82	172	95.6
No	0	3	7	0	0	4	18	8	4.4

2.11. Use of inputs acquired at the seed fair

Intermediary result 1.1 for SO1 (see Box 1 and Annex 3) is monitored with the indicator that 90% of the targeted households used inputs acquired from the seed fair for productive purposes. Of the farmers interviewed, 96.7% confirm having used seeds they acquired from the fair for planting their fields. Similarly, 99% of the farmers used the tools they got at the fair, while only 1% sold them. As for small ruminants, 13% of the households have raised and kept them up to the present. Of the others, 27% have sold the animals, 5% have given them away, and 55% declare having eaten them within the two years since they obtained them. It was not possible to discuss these answers in greater detail in this evaluation. Thus, it is not clear if the receipts from selling animals were used for productive purposes or not. Nevertheless, the usual practice in Douentza is to raise animals for about six months and then to sell them. It is not clear why so many households have eaten the animals. Most likely, this may have coincided with an important holiday (the end of Ramadan or the 'fête de mouton').

Farmers acquired, in most cases, a 100-kg bag or up to 120 kg. The question remains: How much of this millet was used for sowing, and what was done with the rest? The agricultural follow-up conducted by CRS after the seed fair showed that 34% of the millet seeds were used for cultivation (Table 7; see Tandina, 2006). Information from the focus group interviews deviated from this finding, indicating that the majority of the millet was eaten while only a small part was used for planting. In Youna, for instance, farmers confirmed having used about 10 kg out of 100 kg for planting; they consumed the rest. In Gaye, only between 10-20 kg of millet was used for seeds out of 100 kg. Some farmers in Gaye as well as in Kiro declared that they had eaten all or most of the

millet. In addition, the remaining seeds they had in their personal stocks were not sufficient for cultivation. Nevertheless, they were able to obtain seeds through their relatives.

Table 7. Amount of seeds acquired at seed fairs used for planting

Crop	Acquired seeds kg/500 farmers	Planted seeds	Planted seeds in % of acquired seeds
Millet	26595	8914	34
Sorghum	2624	1511	58
Rice	2230	1862	84
Peanuts	4712	196	4
Niebe	321	186	58

(Tandina, 2006; Suivi Agricole)

The results from the first seed fair in 2005, funded by the Gates Foundation in the Mopti region, with vouchers half the size of those offered through this project, showed that 93% of farmers used their vouchers to buy, on average, 48 kg of millet seeds, with most farmers buying a 50-kg bag, using up the entire voucher (Stenhouse, 2006). Seventy-two percent of farmers reported having used the seeds for sowing, while 69% stated that they had eaten from it. The evaluation hasn't investigated how much of the seeds were used for sowing and how much for consumption. In the Mopti region in the 2003, 2004, and 2005 agricultural seasons, about 50 kg of millet was used on average for seeds. The 50-kg bag obtained at the fair could therefore theoretically be used entirely for seeds (Stenhouse, 2006). As stated in Sections 2.5 and 2.6, farmers employ multiple strategies for obtaining seeds, the most important sources being personal stock, the market, and relatives. It is therefore unlikely that all of the seeds obtained at the fair would have been used for sowing alone, especially in the dry season of 2005, which directly followed the year of the locusts.

The dynamics and complexity of seed provision is confirmed by looking at how much seeds farmers have currently set aside, as of March 2008, to use in cultivating their fields in July 2008 (Figure 3). Only 57% of farmers surveyed admit having currently enough seeds to plant their entire fields. For 30% of the farmers, seeds would be sufficient to plant only 50-75% of their fields. On the other hand, for 7% of farmers, the seed quantity would be adequate for 25% of their fields, while 6% claim to have no seeds at all. Although last year was a relatively good agricultural year, for some of the farmers, it seems, their millet stock represents food first, and they are speculating to be able to find seeds before the rainy season.

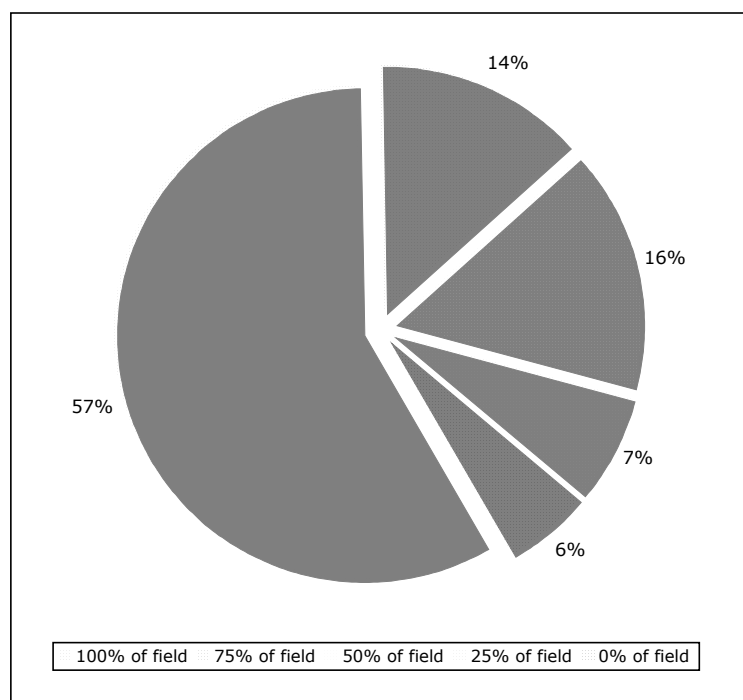


Figure 3: Amount of seeds set aside in March 2008 sufficient for planting a given field surface area in July 2008 (% of farmers, n=188)

2.12. Evolution of field surfaces in the years after the crisis

Another way of investigating the availability of seeds following the crisis is to identify the proportion of fields cultivated in the years after the locust invasion (Figure 4). There has been a steady increase in the cultivated surface area of fields from 2005 to 2007. In 2005 only 56% of farmers were able to cultivate the entire area of their fields, but this has increased to 73% in 2006 and 76% in 2007, which indicates overall a 12% increase. At the same time, in 2005 17% of farmers were able to plant only 50% or less of their fields, which declined to 10% in 2006 and 9% in 2007. The increase from 2005 to 2006 was considerably greater than from 2006 to 2007. It is most likely that the fair has contributed to the relatively higher increase in 2006. But the issue is complex. As farmers explained it, the reduction of the cultivated field surface area depended not only on seed availability, but also on loss or lack of agricultural materials. *'It is more difficult to get agricultural material than seeds.'* In addition, as a result of emigration, less labor was available for cultivation. Also, people who were hungry lacked the strength to cultivate a large field. Nevertheless, the trend seems to be positive, and indicates a process of recuperation.

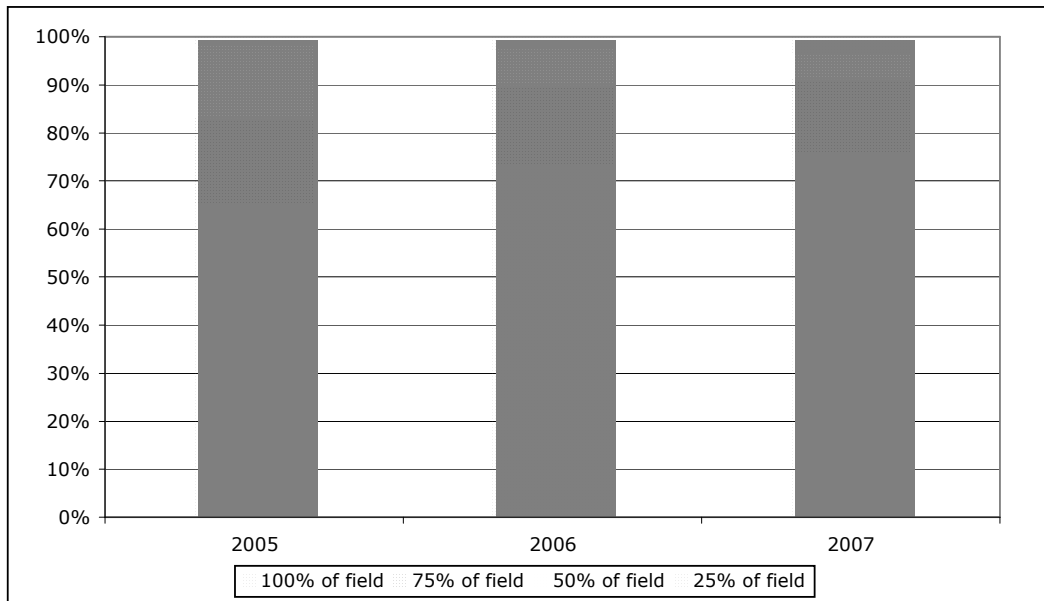


Figure 4: Evolution of planted field surface areas in the years after the locust invasion for beneficiary farmers in the Douentza Circle

2.13. Are the productive assets reconstituted?

Strategic Objective 1 of the project refers to the restoration of productive assets of the targeted households in Douentza. Evidence for this was gathered by inventorying the productive assets among the beneficiaries and in the two control communes, both before the crisis and today. Three main categories of productive assets were distinguished: 1) transportation equipment, 2) agricultural tools, and 3) animals. The subtraction of the current number for each asset from the number present before the crisis indicates whether households have increased their assets (a positive number) or are still experiencing a shortfall (a negative number). The results for each of the communes are presented in Table 8.

We can see a difference in the restoration of productive assets among the communes. Koubewel, Haire, and Dangol Bore remain short on many of the assets compared with the levels reported before the crisis, whereas Djaptodji and Dianweli have restored their assets almost entirely, with the exception of some of their livestock. The non-beneficiary communes are characterized by a large loss in their livestock population, which they have not yet restored. The level of analysis unfortunately does not support further comment on the differences identified among the communes. The number of people per household differs considerably across the various communes. Especially high numbers are found in the control communes. Assets have therefore been calculated to a standard size of six adults per household. These adjusted results for the beneficiaries and the control communes are reported in Table 9 and Figure 5 (The differences reported in Table 9 are plotted out in Figure 5).

Table 8: Productive asset gain or loss per household in the project intervention zone and the control communes (difference between number of assets held currently and prior to the crisis; positive numbers indicate an increase in assets, negative numbers a loss of assets)

Assets	Project Intervention Zone							Control	
	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	Petaka	Mondoro
----- Difference in number of assets per household* -----									
a) Transportation equipment									
Bicycle	0.09	0.02	0.06	0.18	0.36	0.23	0.00	-0.59	0.45
Motocycle	0.36	-0.06	0.03	0.64	0.00	0.29	0.09	0.14	0.41
Cart	0.36	0.24	0.09	0.18	-0.09	0.19	0.64	0.27	1.23
b) Agricultural tools									
Plow	0.45	0.24	0.09	1.55	-0.18	0.27	0.91	0.32	1.50
Daba	0.00	0.40	0.06	1.73	-0.09	1.40	1.91	1.14	2.27
Pick (Pioche)	-0.09	0.19	0.00	0.91	-0.09	0.56	-0.18	1.18	2.50
Axe	0.45	0.29	0.09	1.09	0.18	0.56	0.91	0.77	0.45
Sickle	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pick (Pic)	0.00	0.00	0.00	0.09	-0.09	-0.02	0.00	0.09	0.05
Shovel	0.00	0.02	0.00	0.09	0.18	0.19	0.00	0.00	0.09
Wheelbarrow	0.00	-0.03	0.00	0.09	0.09	0.06	0.00	0.00	0.00
c) Animals									
Horse	0.00	-0.03	0.00	0.27	-0.27	-0.06	0.00	-0.05	-0.05
Camel	0.00	-0.03	0.09	0.00	0.00	0.02	0.09	0.00	0.23
Donkey	0.36	-0.13	-0.03	2.55	-0.55	-0.06	0.27	0.55	0.41
Sheep	-2.36	-2.97	-0.06	5.45	-4.91	-1.31	2.09	-1.82	-4.32
Goat	0.36	-1.24	0.12	0.64	-8.27	-1.21	3.64	-4.18	-3.36
Bovins	-3.55	-0.43	0.24	-0.91	-6.09	0.29	0.36	-2.68	-6.36
Poultry	-0.82	-0.73	-1.03	-2.64	-4.27	-2.54	-1.82	-1.36	-3.68

* Current assets - assets before the crisis

Table 9: Productive assets per household (standardized to 6 adults/HH), before the crisis, today, calculated as a difference, and as a ratio of today to before.

Assets	All Beneficiaries				Control communes			
	Before (B)	Now (N)	Diff N-B	N/B	Before (B)	Now (N)	Diff N-B	N/B
----- Number of assets / household -----								
a) Transportation equipment								
Bicycle	0.58	0.66	0.08	1.14	0.56	0.53	-0.02	0.95
Motocycle	0.09	0.18	0.09	2.00	0.07	0.17	0.1	2.43
Cart	0.4	0.55	0.15	1.38	0.39	0.65	0.26	1.67
b) Agricultural tools								
Plow	0.47	0.7	0.23	1.49	0.52	0.84	0.32	1.62
Daba	4.47	4.97	0.5	1.11	5.9	6.5	0.6	1.10
Pick (Pioche)	2.34	2.51	0.17	1.07	3.61	4.35	0.74	1.20
Axe	1.92	2.21	0.29	1.15	3.27	3.48	0.22	1.06
Shovel	0.01	0.06	0.05	6.00	0	0.02	0.02	
Wheelbarrow	0.01	0.02	0.01	2.00	0	0.03	0.03	
c) Animals								
Horse	0.06	0.04	-0.02	0.67	0.02	0.01	-0.02	0.50
Camel	0.06	0.07	0.01	1.17	0.14	0.18	0.04	1.29
Donkey	1.08	1.14	0.06	1.06	0.67	0.84	0.17	1.25
Sheep	3.98	3.04	-0.94	0.76	2.61	1.53	-1.08	0.59
Goat	4.62	3.97	-0.65	0.86	3.71	2.38	-1.32	0.64
Bovins	2.13	1.69	-0.44	0.79	2.36	0.77	-1.59	0.33
Poultry	5.75	4.59	-1.16	0.80	4.46	3.58	-0.88	0.80

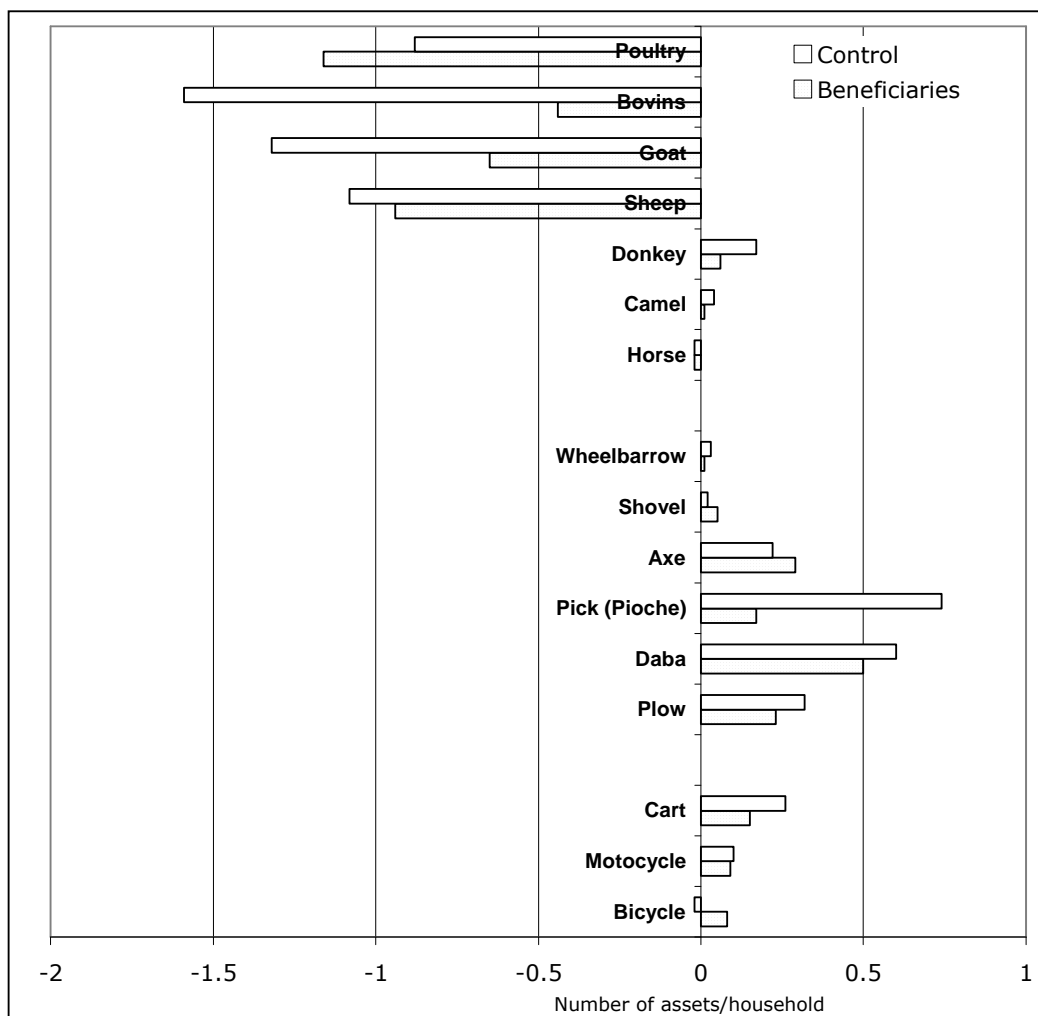


Figure 5: Differences in productive assets per household (comparing before-crisis levels with current levels) for project beneficiaries and control communes (standardized to 6 adults per HH)

Project beneficiaries and control farmers were able to restore most of their agricultural tools and transportation equipment, but they were not able to match the number of animals they had before the crisis. The control group faces more problems in restoring their livestock compared with the beneficiary group. The increased recuperation of transportation assets, including donkeys and camels in the control group, can be attributed to Mondoro, which is very remotely located. The population likely assigned high priority to restoring its means of transportation.

Focus group discussions did not confirm the full recuperation of tools and transportation equipment. Farmers confirm that the situation is getting better, but the assets are not yet fully restored. This concerns most importantly animals, but also agricultural tools and

transportation equipment that are more costly (plows, carts) compared with simple hand tools such as *dabas*, etc. On a good note, the availability of food and seeds is currently secured. Differences within a community can, however, be considerable. Better-off people with more assets were not affected as much by the crisis as poorer villagers, and they have also recuperated faster. Two major factors influencing the process of recuperation are the quality of the agricultural season (rain, pest incidence, and diseases), and the severity of personal indebtedness. The two years following the locust invasion were not very good agricultural seasons (2005, 2006). Only last year (2007) were yields good. The recuperation process in general was therefore slow, and only after farmers have secured food are they able to buy new assets.

“After the locusts and the fair, the agricultural years were unfortunately not very good, which didn’t allow us to regain our lost material, but at least we had to eat.” Farmer in Doumbara.

“It all depends on the rainy season, if the harvest is good, and once you have enough to eat, you can buy some assets to recuperate.” Farmer in Youna.

The debt situation is another constraint. During the crisis, many people had to take up credits in order to buy food. With the low agricultural productivity over the past years, debts could not be reimbursed.

“As long you haven’t paid your debts, you can’t invest in livestock.” Farmer in Kiro.

Farmers in Kiro estimate that at least three years of good harvest are needed to reestablish their assets. In Youna, villagers estimate that they have restored about half of their animals. A few people in the village have restored their assets. Also, women were able to restore their jewelry. In Toupere, two good years of harvests are needed so that most people can pay back their credits. In the control village of Tiguila, which received very little help during the crisis, villagers took up many credits. Some farmers estimate that it will take them at least 10 years to recuperate (see also Box xx).

Thus, in summary, focus groups affirm that the availability of food and seeds has been restored to pre-crisis levels, tools and transportation equipment have been partially restored, but animals have not yet been restored. Restored food availability is also confirmed by the data presented in Figure 6.

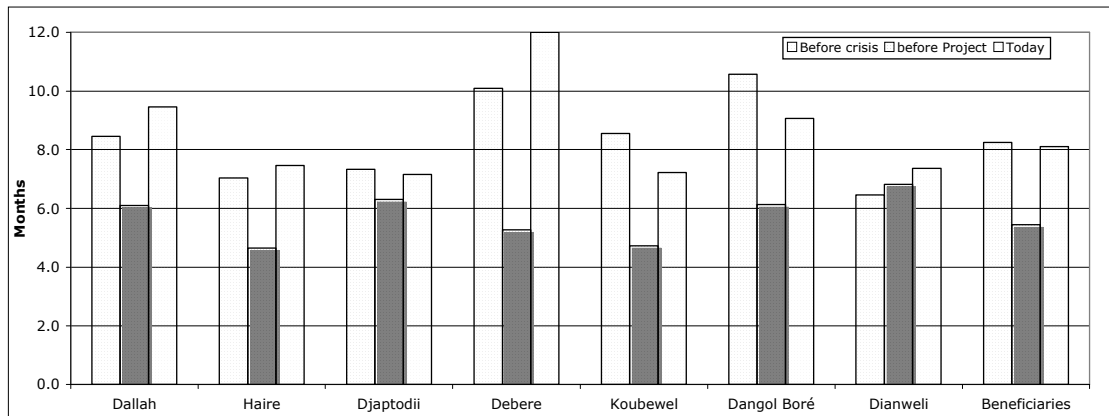


Figure 6: Food availability in months (from agricultural production) before the crisis, before the DCC project and today.

2.14. Impact of seed fairs on households

Farmers' opinions on the impact of the seed fairs, which were collected during the focus group interviews, were fairly straightforward and analogous. Seed fairs were held at the end for the dry season, and just before the start of the planting season in 2006. At this time, there was no food available at the village level. People had to pursue different strategies (see Section 2.4.) to organize food, which included most often the necessity of leaving the village. The impact of the seed fair was significant, as it provided the seeds needed for planting, but also some food, which allowed people to stay home and plant their fields. With the planting of their fields, farmers were able to secure most of their food needs for the rest of the year, in which case farmers could avoid taking up credits.

2.15. Insights from the control communes

The two control communes Petaka and Mondoro did not benefit from the seed fairs. Their characteristics are fairly different, and their stories may help to illustrate some other realities and aspects of communities in this region. Alamina in Petaka represents a village that was able to address the crisis better than many other villages in the circle, whereas Tiguila in Mondoro can be considered a real control. This is a village that was strongly affected by the crisis but received barely any outside assistance. The stories of how the two villages lived through the crisis, as told by its citizens during the focus group interview, are reported in Box 2 and 3.

Box 2: The story of Tigula in Mondoro as told by its citizens during the focus group interview

About 50-60 villagers joined the focus group interview and told the story of how they lived through the crisis:

Tigula was heavily impacted by the locust invasion, as were all the villages of Mondoro. The locusts destroyed the entire harvest, including the pastures, leaving the animals with nothing to eat. Half of the animals died, and people took up credit to buy fodder to save the rest of their animals. The only help they received was some food distribution from the government, which didn't last very long, and some seed supply from *Afrique Verte*. In order to survive the crisis, people sold everything they were able to sell. Four farmers were selected randomly from focus group participants and were asked to tell the stories of how they lived through the crisis:

- *I sold everything I owned in order to buy food: my tools, my small ruminants, even my camel, but it was not enough. At the end, I was obliged to take up a credit to get a bag of millet; and above all, I didn't eat well.*
- *My harvest was zero, I didn't even get one millet panicle. I took my family on my donkey cart to Douentza. There, I transported with my cart firewood, grass, and construction material for the town. But the income was not sufficient to feed my family. I was obliged to sell my donkey and the cart in order to buy some food and to be able to move back to the village,*
- *I didn't have anything to sell, so immediately after the locust invasion I left for the gold mines in Burkina Faso, where I earned the money for two bags of millet. When I came back to the village I collected food from the wild. Not eating well, I wasn't able to cultivate my entire field, because I was hungry.*
- *I sold my small ruminants and my cart. Today I got my cart back, because one of my sons, who went to work in the gold mines in Burkina, had sent me some money. As for the livestock, I wasn't able to get it back.*

Villagers estimated that they were able to plant about half their fields in the first year after the crisis. Because the harvests in the two following years were not good, people had to take up more credits. Some people estimated it will take up to 10 years to reimburse the credits. Thus there has been very little recuperation of assets. In general, farmers find seeds for planting, coming either from their personal stocks or from their relatives. Also *Afrique Verte* distributed some seeds (17 bags/village or 2 kg/family) and established a revolving fund, with the plan to establish a village seed bank. But reimbursement was not respected, because people produced only a little and kept the entire harvest, or they had emigrated after having borrowed the seeds, and never paid them back.

Box 3: The story of Alamina in Petaka as told by its citizens

Alamina is only a few kilometers away from Douentza. The locusts destroyed their millet in 2004, and some additional damage was experienced due to local flooding. The village has a number of gardens, which are either family or community plots, where tobacco, onions, cabbage, tomatoes, hot pepper, salad, and sweet potatoes are cultivated, especially during the cool season. This is possible due to a high water table, and water usually does not represent a problem. The vegetable growing season after the locusts was normal. With the income from vegetables sold in Douentza, villagers were able to buy food. People also lived from wild food, from money sent home by emigrated young men, by transporting and selling firewood in Douentza, and by selling their animals. Villagers admitted not to have recuperated fully, especially not for the animals. The money from the gardening goes directly into consumption and not into investment. Similar to Tiguila, *Afrique Verte* also established a revolving fund for a village seed bank. Here, people reimburse the seeds, and they currently have 55 bags of millet in their warehouse.

People in Alamina lost assets, and they have not recuperated them fully. The village is fortunate to have a high water table, and people can grow gardens during the off-season. The proximity to Douentza allows them to sell their products in town, which helps them to improve their food security situation. The decision not to include this village in the seed fair seems to be justified when their needs are compared with those of the other villages in the region.

The people in Tiguila lost many assets, were forced to emigrate, and had to take up credits in order to survive the crisis. When the agricultural season arrived, the farmers were still busy seeking money and food, and therefore the planted surface areas were reduced. The harvests were small, also due to the particular climatic conditions of that season, which forced farmers to take up more credits. This example shows how critical the impact of the seed fair was, as it provided seed and food just prior to planting. This helped people to reestablish their basis of production. Even if yields were low that year, seed fair farmers were able to produce enough food to avoid having to take on credits.

It is not clear why the commune of Mondoro wasn't included in the seed fair. According to the Regional Food Security Commission, Djaptodji, Mondoro, and Dangol Bore had the highest food deficits after the locust attacks (Sperling et al., 2006). CRS collaborated strongly with the technical committee put in place at the Circle level. One of the selection criteria applied was accessibility, although for a one-time event at the end of the dry season (where roads are passable) this should not have become an overriding criterion.

2.16. Conclusion and recommendations for SO1

The locust invasion and drought during the cropping season of 2004 had long-lasting consequences for rural livelihoods in the Douentza Circle. People had to sell off many of their productive assets in order to buy food to survive. This asset reduction translated into lower productive capacity, initiating a vicious circle of poverty and low agricultural productivity. The first strategic objective (SO1) of the DCC project was to reconstitute the productive assets of vulnerable households in Douentza. The main activity toward this end was conducting livelihood fairs at which 10,000 targeted farmers were able to acquire seeds, tools, small ruminants, and other productive assets. The achievements related to SO1 can be summarized as follows:

- According to the focus interviews and the PIA, CRS's support was by far the most important direct support that farmers received during the crisis.
- The reconstitution of productive assets is a complex process that takes time, but today the trend is positive. Differences in asset restoration both between and within communes were identified in this evaluation, although the level of analysis does not support in-depth explanation of these differences. It seems that the recuperation process for better-off people has played out more efficiently than it has for the poorer segments of the communities, in which people still struggle considerably. It also became evident during the final evaluation that locations with improved water availability (water points, wells, high groundwater tables) showed improved asset restoration compared with locations marked by limited water access and availability. Today, food and seeds have been fully recuperated, agricultural tools and transportation equipment have been partially restored, but the number of animals has not yet reached pre-crisis levels.

Asset restoration was influenced by the quality of the agricultural seasons that followed the locusts, which featured remarkably below-average production in 2005 and 2006. Only the 2007 season allowed for satisfactory agricultural production. Thus for the first two years, people were preoccupied by meeting their food needs. Only in the most recent season has individual surplus production allowed people to invest in restoring assets.

Indebtedness operates as another main factor. Farmers who were forced to take up credits at high interest rates during the crisis still struggle and are likely to continue struggling for a while to repay their debts. This is especially the case in locations that received no assistance during the crisis. Some people in the commune of Mondoro claimed that it will take them as many as 10 years to repay their debts. Thus one of the main impacts of the DCC project was enabling farmers to avoid taking up credits through the provision of seeds and food at the livelihood fairs. This allowed farmers to get back on track in producing their own food. This is in contrast to situations in which farmers had to look for money and food well into the cropping season, thus reducing their productive agricultural surface areas, which translates into lower production and obliges farmers to take

- up more credits. Future projects with similar characteristics should use the level of indebtedness as a project indicator.
- The livelihood fairs had a significant impact on participating households in the restoration of their productive capacity for the agricultural season of 2006. This represented a turning point in addressing the crisis, and a starting point in the restoration of assets.
 - The timing of the fairs was right, just before the cropping season, when the need for food, seeds, and tools was most pronounced.
 - CRS's priority to offer appropriate products at the fairs is to be commended, and worked out for the farmers.
 - Undertaking a Seed System Security Assessment beforehand made it possible to identify seed needs, seed availability within the region, and existing seed access mechanisms utilized by farmers.
 - The fairs concentrated on local millet seeds (versus varieties from outside the region), and also provided seeds for other crops such as sorghum, cowpeas, peanuts, bambara groundnuts, and rice. This allowed farmers who had lost their seeds of various crops and had no access to new ones to reestablish a diversified cropping system.
 - The quality of products was good, and the range of offered products was appropriate and sufficient, according to farmers. Participants appreciated being able to choose products—singly or in combination—that best suited their respective situations.
 - The offer of small ruminants was an innovation, compared with the seed fair of a year earlier, where vouchers were worth half as much (USD 20) and concentrated on seeds. The USD40 voucher should allow people to purchase small ruminants and thus directly contribute to reconstituting their assets. Yet, less than 2% of seed fair participants bought a small ruminant. The reason was the high level of food insecurity, and people's primary concern for food acquisition. Although CRS may have miscalculated the popularity of small ruminants, the outcome was positive. Increasing the voucher values to USD 40 proved to be important and significant. It provided farmers not only with seeds needed for planting, but also with food, which allowed people to stay home and plant their fields. A smaller voucher may have helped alleviate the immediate situation but may still have provoked a disruptive situation during field establishment, thus reducing the surface area of cultivated land. It is the farmers' agricultural production that is the key to reestablishing food security and lays the foundation for asset restoration.
 - When farmers were asked whether this was more of a Seed Fair or a Food Fair for them, they responded 'both.' The importance of food acquisition was not foreseen as such by CRS. This raises the question as to whether more food (which would be cheaper than seeds) should have been offered at the fair. Buying up large quantities of food during a food crisis may adversely impact prices, which is

to be avoided. On the other hand, farmers prefer local varieties, not only for planting but also for consumption. According to them the local varieties are more nourishing. Some farmers exchanged the higher-priced local millet later for the cheaper exotic millet for food. Also, offering local seeds helped to redistribute the varieties across the region. Would it have been better to offer more exotic varieties (equivalent to food), compared with local varieties (equivalent to seed—but also food, as seen above)? This is a complex question with no easy answer. The issues raised above may deserve specific attention when seed fairs in similar settings are to be designed in the future.

- Although the timing of the seed fairs was right (before the cropping season), it happened almost two years after the locust invasion. Due to a weak agricultural season in 2005, the crisis situation persisted in 2006. Asset loss had already occurred over a two-year period, and thus efforts to regain these losses became much harder as more time passed. The rapid intervention of an emergency project therefore becomes critical. Nevertheless, if not for the DCC project, the livelihood situation in the region would most likely have stagnated or deteriorated further.
- Seed availability vs. seed access: As identified in the SSSA (Sperling et al., 2006) and confirmed in this evaluation, farmers pursue multiple mechanisms to access seeds. It became evident during this crisis situation that seeds are among the most enduring items to outlive a crisis. Thus seed availability within the region was secured thanks to farmers' strategies for keeping multi-annual seed stocks. This was especially true for cereal seeds, but less so for legumes, which pose serious storage problems. The impact of the seed fairs is nevertheless not to be underestimated. Some villages and individuals had no seeds left and were confronted with difficult seed access problems. The seed fairs allowed for the mobilization of high-quality local seeds throughout the region, for instance from specialized seed-producing villages in the commune of Haire. These quality seeds were then redistributed across the region. This had three major effects, i) allowing people in great difficulty to easily access high-quality seeds, ii) contributing to the preservation of local agro-biodiversity (less contamination of local varieties with exotic varieties), and, with that, iii) guaranteeing the productivity of the agricultural systems (varieties from outside the region are not adapted and, if planted, would have significantly reduced agricultural production).
- All the communes of Douentza were affected by the crisis. The seed fairs were able to cover 10 out of 15 communes and reached 10,000 households, 45% of the total population in Douentza. CRS adopted a consultative process, integrating regional and local technical committees and stakeholders into the decision-making process of identifying communes to be included in the fairs. This approach is to be commended. Nevertheless, the commune of Mondoro, identified by the Regional Food Security Commission as being among those with the greatest crop deficits (Sperling et al., 2006), was not included. It wasn't possible during this evaluation to accurately understand the decision-making process for commune selection, which is certainly not an easy exercise. However,

‘remoteness’, apparently among the selection criteria and one, which applied to Mondoro, should not be relevant for assigning beneficiaries to seed fairs, which are held as one-time events at the end of the dry season when roads are drivable.

- People have survived and remained in relatively acceptable health thanks to wild food resources. These food resources are extremely valuable; some of them have higher nutritional value than agricultural crops (Berge et al., 2005). The overexploitation of natural resources, such as extensive firewood collection, overgrazing, and wildfires, threatens the integrity of these resources.

3. Achievements of Strategic Objective 2: Targeted households in Douentza have improved their resiliency in the face of future shocks.

This strategic objective—to improve resiliency in the face of future shocks—is oriented towards improving the *long-term* food security situation of households in the Douentza Circle. The objective, intermediate result, output and the monitoring indicators are presented in Box 4. The summary of achievements in relation to SO2 is provided in Annex 3. Two knowledge-based activities were undertaken: i) Farmer Field Schools and Agro-Enterprise development (of FFS/AE), which introduced farmers to new agricultural techniques and agro-marketing skills, and ii) Savings and Internal Lending Communities (SILC), through which women’s groups were trained in savings, investment, and the diversification of income. The SILC activities were undertaken in the three communes of Djaptodji, Dangol-Bore, and Haire, whereas the FFS/AE activities were implemented in Dangol-Bore and Haire. These three communes were severely attacked by the locusts, are in normal times among the major agricultural production areas, and feature a majority sedentary population. In the agricultural context of the Douentza Circle, increasing resiliency can be achieved through various strategies that were targeted by the project. They are summarized in Table 10.

Table 10: Project activities in support of reinforcing resiliency

Strategies to reinforce resiliency	Project Activity
Increasing productive assets	SF, FFS, SILC *
Improving production techniques	FFS
Diversifying agriculture production	SF, FFS
Diversifying sources of revenue	SILC, FFS, AE
Improving commercial strategies	SILC, AE
Improving access to capital	SILC

* SF: Seed fair, FFS: Farmer Field School, SILC: Savings and Internal Lending Communities; AE: Agro Enterprise

Box 4: Strategic Objective 2

Targeted households in Douentza have improved their resiliency to future shocks

Impact Indicator: By project end, 90% of targeted households can cite at least 2 concrete ways they have improved their resiliency to future shocks.

- Intermediate Result 2.1: Targeted beneficiaries have adopted improved agricultural techniques and the agro-enterprise approach to farming
- Monitoring indicator: i) 50% of targeted beneficiaries report having adopted at least one of the agro-enterprise (AE) approaches to farming, ii) 95% of targeted beneficiaries report having adopted at least one of the improved agricultural techniques
 - Output 2.1.1: Targeted households have acquired appropriate capacity in agro enterprise techniques
 - Monitoring indicator: i) 45% of targeted beneficiaries can accurately describe at least 2 agro enterprise techniques, ii) 40% of targeted beneficiaries can accurately describe how they might apply the 2 agro enterprise techniques described above in their own work.
 - Output 2.1.2: Targeted households have acquired appropriate capacity in improved agricultural techniques
 - Monitoring indicator : 90% of targeted beneficiaries can accurately describe at least 2 techniques they learned through FFS participation how they might apply in their own work.
- Intermediate Result 2.2: Targeted beneficiaries have adopted internal savings and credit group techniques
- Monitoring indicator: 90% of targeted beneficiaries are active members of an internal savings and credit group
 - Output 2.2.1: Targeted households have acquired appropriate capacity in internal savings and credit groups techniques
 - Monitoring indicator: 90% of targeted beneficiaries can describe accurately how they might apply savings or credit management techniques

3.1. Farmer Field Schools

CRS established collaboration with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Institute d'Economie Rurale (IER) to identify and test new agricultural techniques for the zone with the goal of improving agricultural productivity, and thus increasing the resilience of the farming system when facing shocks in the future.

Implementation was facilitated by a cluster-based farmer field school (FFS) approach (Figure 7). Two communes, Dangol-Bore and Haire, were selected, and in each commune

six participating villages. Once a week five farmers from each participating village came together for training at a central site, also called the Training of Trainers site (or TOT site). Upon returning to their villages, the farmer trainers pass on what they have learned to 20 participant farmers in their village. Thus in total, with two main sites, six villages per site, and 25 participants per village, some 300 farmers received training and tested themselves the new techniques in their fields. In Dangol-Bore, four out of 150 participants were women (or 2.6%), including one trainer (or 3% of the trainers), whereas in Haire 19 women participated in the FFS (or 12.7% of the participants) with four trainers (13% of the trainers). In Dangol-Bore, the six participating villages were Kiro (the TOT site), Adjoubata, Bobowel, Ibissa, Doumbara, and Gnimignama. In Haire, the villages were Gaye (the TOT site), Touperre, Tabi, Tega, M'bebi, and Youna.

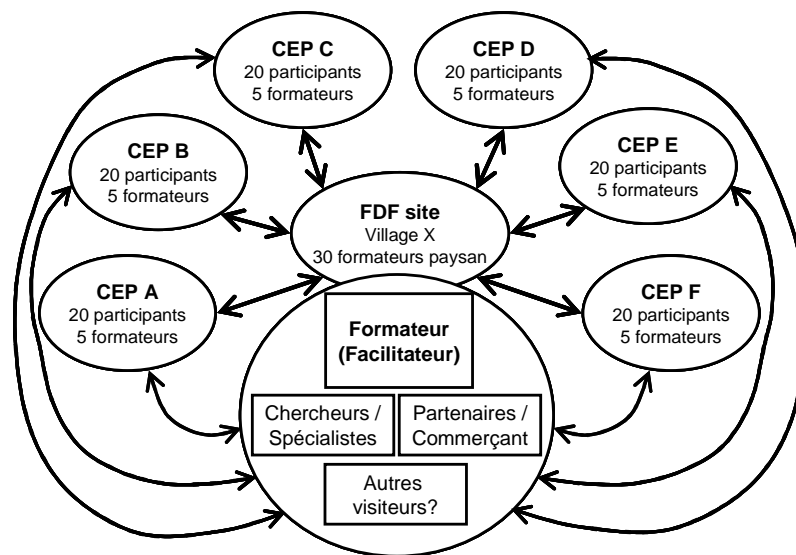


Figure 7: Cluster-based farmer field school approach applied at Dangol-Bore and Haire

ICRISAT provided the technical expertise to lead the FFS program. One facilitator was hired by CRS for both sites and, according to the designed learning modules, specific support was provided by researchers from IER and ICRISAT. The training was based on experimentation, observation, and follow-up discussions between farmers and technicians about the observations made during each session.

3.1.1. Choice of technology testing

In March and April 2006, village-level interviews were held in all of the participating villages to identify existing cropping systems, assess the importance of the different cultivated crops, identify production constraints on the main crops, and ascertain the local methods for addressing the main constraints. In Dangol Bore the most important

problems identified by farmers were i) drought, ii) crop establishment (losses due to insect damage), iii) cantharides and crickets, and iv) birds. In Haire, the main constraints identified were i) crop establishment (losses due to insect damage, and a variety of other reasons), ii) *Striga* (*Striga hermonthica*), iii) cantharides, and iv) other insect pests. These interviews and discussions allowed ICRISAT to identify potential technical options to be tested. The discussion of farmers' and researchers' options led to the joint decision-making process which techniques to be included in the FFS. ICRISAT developed a training curriculum adapted to each of the sites. The main theme for the Dangol Bore site was Integrated Cowpea Management (ICM), and for Haire it was Integrated *Striga* Management (ISM). The details of the technical packages, which was compared with farmers' practices, are presented in Box XXX.

Box 5: Researcher designed technical packages and farmers' practices

Integrated Cowpea management (ICM)

Technical package tested:

- Soil preparation (ploughing)
- Fertilization with 75 kg (NPK) ha⁻¹
- Increased density of cowpea (0.5m x 0.25m)
- Phytosanitary treatments with *Neem* (*Azadirachta indica*) tree leaf extracts (5-6 treatments) during the flowering stage of cowpea
- Solar heating of harvested cowpea seeds and improved seed storage.

Compared with farmers' practice:

- Cowpea density of >0.75m x 0.75m.
- No application of organic or inorganic fertilization.
- No phytosanitary treatment of flowering cowpea plants.

Integrated *Striga* management (ISM)

Technical package tested:

- Fertilization with 100 kg ha⁻¹ NPK before sowing, and 50 kg ha⁻¹ of Urea 2 weeks after sowing
- Increased planting density of millet (0.5m x 0.5m)
- Intercropping of cowpea with millet in alternating rows
- Weeding *Striga* at its flowering stage (60-70 days after planting)
- Integration of ICM techniques as described above.

Compared with farmers' practice:

- Organic manure application (4 tons ha⁻¹)
- Millet plant spacing of >0.75m x 0.75m, and cowpea spacing of >1m x 1m
- No late weeding of flowering *Striga*

3.1.2. Agronomic results for 1st year FFS, 2006

ICM: The cowpea variety introduced produced more fodder than grain when planted on heavier soil, one reason why farmers were not entirely satisfied with the ICM treatment. ICM yields were lower compared with that of FP in four out of six sites. Solar heating of cowpea seeds for longer-term storage proved to be very efficient, not complicated, and easy to replicate, and had a clear advantage over the local techniques for storing seeds.

ISM: With the ISM, millet yield was not different, but yields of cowpea grain, millet, and cowpea straw were higher in ISM. Also, the density of *Striga* was reduced under ISM. Nevertheless, ISM had no clear advantage over FP in economic terms. Fertilizer application was too expensive and did not result in expected yield improvements. On the other hand, dry sowing of millet as part of the farmers' practice had a significant advantage over ISM, which was installed after the first big rains. Participatory cost-benefit analysis revealed that the costs of inputs and labor were too high within tested techniques, and some adaptations to reduce these costs were proposed.

3.1.3. Second-year FFS experience, 2007 (no longer funded by the Gates Foundation)

Based on farmers' and ICRISAT's interest in continuing to work on the technical development of agricultural practices and in order to build on the first year's experience, ICRISAT extended the funding to continue the FFS for a second year, within the no-cost extension period of the project. Thus the Gates Foundation no longer funded this second year of the FFS. The FFS continued in nine out of the 12 original villages, meetings were reduced from weekly to bi-weekly meetings, and the technical packages tested for ICM and ISM were adapted (Box 6).

3.1.4. Agronomic results for second-year FFS, 2007

In the second season, ICM and ISM reached higher grain and fodder yields compared with those of FP at most sites. As for Haire, grain and fodder yields were higher under ISM as compared with FP. Grain yields almost doubled. For millet the figures were 0.63 t/ha for FP and 1.16 t/ha for ISM, and for cowpeas 0.28 t/ha for FP and 0.44 t/ha for ISM. The *Striga* density did not increase considerably with the ISM practice, whereas the farmers' practice almost caused a six-fold increase in *Striga* seed-bank density (Tom van Mourik, personal communication, 2008).

Box 6: Adapted researcher packages in the second FFS season

Adapted protocol for ICM 2007

- Organic manure (2-4 tonnes ha⁻¹) application before sowing
- Seed treatment with insecticide (Kaiman Rouge)
- Fertilizer application (40 kg ha⁻¹ DAP) to rows at sowing
- Variety Korobalen, at a 0.5 m x 0.25 m density
- Phytosanitary treatment with insecticide (Decis) flowering stage of cowpeas, followed by Neem leaf extract treatments every two weeks

Adapted protocol for ISM in 2007

- Organic manure (2-4 tonnes ha⁻¹) application before sowing
- Seed treatment with insecticide (Kaiman Rouge)
- Fertilizer application (DAP) by mixing it with millet seeds (1 kg seeds, 1 kg fertilizer)
- Millet dry sowing before the rains and cowpea sowing after first weeding (1-2 weeks after emergence of the millet crop)
- Urea application (20 kg ha⁻¹) on the millet rows after first weeding
- No fertilizer application to cowpeas
- Planting density 0.5 m x 0.5 m, alternating rows of millet and cowpea
- Phytosanitary treatment of cowpea with Neem tree leaf extract every two weeks at flowering
- Hand weeding flowering *Striga* plants

3.1.5. Adoption of agricultural techniques

On the basis of working only one year (or two years) on agricultural technologies in the context of the marginal agricultural systems of Douentza, it is not feasible to have a good understanding of the adoption of the techniques that were introduced via the FFS program to the farming community. The possible exceptions are simple techniques with compelling results, such as the solar heating of cowpea seeds or the chemical treatment of seeds. In order to evaluate adoption, an evaluation conducted in farmers' fields during the rainy season would be necessary. 'Adoption' as such may not be a good objective, but should be replaced by 'integration and adaptation of technical components into farmers' practices.' Technical improvements are in reality not products of a straightforward process, but instead are complex, take a number of years to complete, and are adjusted by farmers to local conditions. The Intermediate Result 2.1 (targeted beneficiaries have adopted improved agricultural techniques) is therefore not an appropriate result for this short-term intervention.

What is feasible to evaluate after one year of the FFS program is the technical understanding that farmers obtained of the introduced techniques, which corresponds to

output 2.1.2 (targeted households have acquired appropriate capacity in improved agricultural techniques). In an in-depth survey conducted by the project in September 2007, 100% of the FFS farmers were able to describe accurately at least two techniques they had learned during the FFS (indicator of output 2.1.2), thus the output can be considered being achieved. In the final evaluation, FFS farmers were questioned about which of the techniques they are able to practice with confidence (Table 11). Interpretation of these results is difficult. They should have been followed up with in-depth interviews, and ideally by checking whether farmers continue practicing the techniques.

Table 11. Percentage of farmers (n=37) confident about practicing the techniques introduced by the FFS

Agricultural techniques	% of FFS farmers
Germination test	38
Seed treatment	27
Thinning of millet	51
Crop association millet and cowpea	73
Improved cowpea cropping techniques	3
Micro dosing of fertilizers	49
Phytopathological treatment of cowpea	57
Integrated <i>Striga</i> Management	24
Agro-ecosystem analysis	14

3.1.6. Use of inputs

The use of inputs such as fertilizers and pesticides and the use of organic manure as a means of fertilization were investigated. The results are reported in Table 12.

Over 90% of all farmers use organic manure to fertilize their fields, and 9% of all project beneficiaries use chemical fertilizer, whereas in the control communes, none of the farmers use fertilizer and 98% use organic manure. In the two FFS communes, Haire and Dangol Bore, fertilizers are applied by 5% and by 21% of the farmers, respectively, and the latter figure is exceeded only in Dianweli, where 27% of farmers use fertilizer. Increased fertilizer application can also be observed with the FFS category (16% and 11% of farmers in the category FFS and FFS+SILC, respectively) compared with FS and SILC with 5% each. Similarly, the use of pesticides is more extensively adopted in the two FFS communes and in the FFS and FFS+SILC categories. These results should ideally be reconfirmed in the years after the project, as the results may relate to project-linked activities.

Table 12: % of farmers using inputs (non exclusive)

a) Beneficiary Communes									
Input use	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	All Farmers	
	----- % Farmers -----							Number	% Farmers
Organic manure	91	97	73	100	73	94	100	170	90.4
Fertilizer	0	5	3			21	27	17	9
Pesticides	9	19	12		9	10		23	12.2
Nothing			15					5	2.7

b) Control Communes				
Input use	Petaka	Mondoro	All Farmers	
	----- % Farmers -----		Number	% Farmers
Organic manure	100	96	43	97.7
Fertilizer				0
Pesticides		14	3	6.8
Nothing				

c) Project intervention categories				
Input use	FS	FFS	SILC	FFS SILC
	----- % Farmers -----			
Organic manure	82	93	93	96
Fertilizer	5	16	5	11
Pesticides	5	16	9	18
Nothing	7	0	2	0

3.1.7. Farmers' appreciation of techniques introduced by FFS

During the focus group interviews, farmers shared their observations of the different techniques, which is summarized below:

- Solar heating of cowpea seeds. Farmers are convinced of the efficacy of this technique, and it was adopted in several villages. During final evaluation, bags of intact cowpea seeds were witnessed in several villages. See Box 7 for technical details.
- Cowpea single cropping and cowpea-millet intercropping, with a higher density of cowpeas than is traditionally used, attracted interest. The cowpea is a cash crop and with the possibility of seed storage via solar heating techniques, economic interest in this crop is increasing.
- Seed treatment with pesticides was already known to some of the villagers before the FFS. The technique seems to work, but farmers mentioned the constraints of product availability and cost.
- Thinning of millet: Farmers who have witnessed the difference seem to be convinced of the efficacy of this technique, whereas villagers, who haven't seen it, are skeptical. This is to be expected. It indicates that multi-year testing is preferable.
- Striga weeding at flowering: Some farmers observed a yield-increasing effect and are favorable toward the technique; others noted the labor intensiveness and the problem of applying it to an entire field. *Striga* seed-bank density increased six-

- fold in farmers' plots compared with remaining about equal in the improved weeding plot. Again, it would be more informative to observe test plots (with and without weeding) over several years, in order for the farmers to appreciate the long-term impact of this practice.
- Fertilizer application: Some villagers had some experience with fertilizers before the FFS, and some farmers have fine-tuned the optimal quantities and timing of applications. Other farmers stressed the risk of fertilizer application, arguing that, fertilizer application may only have a yield-increasing effect once every three years. This is related to climate variability and the timing of fertilizer application in relation to rainfall. Additionally, if incorrectly applied, fertilizers can damage crops, burn the plants, and thus reduce production. Costs and inconsistent availability are other constraints farmers face when using this input.

Box 7: Cowpea seed solar heating for extended storage

Solar heating of cowpea seeds requires a black plastic sheet on which seeds can be spread out evenly, allowing enough spacing between the seeds. The seeds are then covered with a transparent plastic sheet. At the edges the two plastic sheets are tightly sealed to avoid air circulation from the outside. The package is then heated in the sun for two hours, a procedure that, if possible, is repeated a second time a few weeks later. The heating of the seeds kills the eggs/larvae of a pest that is located within the seeds following grain formation. In untreated seeds, the larva develops after harvest within the grain, and within a few weeks carves a tunnel from the inside out and perforates the seed while escaping. These seeds are suitable for neither planting nor consumption. Local techniques used to preserve seeds exist but are not very successful. Farmers store small quantities of seeds (usually 2-3 bowls) in receptacles of hot sand or ashes, in order to save some seeds for the next planting season. The problem of cowpea storage is widespread in the region. Market prices reflect this accordingly. At harvest, cowpeas flood the markets. The prices are about 50 CFA/bowl (1 bowl = 0.667 kg). Before the rainy season, seeds can cost up to 500-750 CFA/bowl.

3.1.8. Farmers' observations on the FFS approach

Farmers appreciated coming together and being introduced to new techniques and being able to exchange ideas with technicians and other farmers. Agricultural advice is scarce, and therefore there was considerable interest in the FFS. The productive time in this farming system is very short, only three months, during which time farmers must produce for the entire year. For many farmers, the approach was too labor intensive, especially in the first year, as well as for the trainers, who participated two days per week in FFS activities. Participating during two days (or a minimum of 1.2 days for people living close by) out of seven days cost people 30% (or 18% at a minimum) of their productive time. Some people had to come from very far away (e.g., it is 17 km from Tabi to Gaye),

which prevented them from working in the fields that same day. In the second year, the meetings were held every two weeks. But still, three villages ceased participating because the meeting days didn't work out culturally for them, the distance to the TOT site was too great, they lacked labor at the household level, or the loss of agricultural production did not justify participation. On the other hand, nine out of 12 villages decided to continue the joint learning and experimentation with the FFS, despite the constraints mentioned above.

3.2. Agro-enterprise activities

Introduced through the FFS, agro-enterprise (AE) training aimed at providing farmers with skills that would give them the capacity to broaden their livelihood strategies from subsistence farming to an improved integration into the market economy. By helping farmers better organize themselves and take advantage of existing market dynamics in their areas, the project targeted diversification of farmers' options for production and income generation, and thus, their resiliency when facing food security shocks.

CRS has its own approach to agro-enterprise development, with a specific methodology that includes i) agro-ecological characterization of the intervention zone, including the present partners; ii) identifying market opportunities; iii) analyzing the selected value-chains; iv) establishing linkages with appropriate business development services; and, finally, v) implementing the activity. Work started in July 2006, with several studies regarding zonal characterization and market analysis. By the time activities were identified and a plan for implementation could be designed, it was February 2007, only a few months away from project closure. Nevertheless the project realized three activities in the 2006 cropping season. They were identified based on value-chain analysis, production costs, and marketing opportunities. Self-selected participants in the FFS and SILC groups decided to implement the three activities:

- Production and marketing of cowpeas in Kiro: A group of 28 SILC/FFS women formed to produce and market cowpeas. This activity worked very well, and the women successfully continued this activity by themselves in 2007 (see Box 8). In 2006, women produced 400 kg and earned a benefit of 60,000 CFA, which was judged to be weak. Women sold their crop prematurely when prices were low.
- Production and marketing of garlic in Ibissa: A group of 20 FFS men focused on producing garlic in the off-season. A surface area of 0.25 ha of garlic was planted with technical advice from the project, testing some different cropping techniques (increased spacing), and fertilization options (livestock manure, bat manure, urea and DAP fertilizer). Unfortunately, the solar pump that irrigated the plot broke down in the middle of the cropping season, and could not be repaired in time. The crop was lost.
- Fattening and marketing of small ruminants: Two women's groups in Boni and N'Gouma collaborated on raising sheep. The group in N'Gouma fattened seven

sheep and sold them just before *Tabaski*. The fattening period was long and took seven months. The profit was medium, with 115,500 CFA. The group in Boni fattened 10 sheep over five months. One sheep died and the benefit was weak, with 55,000 CFA. Women apparently didn't master the improved fattening techniques very well.

Box 8: Cowpea production and storage by an FFS/AE – SILC women's group in Kiro: a success story

This example shows how synergies can be created by the favorable interaction of the various project activities. Although these types of synergies are difficult to develop in a short-term emergency relief project, they are hoped to multiply in a longer-term development project. Thus, this experience by the Kiro women provides a good lesson to learn from:

In the first year of the FFS program, three women were part of an FFS group, and learned about the various agricultural techniques, among them the solar drying of cowpea seeds. They also participated in some agro-enterprise training pertaining to cowpea marketing strategies, which stimulated much interest among them. The SILC group that was already in place, with 28 members, opted to form a separate FFS group in the second year. The women then decided to invest their SILC social fund in jointly cultivating a 1.5 ha field of cowpeas, applying what they had learned in the FFS. They also intercropped parts of the field with peanuts, multiplying a new variety. The women's group produced 9½ bags of cowpea seeds, of which they sold 7 bags and solar dried 2½ bags. The seeds are currently (as of March 2008) in excellent condition. The crop should be dried the same day it is harvested, but organizational problems limited their yield of dried seeds to only 2½ bags. Still, the women are convinced that by next season they will be able to solar dry most of the harvest.

Cowpea seeds in December were selling at 100 CFA/bowl (1 bowl = 0.66kg), a price that had risen by March to 150 CFA/bowl. The women predict that the price will rise to between 300 and 500 CFA/bowl by June, just before planting season. This represents a fivefold increase in revenue from this crop if sold at such a later stage. The women plan to continue with this activity next year, attempting to take better advantage of the solar drying technique and marketing the seeds at the appropriate moment. With the money they have earned, the women have opened a bank account in Douentza, where they deposited 250,000 CFA (USD 600) from their cowpea earnings. In comparison, the women marketed millet seeds in the past, but the increase in revenue was not as significant. At harvest, millet is generally sold at 60 CFA/bowl, rising to 80 CFA/bowl in March and 100 CFA by June, which represents a 66% increase in revenue from the time of harvest to the time of planting.

3.3. SILC—Savings and Internal Lending Communities

3.3.1. Implementation of SILC activities

After the seed fairs, CRS undertook a SILC promotion campaign in the three communes of Diaptodji, Dangol-Bore, and Haire (what SILC is and how it works is presented in Box 9). The project targeted women who self-selected into SILC groups. CRS field agents organized, trained, and monitored SILC groups and trained and mentored village animators who were then able to replicate the process with newly created groups. Once a SILC group successfully completed an entire SILC cycle in 12 months, which includes self-management of SILC activities, the group “graduated” from needing outside support. Graduation ceremonies were held to celebrate a SILC group’s independence. The presence of village animators ensured the sustainability and ongoing replication of the approach after the project ended. New SILC groups have formed since then, and are accompanied by village animators who provide a demand-driven, paid service to new groups. Payments can range from small monthly amounts per member to material goods such as rice. Currently 10 animators are working independently in the circle of Douentza.

The project’s objective was to reach 450 women who are engaged in SILC activities, with the goal of having 90% (or 405 people) becoming active members of SILC groups. By the end of the project, the number of SILC group members exceeded the original objective by far, with 1,961 active SILC members, or 4.8 times the targeted number. The results for all created groups are summarized in Table 13.

Table 13: SILC groups in Douentza Circle

	Municipalities			Total
	Diaptodji	Dangol Bor	Hair	
Number of villages	4	5	5	14
Number of groups	27	22	26	75
Total number of group members	751	559	651	1961
Number of graduated groups	16	10	15	41
Number of groups in first cycle	11	12	11	34
Number of groups per CRS field agent	16	7	14	37
Number of groups per village agent	12	14	9	35
Number of spontaneous groups	2	1	3	6
Cumulative value of savings in CFA francs (US\$)	2,692,475	2,362,000	2,704,500	7,758,975
	\$6,119	\$5,368	\$6,147	\$17,643
Cumulative value of loans in CFA francs (US\$)	3,810,800	3,855,500	4,317,650	11,983,950
	\$8,661	\$8,763	\$9,813	\$24,237
Cumulative number of loans	1,246	557	490	2,293
Cash on hand (US\$)	3,658,520	2,899,815	3,381,055	9,939,390
	\$8,315	\$6,590	\$7,684	\$22,859
Cash in social funds in CFS francs (US\$)	874,230	334,825	519,450	1,728,505
	\$1,987	\$761	\$1,181	\$3,929

As only a few participants had engaged in savings and loans before, these results are significant and had a positive impact on people’s livelihoods, which are further described below. Members also made regular contributions to a social fund, which allows the giving out of “grants” to members or non-members for special needs and emergencies.

Box 9: What is SILC and how does it work?

SILC (Savings and Internal Lending Communities) is an ASCA (Accumulating Savings and Credit Associations) model promoted by Catholic Relief Services (CRS).

The purpose of SILC is to provide savings-led financial services to communities that have no access to formal financial services or where access to formal financial services is limited due to high transaction costs and other entry barriers.

Members save money that becomes a source of loan capital for members of the group. When the amount of group savings is sufficient, any group member can borrow from the internal fund, committing to repay the loan with interest. This allows the fund to grow.

SILCs are owned and managed by their members. This is their most important characteristic, and self-reliance is fundamental to their operations and long-term sustainability. The goal is group and financial independence.

SILC group members elect a five-member governing Committee consisting of a Chairperson, Secretary, Treasurer, and two Money Counters. Committee members are subject to annual re-election at the start of a new cycle. They may be removed at extraordinary meetings.

SILC group members agree on a set of rules, by-laws, or a constitution, to guide their activities. These rules are written into the SILC Constitution that provides authority to the Committee members and a framework for regulation and dispute resolution

All transactions at meetings are carried out in front of the group to ensure transparency and accountability. This ensures that all members of the group are able to witness who has saved and who has not, who has borrowed and who has not, and what this means with respect to the return on savings. To ensure that transactions take place only during group meetings, a lockable cash box or heavy-duty lockable canvas pouch is used to safeguard excess cash and record books to prevent unauthorized cash transactions and tampering with group members' records.

The cycle of savings and lending is time-bound. Members agree to save and to borrow as they wish from the accumulated savings of the group for a limited period of time. At the end of this period the accumulated savings, interest earnings, and earnings from other economic activities undertaken by the group are shared out amongst the membership in proportion to the amount that each member has saved throughout the cycle.

(Vanmeenen, 2006)

3.3.2. Impacts of SILC activities at the household level

Impacts of SILC activities on households were significant and have been evaluated during the PIA, with a household survey in September 2007, and by the final evaluation. The main impacts can be regrouped as following: i) improved financial management capacity, ii) increased income, iii) diversification of activities, and iv) improved social cohesion and social status.

3.3.1.1. Improved financial management capacity

During the PIA, women from the SILC groups clearly felt improvement in their financial management capacities since participating in the activity. During the focus interviews at final evaluation, women explained that before SILC they were not very confident in undertaking small business activities. They hesitated over what to buy and how to market their products. SILC has reassured them in managing their finances, and has helped them to engage in commercial activities. For instance, a woman from Wakere buys a few kilos of peanuts at the big market in N'Gouma, and then prepares them and resells them in small packages in the village. She admits that she was not very confident in doing business before. As many women have engaged in this type of activity, there are many more products available at the village level than there were before. Before SILC, credits were taken with outsiders. Access to credit was difficult, and the interest payments profited outsiders. With SILC, credit is taken within the group's own money, the interest paid benefits the group, and women can access small credits a few times a year. This has reinforced the attitude of working with their own capital. For instance, in Wakere, credits in the first year of SILC were between 2500-5000 CFA, but in the second year they have increased to between 10,000 and 25,000 CFA. Every woman has already taken about four credits in two years.

3.3.1.2. Increase in income and use of additional income

During the PIA, all SILC members confirmed that the SILC contributed to an increase in their incomes. The increase has not been quantified. Some indication of its impact can be gained, however, by understanding how the additional income was used. Women used gained revenue for household expenses, such as an improved diet, clothes, kitchen utensils, for savings through jewelry acquisition (36% of the women), to invest in small ruminants (54% of the women), or in construction. The men are usually in charge of household needs, but recently women have been able to contribute substantially to them. Women can now buy condiments and vegetables, or prepare breakfast, which wasn't possible before. Eighty-four percent of the women interviewed in the household survey (n=80) confirmed eating better today compared with the way they ate before SILC. A woman from Wakere reported that the diet at the household level is much more diversified. Before SILC, she was not able to buy sugar, but now she even has money for

onions. Today, 14% of the SILC women pay for schooling fees or school material for their children. For instance, a woman from Kiro bought a goat with the SILC loan, and raised, fattened, and sold it. With that revenue she paid the schooling fees for her child who attends secondary school in Douentza. Debt avoidance was identified as a key factor in the context of livelihood recovery during this evaluation. It is most likely that the mobilization of money and savings within the community has contributed to avoiding debt, although we were unable to explore this particular relationship in more details.

3.3.2.3. Diversification of activities

Now that they are able to access small loans, women's activities and incomes have diversified with SILC. Whereas before SILC only 25% of the women had engaged in income-generating activities, this percentage had increased by September 2007 to 41%. Before SILC, income was generated through the weaving of mats. But today the trading and marketing of products has diversified incomes considerably. Fattening small ruminants is popular and widespread within the SILC community. SILC revenue is also used to pay laborers for field work. Some women confirmed planting larger field surface areas, thus improving agricultural production. SILC women also undertake community activities. In Kiro, for example, women were able to buy a plough. They also contributed financially to literacy activities and to the fencing of their vegetable garden, supported by the ALCOP project.

3.3.2.4. Social cohesion and social status

In addition to economic improvement, SILC members mentioned that social cohesion is an important impact of the activity. This includes mutual support among women through loans and social fund grants, but also through increased solidarity in difficult times. With increased access to capital and greater capacity for financial management, women's status has also notably improved. Women now are more self-confident and are better respected by their husbands. Some women have also developed their leadership skills, and are more engaged in village committees and in the political process. These outcomes were not anticipated by the DCC project.

3.3.3. Sustainability of the SILC activity

The project extension of six months allowed for a follow-up assessment of implementation quality to ensure that replication of the approach with new groups was well underway. In December 2007, a SILC network for Douentza Circle was created with the aim of exchanging information and mutual learning. Representatives from each SILC group gathered and a representative of the *préfet* presided over the meeting. The creation of this SILC network substantiates the organization of private sector providers into networks as a means for future certification of new private sector providers and replication of the SILC model over a wider geographic area.

3.4. Additional indications of improved resilience

3.4.1. Reestablishment of crop diversification after the crisis

With the crisis, farmers not only lost millet but also other crops and their seeds. Table 14 shows the comparative importance of various crops in the Mopti region.

Table 14: Importance of crops in the Mopti region of Mali (% of farmers cultivating them), according to Stenhouse, 2006.

Crop	% Farmers
Pearl millet	99
Sorghum	62
Cowpea	62
Groundnut	54
Rice	45
Bambara groundnut	38
Oseille de Guinée	16
Watermelon	4
Fonio	4
Sesame	4
Gombo	3
Maize	1

Next to millet, the seed fair also offered seeds of sorghum, rice, cowpeas, peanuts, and bambara ground nuts. The FFS introduced varieties of peanuts, *Hibiscus*, and cowpeas for farmers to test. Farmers mentioned having increased the surface areas of 18 crops since the beginning of the project. The highest numbers of crops (13 and 14) that experienced a surface area extension were found in the three communes where the FFS and SILC were undertaken, whereas in the other communes the crop numbers are between six and eight crops. (Figure 8, The crops mentioned included: millet, sorghum, rice, cowpeas, peanuts, dah, gombo, gourds, oseille de guinee, sesame, melons, squash, bambara groundnuts, onions, tomatoes, mais, fonio, and root crops)

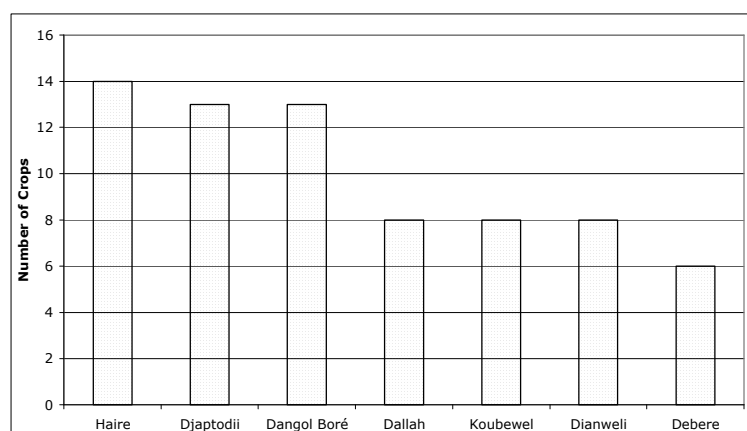


Figure 8: Number of crops that experienced an increase of field surface area since the beginning of the project in the communes of project intervention (out of 18 crops mentioned *; n=188 farmers)

The crops that were extended by the highest percentage of farmers are cowpeas, peanuts, sorghum, dah, and millet (Figure 9). These are among the most important crops in the region, but also crops of which seeds and multiple varieties have been distributed by the DCC project. Two of the three communes where the increase was highest were also communities in which an FFS was conducted. To establish a direct link between project activities and crop extension may be difficult at this level. Nevertheless, it can be assumed that the project activities facilitated the extension of surface areas for the main crops of the farming system.

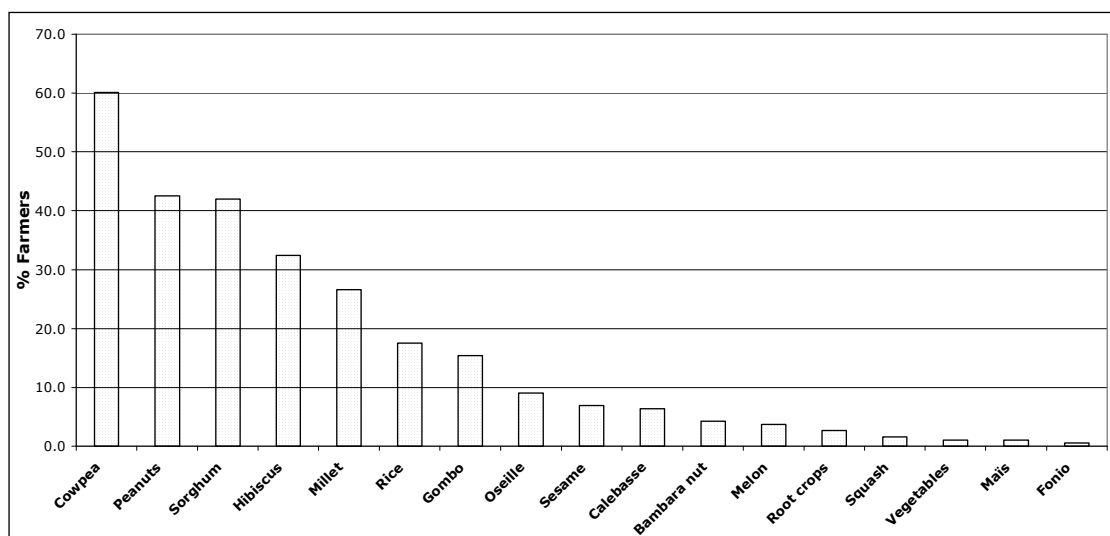


Figure 9: % of farmers who declare having increased the surface area of various crops since the beginning of the project

About the importance of this increase, only qualitative appreciation was gathered from farmers, indicating that over 60% of them considered the surface area increase as being rather important or important. (Table 15)

Table 15: Farmers' estimates of the importance of surface area increase of crops (% farmers)

Surface Increase	Dallah	Haire	Djaptodii	Debere	Koubewel	Dangol Boré	Dianweli	All Farmers	
	----- % Farmers -----							Number	% Farmers
Important	11	15	13	82	30	42	18	45	28
Rather important	33	32	21		30	31	55	48	29
Medium	33	26	21	18	20	11	18	33	20
Small	22	26	46		20	16	9	37	23

3.5. Conclusions and recommendations for SO2

3.5.1. Farmer Field Schools

The FFS approach: Technical agricultural advice is rarely available in the region, so there was a high level of interest on the part of farmers and a strong commitment to participating in the FFS program. Farmers appreciated coming together and being introduced to new techniques as well as exchanging ideas with technicians and other farmers, although the approach may have been a bit too time demanding for participating farmers. In the rainfed farming system of Douentza, productive time is concentrated within the three-month period of the rainy season. During this short time, farmers produce their entire agriculture crop. By participating in FFS activities two out of seven days (or 1.2 days, depending on the distance to the TOT site), FFS trainers spent between 18% and 30% of their productive time on FFS. For farmers with enough labor at home for field cultivation, this was an acceptable arrangement. But for others facing a labor shortage at the household level, participating in FFS translated into a loss of production.

Farmers were offered a meal after each FFS session, but not compensated otherwise. Demands for compensation of lost time were made but not addressed at the time. This is a delicate issue. On the one hand, farmers found support through the seed fairs, which targeted regaining the previous levels of agricultural production; on the other hand, FFS farmers were confronted with reduced production. Compensation may be the easiest and most straightforward solution, but may be unsustainable over the long run. Compensation may also create false interest in the FFS program, social tensions, and may also restrain the dynamics of farmer-driven learning, especially once the project stops. It may be better, in view of these sustainability concerns, to design an FFS approach that is acceptable to farmers. Possible adaptations might include increasing the number of field agents, working closer to farmers' homes, and developing a lighter curriculum.

Ideally, the approach should be developed in close collaboration with farmers, and be adapted to their local inclinations. This demands flexibility on the part of the project in terms of funding allocation to budget lines (for instance, if more staff needs to be hired), and in terms of managing and overseeing such a dynamic activity. Flexibility is also needed if more women are to be included among FFS participants, as time constraints and interests often differ between men and women.

Thus, a cluster-based approach may be appropriate for initiating an FFS and allowing farmers to become acquainted with it, but the project should be flexible enough to permit the approach to evolve according to the dynamics that occur over time in the field.

Technical testing: Choices of techniques to be tested were driven by i) the diagnostics of cropping system constraints, ii) researchers' ability to propose new techniques that

respond to these constraints, and iii) agreement between farmers and researchers to test the proposed techniques. Two researcher packages (RP) were designed to be tested in comparison with a farmers' practices (FP) package. Through the researcher package, many new themes and techniques were introduced, which varied in complexity and potential suitability to the local environment. Reporting of the results was based on agronomic and economic data. In the first year, the FP performed better than the RP, but these results were reversed in the second year. The reasons for this evolution in the results are not very clear, but could be rooted in any of the following considerations:

- Climate variability is very high in this region. 2007 was a better agronomic year compared with 2006. It is highly possible that the RP performs better in good agricultural years while the FP outperforms the RP in difficult weather conditions.
- The technical design of the RP was adjusted considerably in the second year of testing compared with the first year, integrating some FP components into the design, among others.
- Complexity of the tested packages. The difficulty in working with a complex package is that poor performance with respect to one factor may override the impact of other factors, which, as a consequence, cannot realize their full potential. (One example of this is the cowpea variety that produced more fodder than grain when planted on heavier soil)

A detailed discussion by ICRISAT on the various factors that contributed to the respective performance results would be useful for any future project that would like to build on this experience.

The following recommendations can be proposed: When developing new techniques on farm, the introduction of techniques proposed by researchers can provide a good starting point, presenting to the farming community technical aspects with which they have not been acquainted previously. In the first year, the introduction of a 'researcher' package is therefore an efficient way of testing new techniques and ideas. During the second year, adaptations should take place based on observations of the first year's results, which was the case with the projects' FFS program. From that point forward, it may be better to test technical components side by side rather than combining everything into one package.

In fact, with the evolution of technical developments on farmers' fields, the concept of a 'package' will no longer be suitable, as many forms of adaptations will take place according to local situations and farmers' inclinations. The same is true for 'adoption,' which is a concept that does not match the realities of farming very well. Adoption also does not acknowledge that farmers are constant innovators and work creatively at developing and adapting techniques. The old concepts of the researcher as expert and the farmer as having to learn new techniques tend to restrict learning opportunities for both farmers and researchers. It is also not evident, especially in a marginal agricultural system such as is found in Douentza, that the new techniques introduced by researchers are *improved*. This has first to be proven over a number of years by taking into account, among other things, the climate variability of the region. It is to be expected that local practices perform more consistently over several years than some of the *improved*

techniques. Local practice yields may be lower, but the risk of crop loss is also reduced. Research work is more efficient when it focuses on the adaptation of new technical components and aspects within the farming system. It is the farmer who should guide the process. The researcher then becomes an advisor to the farmer-innovator. With this approach, the reporting on observations and learning becomes important, next to the more standard agronomic and economic results.

The impact of the FFS program is difficult to evaluate on the basis of one or two years of implementation. A distinction can be made between *easy techniques with short-term results and impacts* and *more complex techniques that need a longer-term testing approach*. Both types of techniques were addressed during the FFS. The uptake of ‘easy’ techniques by the farming community is visible within a short time frame, and can be determined with simple yes-or-no questions. This is the case for the solar heating of cowpea grains, and for the application of pesticides to seeds. To evaluate uptake of *more complex techniques*, such as changes in the cropping system, for instance in crop, soil, or pest management, a longer time frame is required. Evaluation of uptake would need to be done in the following rainy season, directly observing if and how farmers have integrated the techniques into their cropping systems. That uptake may be less visible does not mean it is not happening or that these techniques are less important in terms of their potential for improving the farming system. It would be especially important for a follow-up project to conduct a field evaluation during the project design stage or at the beginning of the project, in order to build on existing dynamics at the farmers’ level.

3.5.2. Agro-enterprise development

CRS is to be commended for doing its homework on agro-enterprise development before launching major activities. The project time frame was simply too short to a) perform good diagnostics or b) implement all activities. The project undertook studies of promising value-chain and market opportunities, and identified potential partners. These studies should be published, and the results should be made available at the Douentza Circle level. Nevertheless, three group projects were piloted in the 2006 season with mixed results. They indicate that a technical follow-up to activities is important to assure success, which is more suitable to a multi-year project. The work that was accomplished and the experiences that were reported provide an important basis for future work. Thus, the agro-enterprise development approach may not have been the appropriate approach for this short-term emergency relief operation, but would be better suited for a long-term resiliency build-up intervention.

3.5.3. SILC

The SILC activity exceeded all expectations the project had for it, with 1961 active members at the end of the project compared with the targeted figure of 405. The DCC project was the first SILC project for CRS/Mali, and thus helped the staff to learn about the approach and gain experience in implementing it. SILC has already been included in

other CRS projects, notably an HIV/AIDS project in Sikasso and a USDA-funded Food for Education and Child Nutrition project in all eight circles of the Mopti region. The SILC approach is most likely to continue by itself, as evidenced by the independent work of the village animators, and by the creation of a self-organized SILC network. Only a few participants engaged in savings and loan activity before the project, so the results are significant and positively impacted people's livelihoods. SILC activities helped to increase income and diversify income-creating activities, and had many social impacts at the household level such as improved nutrition and the ability to pay for schooling fees. It also reinforced solidarity among women and increased their social status within the community.

3.5.4. Improved resiliency

Within the very short time frame of 18 months, the project contributed to improved resiliency in the face of future shocks. This was due to the very innovative combination of the various approaches and activities, most importantly by building on the impact of the seed fair with the introduction of the internal savings and lending approach SILC, the testing of improved agricultural techniques at farmer field levels, and by piloting some agro-enterprise activities. This allowed participants to improve their access to capital, diversify and increase their revenues, and reestablish the basis of agricultural production with access to seeds of diverse crops and varieties. Although productive assets have not yet been restored completely, project participants have acquired knowledge pertaining to financial management and agricultural technical improvements and developed a system of savings and loans, all of which represent important skills in terms of recuperation of assets and livelihood improvement.

3.5.5. Recommendations for a short-term emergency relief project

- Seed Fair: Conducting an SSSA, or updating an earlier accomplished SSSA, assures that the right products and seeds can be made available at the seed fairs.
- Seed Fair: The value of the vouchers should be carefully evaluated. The unexpected outcome of the USD40 voucher, where people bought food instead of small ruminants, had an important impact on the food security situation. Thanks to the considerable amount of millet purchased and used as food, people were able to cultivate their fields, which was critical in turning around the crisis situation. Once agricultural production is reestablished, recuperation can take place. Thus, some food aid considerations are important in relation to the timing of the cultivation season.
- SILC is an excellent activity to introduce in a crisis situation and in a short-term project. SILC facilitates community organization, instills empowerment—especially of women—and establishes a development dynamic in which members finance their own small projects. When using SILC as a tool in crisis management (versus as an economic growth tool), implementers may want to emphasize the role of social funds, which could help SILC members avoid indebtedness.

- Agricultural development: In a short-term crisis intervention, the project should identify activities and techniques that can easily be learned or implemented, creating quick results. Activities can be diversified beyond those that are characteristic of the cropping season, with a positive impact on household economy and integrity (by avoiding migration). Possible themes could be: i) improved storage of crops; ii) transformation of crop and livestock products; iii) improved livestock production (feeding, vaccination according to constraints); iv) gardening, where water is available; and v) management of wild food production resources (e.g., wild fonio, tree products, etc).
- Agricultural development: Techniques should preferably be climate-independent. As climate variability is very high in this zone, initiatives that are influenced by climate may fail in years when conditions are not favorable (e.g., fertilizer application).

3.5.5. Recommendations for a longer-term development project (as a follow-up to a short-term emergency relief project)

- In a longer-term project emphasis can be given to the integration of and the creation of synergies between various project activities that complement and reinforce each other. Among them can be: community organization, financial mobilization, agricultural development, and agro-enterprise development that should be developed according to local needs, inclinations, and potential.
- SILC activities can be scaled-out within the project intervention zone, providing support for the establishment of more SILC groups, and most importantly to support and strengthen the capacity of the private service providers.
- Agro-enterprise training and support will be critical in order to maximize the impact of SILC activities, and to orient crop choices and changes in agricultural systems.
- Agricultural development:
 - Innovation development should be done within the concept of adaptation to climate variability.
 - The FFS program is a good approach to consider as a starting point. Resources should be available and project should remain flexible to adapt the approach in the subsequent years.
 - The FFS program should provide a platform for new and more varied ways of learning, with farmer-driven innovation development, where researchers become advisors to farmers. Focus should remain on the process of learning, and not on models or packages introduced.

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Annex 1: Terms of reference for the final evaluation of the DCC project

Termes de Référence de l'évaluation Finale du Projet

DOUENTZA CIRCLE IN CRISIS (CRISE DANS LE CERCLE DE DOUENTZA):
AMELIORATION DE LA RESISTANCE DES MENAGES AUX CHOCS DE SECURITE
ALIMENTAIRE AU MALI

INTRODUCTION

Les ménages les plus affectés par les effets conjugués de l'invasion acridienne et de la sécheresse dans la région de Mopti au Mali pendant la campagne agricole 2004/2005 ont épuisé l'essentiel de leurs biens de production. N'ayant que très peu de stratégies d'adaptation, les ménages sont soumis à une grave insécurité alimentaire et sont vulnérables aux futurs chocs de sécurité alimentaire.

CRS et ICRISAT, son organisation partenaire, ont appuyé à travers ce projet 10 000 familles agro-pastorales du cercle de Douentza dans la région de Mopti au Mali à reconstituer leurs biens de production à travers les FOIRES AGRICOLES, plus de 10 000 familles à reconstruire leur vie et à accroître leur résistance aux futurs chocs à travers l'amélioration des techniques de production agricole, le développement des capacités en matière d'agro-entreprise et de pérennisation sur le plan économique.

1. Description du projet

Le projet « Douentza Circle in Crisis » a démarré en janvier 2006 pour une durée de 18 mois au terme des quels il a été prolongé de 6 mois complémentaires. Le but, les objectifs et principales activités du projet selon le cadre logique étaient définis comme suit :

But : améliorer à court et à long terme la sécurité alimentaire des ménages du cercle de Douentza affectés par l'invasion acridienne et la sécheresse de 2004/2005.

Objectif stratégique 1 : les ménages cibles de Douentza ont reconstitué leurs biens de production.

Objectif stratégique 2 : les ménages cibles de Douentza ont amélioré leur résistance aux futurs chocs.

Principales activités :

- 1) Organiser une série de foires agricoles en mai et juin 2006 et, en collaboration avec le Programme alimentaire mondial, distribuer des rations alimentaires «pour protéger les semences» pour s'assurer que les familles participantes ne vendent pas les biens acquis afin de faire face à leurs besoins immédiats;
- 2) Organiser environ 18 « Champs Ecoles Paysans » pour apprendre aux paysans locaux les techniques agricoles améliorées et les compétences en agro marketing;
- 3) Organiser des « Communautés d'Epargne et de Crédits » (SILC) dans les villages membres pour appuyer les femmes en épargnes et en investissement ainsi qu'en diversification des revenus.

Avant la mise en œuvre du projet, CRS et ICRISAT ont procédé à deux évaluations qui ont donné un aperçu général sur le marché agricole et sur les pratiques agricoles en cours dans la zone du projet. Ces études ont servi comme données pour la situation de départ du projet.

A la fin des 18 mois d'exécution, CRS a sollicité et obtenu du bailleur une prolongation de 6 mois du projet. L'objectif principale de cette prolongation était de conduire une évaluation participative des impacts du projet avec les bénéficiaires et de mesurer les effets des activités de Foires agricoles, Champs écoles paysans après la seconde campagne agricole.

2. But et Objectifs de l'évaluation :

Le but de la présente étude est d'évaluer le niveau de réalisation des objectifs du projet, ses performances et son impact sur l'état de la vulnérabilité et le bien être des bénéficiaires aussi bien sur le plan quantitatif que qualitatif.

Le consultant devra :

1. Evaluer le degré d'accomplissement des objectifs du projet et mesurer les indicateurs cités dans les documents de projet, tel que;
 - ✓ Déterminer si toute fois le projet a contribué ou non à augmenter les biens productifs des communautés bénéficiaires.
 - ✓ Déterminer si toute fois le projet a contribué ou non à améliorer la résistance des communautés bénéficiaires aux chocs futurs ;
2. Apprécier la pertinence du ciblage des bénéficiaires à l'échelle communale et villageoise ;
3. Evaluer le niveau d'intégration des principaux volets (foires, champs écoles paysans, et SILC) du projet
4. Evaluer le niveau de la participation communautaire dans la mise en œuvre du projet ;
5. Identifier les forces et faiblesses de la stratégie de mise en œuvre du projet d'une part et le partenariat CRS Mali - ICRISAT d'autre part;
6. Documenter les leçons apprises;
7. Faire des recommandations appropriées pour le futur

Spécifiquement, le consultant devra apporter la réponse aux questions suivantes:

Foires agricoles : De façon générale, déterminer ce qui a bien marché, moins bien marché, tirer les leçons apprises et faire des recommandations pertinentes pour des interventions similaires à l'avenir. Pour ce faire, bien vouloir élaborer un questionnaire tenant compte des aspects suivants :

- Est-ce que le moment et les conditions de réalisation des foires agricoles étaient adéquats ?
- Quel a été l'impact des biens et services reçus lors des foires agricoles sur la reconstitution des biens de production ?
- Est-ce que les biens reçus lors des foires ont été utilisés pour la production ou pour autre choses ? Si oui, pour quel choses et pourquoi?
- Est-ce que l'innovation d'inclure la possibilité d'achat d'un petit ruminant a été utile ?
- Quel a été l'impact de l'acquisition des petits ruminants sur la reconstitution du cheptel ? Quel a été l'impact de l'acquisition des petits ruminants en particulier sur l'accès et la disponibilité alimentaires?

- Quel a été l'impact des foires sur les commerçants ayant participé aux foires et en particulier sur les petits commerçants « femmes »?

SILC : De façon générale, déterminer ce qui a bien marché, moins bien marché, tirer les leçons apprises et faire des recommandations pertinentes pour des interventions similaires à l'avenir. Pour ce faire, bien vouloir élaborer un questionnaire tenant compte des aspects suivants :

- Est-ce que la mise en œuvre du SILC a permis de développer la résilience des ménages aux futurs chocs ?
- Est-ce que tous les membres du SILC avaient le même niveau d'accès au crédit ?
- Est-ce que l'activité SILC a contribué à la sécurité alimentaire des ménages des membres de groupement? et comment ?
- Est-ce que l'activité SILC est durable ?
- Quel a été l'impact du SILC sur la cohésion et la solidarité au sein du groupe ?
- Quel a été l'impact du SILC au cas échéant sur l'accès aux médicaments et particulièrement la santé des enfants de moins de 5 ans ?

Champs Ecoles Paysans/Agro entreprise : De façon générale, déterminer ce qui a bien marché, moins bien marché, tirer les leçons apprises et faire des recommandations pertinentes pour des interventions similaires à l'avenir. Pour ce faire, bien vouloir élaborer un questionnaire : tenant compte des aspects suivants :

- Est-ce que les paysans ciblés ont adopté tout le paquet technologique vulgarisé ou tout simplement une partie et pourquoi ?
- Est-ce que les pratiques agricoles et/ou technologies vulgarisées convenaient réellement à la zone agro écologique ?
- Quel a été l'impact des Champs Ecoles Paysans et l'Agro entreprise sur la résilience des ménages ?
- Quels sont les principales méthodes par lesquelles les bénéficiaires ont amélioré leur capacité de résistance aux futurs chocs ?

Participatory Impact Assessment (PIA): De façon générale, déterminer ce qui a bien marché, moins bien marché, tirer les leçons apprises et faire des recommandations pertinentes pour des interventions similaires à l'avenir. Pour ce faire, bien vouloir élaborer un questionnaire : tenant compte des aspects suivants :

- Le PIA a-t-il contribué à l'appropriation du projet par les communautés ?
- Quel a été l'apport du PIA dans le processus l'évaluation du projet ?
- Comment les méthodes participatives comme le PIA peuvent elles améliorer les résultats des projets d'urgences

3. Méthodologie

Bien que le consultant soit le premier responsable des objectifs fixés, il devra travailler en étroite collaboration avec l'équipe du projet à Bamako et à Mopti afin d'avoir une meilleure compréhension des attentes de l'équipe par rapport à cette évaluation et de fournir des résultats concrets selon ces attentes.

Le consultant devra proposer une méthodologie, un plan d'évaluation et des outils de collecte et d'analyse des données, et une proposition financière pour la conduite de l'évaluation.

NB : La méthodologie détaillée, ainsi que les activités à mener et la proposition financière seront définies par le consultant et approuvées par CRS.

4. Tâches à accomplir

Pour réaliser cette évaluation, le consultant devra :

- ▶ Se familiariser avec les activités du projet DCC et les procédures de CRS et ICRISAT;
- ▶ Se familiariser avec les études, collecte des données, rapports et évaluations déjà réalisés: Plan de suivi-Evaluation (version de August 2006). Evaluation des Systèmes de Sécurité Semencière (SSSA), étude de base, Rapport mensuel des données SILC les fiches de suivi et d'évaluation des foires, les outils et données sur le PIA etc.
- ▶ Rencontrer le personnel clé de CRS (le Chef de Programme et la Chargée de la qualité du programme à Bamako, le Chargé du projet DCC et équipe et Chargé d'unité de suivi-évaluation à Sevaré) et ICRISAT les responsables administratifs et communaux et les services techniques concernés de Douentza ;
- ▶ Collecter les données dans un échantillon représentatif de la zone d'intervention du projet et procéder à l'analyse ;
- ▶ Rédiger un rapport provisoire de l'évaluation en mettant l'accent sur ce qui a bien marché, moins bien marché, les leçons apprises, et les recommandations à retenir pour des projets similaires à l'avenir;
- ▶ Présenter le rapport provisoire (copies dures et électroniques) à CRS et ICRISAT;
- ▶ Soumettre le rapport final de l'évaluation du projet DCC à CRS (y compris la prise en compte des observations sur le draft) en *anglais*.

5. Relations de travail

A l'interne : Chef de Programme, les Chargés d'Unité Administration et Finance de CRS Mali, le chargé du projet DCC, l'Administrateur du bureau de CRS Mopti et le Chargé d'Unité S&E ; le personnel ICRISAT impliqué sur le projet.

A l'externe : les autorités locales (élus et services techniques) et communautés bénéficiaires de Douentza

6. Lieu de travail:

Les travaux de la présente consultation se dérouleront dans la région de Mopti. Cependant, les rencontres avec les personnes clés se déroulent à Bamako, Sevaré et Douentza. La collecte des données au près des bénéficiaires se réalisera dans un échantillon de villages d'intervention du projet dans le cercle de Douentza. Un staff de CRS sera disponible pour accompagner le consultant sur le terrain, de plus CRS mettra à la disposition du consultant la logistique nécessaire pour le travail de terrain.

7. Calendrier de travail

Activit�s	P�riodes
Accueil, orientation, et revue documentaire, entretien avec le staff du projet	29 f�vrier �3 mars 2008
Descente sur terrain � Mopti et Douentza, collecte des informations	4 �15 mars
Synth�se et analyse des informations recueillies	16 �24 mars
Pr�sentation des r�sultats � CRS et ICRISAT	25 mars
Pr�paration du rapport final	26-31 mars
Remise du rapport final	31 mars

8. Qualifications de l' valuateur :

- Avoir au moins une Ma trise en sciences humaines et sociales, sciences  conomiques ou agricoles ou toute autre discipline pertinente pour l' valuation ;
- Avoir au moins cinq (5) ans d'exp rience dans le domaine de la pr paration de r ponses aux situations d'urgence, en l'occurrence les crises alimentaires ;
- Avoir une bonne exp rience dans la mise en  uvre et/ou l' valuation des projets de s curit  alimentaire;
- Avoir une bonne exp rience dans la planification et l'utilisation des m thodes participatives ;
- Avoir une bonne capacit  de communication et de r daction en anglais;
- Une exp rience dans des ONG internationales ou du Syst me des Nations Unies serait un atout.

Annex 2: Consultancy program and people met

a) Consultancy Program from February 29 to March 31, 2008

Date	Activities
Feb 29	Bamako, Meeting at CRS: K.Kent, M. Sangare, A. Bamba (all CRS)
March 1	<i>free time</i>
March 2	<i>free time</i>
March 3	Meeting at CRS: K. Kent, E.Weltzien (ICRISAT), A. Bamba
March 4	Travel to Mopti
March 5	Design Questionnaires
March 6	Design Questionnaires; Meet with Chery Traore
March 7	Design Questionnaires and travel to Douentza
March 8	Village interviews: in Kiro, Doumbara
March 9	Village interviews: Youna, Gaye
March 10	Village Interviews: Tiguila, Touperre, Tabi Meeting with T.v. Morick (ICRISAT)
March 11	Village Interviews: Wakere, Segue
March 12	Village Interviews: Alamina, Kiro, Ibissa
March 13	Visite NGOs in Douentza: NEF, ALCOP, AADec, and PDI-HK/MELM, Travel to Mopti
March 14	Travel to Bamako
March 15	<i>free time</i>
March 16	<i>free time</i>
March 17	Data Analysis
March 18	Data Analysis
March 19	Data Analysis
March 20	Report Writing
March 21	Report Writing
March 22	<i>free time</i>
March 23	<i>free time</i>
March 24	Report Writing
March 25	Report Writing
March 26	Report Writing
March 27	Report Writing
March 28	Draft Report Presentation at CRS
March 29	<i>free time</i>
March 30	Final Report Writing
March 31	Turn in Final Report

b) People met

Name	Organization	Position	Location
Karent Kent	CRS/Mali	Country Representative	Bamako
Moussa Sangare	CRS/Mali	Head of Programs	Bamako
Abderahame Bamba	CRS/Mali	Head of Monitoring and Evaluation	Bamako
Chery Traore	CRS/Mali	SILC Manager	Mopti
Hamidou Guindo	CRS/Mali/ICRISAT	Field Coordinator FFS	Douentza
Eva Weltzien	ICRISAT	Principal Scientist	Bamako
Tom van Mourik	ICRISAT	Associate Professional Officer	Douentza
Sidy Toure	IER	Trainer for FFS	San
Ali Bocoum	NEF - Douentza	Head Natural Resource Management Unit	Douentza
Adama Maiga	ALCOP -Douentza	Interim Director	Douentza
Cheick Sala Coulibaly	AADec -Douentza	Program Coordinator	Douentza
Alahidi Barry	PDI - Douentza	Program Director (PDI-HK/MELM)	Douentza
Tom Remington	CRS/Africa	Senior Technical Advisor Agriculture	(phone)
Joseph Sedgo	CRS/WARO	Regional Technical Advisor Agriculture	(phone)

Annex 3: Project Framework and Project Achievements

Objectives	Indicators and Types	Achievements
<p>Strategic Objective 1: Targeted households in Douentza have reconstituted their productive assets</p>	<p>Impact indicator By project end, 90% of targeted households have increased their productive assets</p>	<p><u>Agricultural tools</u>: 6 out of 6 inventoried tools restored (or 100%); Focus group results: partially restored <u>Transportation equipment</u>: 3 out of 3 inventoried restored (or 100%); Focus group results: partially restored to restored, <u>Animals</u>: 2 out of 7 species restored (donkey, camel), 5 species not restored: goats, bovines, sheep, poultry, horses.</p>
<p>Intermediate Result 1.1: Targeted households use the seeds, animals, tools and other inputs acquired during the seeds fair to produce;</p>	<p>Monitoring indicator 90% of targeted households report having used inputs acquired at seed fairs for intended productive use.</p>	<p><u>Seeds</u>: 96.7% of farmers used the seeds for planting, <u>Tools</u>: 99.1% used their tools (1% sold it); <u>Ruminants</u>: 13% of farmers kept ruminants up to today (27% were sold, 5% given away, and 55% eaten).</p>
<p>Output 1.1: Targeted households have access to <u>appropriate seeds, animals, tools and other inputs</u></p>	<p>Monitoring indicator 95% of targeted households have used their vouchers to purchase goods at seed fairs.</p>	<p>100% or 10,000 targeted households used their vouchers at the seed faire. 95.6% of farmers found the seeds at the fair being appropriate (type of seed: local vs exotic; quality of seed).</p>

(Continued: Annex 3)

Objectives	Indicators & types	Achievements
Strategic Objective 2: Targeted households in Douentza have improved their resiliency to future shocks	Impact indicator By project end, 90% of targeted households can cite at least 2 concrete ways they have improved their resiliency to future shocks.	Achieved
Intermediate Result 2.1: Targeted beneficiaries have adopted improved agricultural techniques and the agro-enterprise approach to farming	Monitoring indicator 50% of targeted beneficiaries report having adopted at least one of the agro-enterprise (AE) approaches to farming. 95% of targeted beneficiaries report having adopted at least one of the improved agricultural techniques.	AE: was not realized as expected; 3 activities were initiated: 1 was successful, 2 stopped preliminary FFS: 100% of participants are <i>able to practice</i> at least one of the improved agricultural techniques (to prove adoption is not possible after 1 agriculture season)
Intermediate Result 2.2 Targeted beneficiaries have adopted internal savings and credit group techniques	90% of targeted beneficiaries are active members of an internal savings and credit group	450 people were targeted: at project end there were 1961 active SILC members, or 4.3 times higher than targeted.
Output 2.1.1 : Targeted households have acquired appropriate capacity in agro enterprise techniques	Monitoring indicator 45% of targeted beneficiaries can accurately describe at least 2 agro enterprise techniques 40% of targeted beneficiaries can accurately describe how they might apply the 2 agro enterprise techniques described above in their own work.	Activity not realized as expected: Time span of an 18-month project was too short.
Output 2.1.2: Targeted households have acquired appropriate capacity in improved agricultural techniques	Monitoring indicator 90% of targeted beneficiaries can accurately describe at least 2 techniques they learned through FFS participation how they might apply in their own work.	Achieved
Output 2.2.1: Targeted households have acquired appropriate capacity in internal savings and credit groups techniques	Monitoring indicator 90% of targeted beneficiaries can describe accurately how they might apply savings or credit management techniques.	Achieved

Annex 4: Questionnaires for final evaluation: 4.1.) focus group questionnaire guide 4.2.) survey questionnaire for project beneficiaries, 4.3.) survey questionnaire for control group.

4.1. Focus Group Questionnaire Guide, according to SO1 and SO2

A) SO 1 Targeted HH have reconstituted their productive assets: 90% of targeted HH have increased their productive assets

1. Quel était l'impact de la crise sur votre ménage ? Expliquez
2. Est-ce que vous avez pu **reconstituer vos biens de production** au même niveau qu'avant la crise ? Expliquez
3. **Comment obtenez-vous habituellement vos semences** ? Est-ce qu'il y avait un changement depuis la crise ? Comment vous vous en sortez ?
4. Combien parmi vous ont pu profiter de la **foire agricole** ? Combien ont acheté
 - Des semences
 - Des petits ruminants
 - Des outils
 - Des produits chimiques (engrais, pesticides)
 - Aliments bétails
5. De quel type **de semences** (culture, variété) avez-vous pu profiter pendant la foire ? Est-ce que ces semences étaient localement adaptées, suffisantes, de bonne qualité ? Si non, expliquez.
 - Comment avez-vous faits pour obtenir les semences recherché pour la saison culturale.
 - Qu'avez-vous faite avec les semences ? Raisons ?
6. Est-ce que vous avez reconstitué le stock des **petits ruminants** ? Comment vous avez fait ? Quels étaient/sont les problèmes ?
Est-ce que vous avez acheté des petits ruminants à la foire ?
 - Si oui : qu'est-ce que vous avez fait avec les animaux, Si non : pourquoi ?
7. **Outils** : Avez-vous pu reconstituer le stock des outils? Comment vous avez fait ? Quels étaient/sont les problèmes ?
8. Utilisez vous plus/moins (ou pas) d'**intrants** (engrais chimiques et pesticides) qu'avant la crise ? Expliquer pourquoi ?
Expérience au sein de FFS avec les intrants ? Commentaire
9. Etiez-vous satisfait avec l'achat des **aliments bétails** ? Comment vous l'avez utilisé ?

10. Est-ce que vous avez reçu des **appuis des autres organismes/structures** ?

- De quelle nature ?
- Quel était l'impact ?
- En comparaison avec l'appui de CRS/GATES ?

B) SO 2: Targeted HH have improved resiliency to future shocks: HH can cite 2 ways to improve la resiliency, have adopted AG, AE techniques, and active SILC members

Questions are directed towards improving the understanding about:

- *Change in livelihood strategies: production, diversification of production and revenue, increased revenue resources outside of agriculture,*
- *Improved resilience (higher income, better production, better diversification, better access and management of capital, improved agricultural techniques, commercial activities)*

11. Est-ce que il y avait des remarquables **changements dans vos stratégies de vie** au sein de vos ménages depuis la crise ? Raisons ?

- L'agriculture, joue-t-elle toujours une même place pour 'gagner votre vie' ?
- Activités qui se sont ajoutées/ ou qui se sont arrêtées? (agricole/non agricole)
- Diversifier le revenu, oui/non ? (agricole/non agricole)

12. La **production agricole** (depuis la crise) : (superficie, rendements)

- Diversification des cultures (nouvelles spéculations, résultats)
- Superficies
- Rendements
- Revenu qui provient de l'agriculture
- Utilisation des intrants
- Test des semences améliorés

13. **Production animale** (depuis la crise) :

- Composition du troupeau
- Nombre d'animaux
- Système d'élevage
- Productivité des animaux
- Production de fourrage
- ddd

14. **Revenus et accès au capital**

- Est-ce que vos revenus ont augmenté, rester le même ou diminuer ? Expliquer
- Si augmenté ? par quoi ?
- Principales sources de revenu ? Est-ce qu'ils ont changé ? Comment ?

- Est-ce que vous avez adopté des nouvelles stratégies commerciales ?
Comment vous les avez connues ?

15. SILC

- Qu'est-ce que la participation au groupement SILC vous a apporté ?
- Avez-vous eu des problèmes dans la mise en œuvre du SILC ?
Lesquelles ? (paiements des cotisations/remboursement)
- Est-ce qu'il y a des personnes qui ont quitté le SILC ? Pourquoi ?
- Combien de l'argent pouvez-vous prêter avec un crédit de SILC ?
Combien de crédits avez-vous pu prendre depuis le début du SILC ?
- Qu'est-ce que vous avez fait avec les prêts ?
- Quels sont vos projets pour le future ?
- Avez-vous pu récupérer vos biens grâce au SILC ?

16. Techniques Agricoles et de Commercialisation

- Quels sont les thèmes techniques agricoles à améliorer (si vous tenez compte de toute votre exploitation).
- Quels sont les problèmes principaux dans votre exploitation.
- Avez-vous reçu ou recevez-vous de l'appui technique agricoles ? de qui ?
sur quoi ?
- Qui autre que le FFS, vous a appuyé dans le développement agricole
- Lesquelles parmi les techniques FFS avez-vous apprécier davantage ?
- Quelle est la FFS/AE technique que vous avez pratiquée ?
 - A-t-il eu un impact sur les rendements ou revenus?
 - Si positive : Assez grande pour que cela était rentable, (en intégrant les coûts associés)
 - Êtes-vous confidents techniquement pour continuer ?
 - Avez-vous les moyens pour continuer les techniques apprise par FFS ?
 - Est-ce que vous allez adapter/changer le dispositif technique de FFS pour continuer

Approche FFS : Commentaires ? Est-ce que l'approche vous convient ? Etait-il assez flexible pour tenir compte de vos réalités ? Suggestions comment adapter.

Annex 4.2. Survey questionnaire for project beneficiaries

CATHOLIC RELIEF SERVICES

**Crise dans le cercle de Douentza :
Amélioration de la résistance des ménages
aux chocs de sécurité alimentaire au Mali**

Evaluation finale

IDENTIFICATION	
STRATE	/ /
COMMUNE _____	/ / /
VILLAGE _____	/ / /
NUMERO DU MENAGE _____	/ / /
NOM DU CHEF DE MENAGE _____	

	Foires agricoles1
	Champs écoles paysans.....2
	Epargne crédit (SILC).....3
<u>CATEGORIE DE MENAGE</u>	<u>BENEFICIAIRE</u>
	Foires agricoles & Champs écoles paysans.....4
	Foires agricoles & Epargne crédit.....5
	Epargne crédit & Champs écoles paysans.....6
	Foires agricoles & Epargne crédit & Champs écoles paysans7

ENQUETEUR	CONTROLEUR
NOM _____ / /	NOM _____ / /
DATE _____	DATE _____

No	Questions	Codes	Passez à
Section 1 : Démographie			
1.1	Sexe du chef de ménage	/___/ Masculin=1 Féminin=2	
1.2	Groupe ethnique du chef de ménage	/___/ 1= Peulh 7= Arabe 2= Dogon 8 = Tamascheckh 3= Bambara 9= Bozo 4= Sonrhaï 10=mossi 5 = Bella 11=Dafin 6=Bobo 12=.....	
1.3	Combien y a-t-il de personnes qui vivent dans le ménage ?	Masc 0-6ans Fem 0-6ans _ _ _ _ Masc 7-14ans Fem7-14ans _ _ _ _ Masc 15-59ans Fem 15-59 ans _ _ _ _ Masc 60 ans et + Fem 60 ans et+ _ _ _ _	
Section 2 : Biens de production			
2.1	Dans votre ménage, combien y avait-il avant la crise de	BICYCLETTES /___/ MOBYLLETES /___/ CHARRETTES /___/ CHARRUES /___/ DABA /___/ PIOCHE /___/ HACHE /___/ CHEVAUX /___/ CHAMEAUX /___/ ANES /___/ MOUTONS /___/ CHEVRES /___/ BOVINS /___/ VOLAILLES /___/ AUTRE _____	
2.2	Dans votre ménage, combien y a-t-il actuellement de	BICYCLETTES /___/ MOBYLLETES /___/ CHARRETTES /___/ CHARRUES /___/ DABA /___/ PIOCHE /___/ HACHE /___/	

No	Questions	Codes	Passez à
		CHEVAUX / / / CHAMEAUX / / / ANES / / / MOUTONS / / / / CHEVRES / / / / BOVINS / / / / VOLAILLES / / / / AUTRE _____	
2.3	Avez-vous de la semence de mil pour ensemercer :	100% du champ / / / 75% du champ / / / 50% du champ / / / 25% du champ / / / 0% (pas de semence) / / / Autre (a préciser) _____	
Section 3 : Production			
3.1	Quelle proportion de votre champ avez-vous cultivé en 2005-2006?	100% du champ / / / 75% du champ / / / 50% du champ / / / 25% du champ / / / 0% du champ / / / Autre (a préciser) _____	
3.2	Quelle proportion de votre champ avez-vous cultivé en 2006-2007?	100% du champ / / / 75% du champ / / / 50% du champ / / / 25% du champ / / / 0% du champ / / / Autre (a préciser) _____	
3.3	Quelle proportion de votre champ avez-vous cultivé en 2007-2008?	100% du champ / / / 75% du champ / / / 50% du champ / / / 25% du champ / / / 0% du champ / / / Autre (a préciser) _____	
3.4	Quelle est la principale source des semences de mil que vous utilisez actuellement?	Stock personnel =1 Achat au marché =2 Achat semences améliorées =3 Don ONG/partenaire =4 Aide gouvernement =5 Emprunt/achat a crédit =6 Troc =7	

No	Questions	Codes	Passez à
		Autre(a préciser)_____ =8	
3.5	Quels sont les intrants agricoles que vous utilisez actuellement ?	Fertilisants organiques 1 fertilisants minéraux 2 pesticides 3 autre _____ 4	
3.6	Combien de mois de nourriture couvrirait votre production agricole avant la crise ?	/_____/ mois	
3.7	Combien de mois de nourriture couvrirait votre production agricole avant le projet DCC ?	/_____/	
3.8	Combien de mois de nourriture couvre votre production agricole actuellement ?	/_____/	
3.9	Les semences que vous avez achetées lors des foires étaient-elles appropriées (adaptées à vos conditions de culture) ?	Oui =1 Non=0 /_____/	
3.10	Quelles proportions des semences que vous avez achetées à la foire avez-vous semé ?	Tout.....1 Plus de la moitié.....2 La moitié.....3 Moins de moitié.....4 Rien.....5 Autre (à préciser).....7	
3.11	Avez-vous acheté des moutons/chèvres lors des foires ?	Oui =1 Non=0 /_____/	Si Non 3.13
3.12	Qu'avez-vous fait des moutons/chèvres que vous avez acheté lors des foires ?	Elevé1 Vendu.....2 Donné3 Mangé4 Autre (préciser).....5	
3.13	Qu'avez-vous fait des outils que vous avez achetés lors des foires ?	Utilisé1 Vendu2 Autre (préciser).....3	
3.14	Quelles sont les spéculations autres que la principale pour lesquelles vous avez augmenté la superficie ou introduit depuis le début du projet ?	MIL 1 SORGHO 2 RIZ 3 MAIS 4 WOUANDZOU 5 NIEBE 6	Si 15 aller à 3.16

No	Questions	Codes	Passez à
		ARACHIDE 7 SESAME 8 OSEILLE DE GUINEE 9 DAH 10 GOMBO 11 CALEBASSE 12 PASTEQUE DOUCE 13 AUTRE _____ 14 AUCUNE 15	
3.15	Quelle est l'ampleur de cette augmentation ?	Grande1 Assez grande.....2 Moyenne.....3 Petite.....4 Autre (préciser).....5	
3.16	Depuis le début du projet, votre production totale a-t-elle	Sensiblement augmenté.....1 Assez augmenté.....2 Moyennement augmenté.....3 Peu augmenté.....4 Stagné (pas changé).....5 Légèrement diminué.....6 Assez diminué.....7 Autre.....8	
3.16	Avez-vous adopté au moins une technique d'agro entreprise vulgarisée par le projet DCC dans votre village ?	Oui=1 Non =0 / ___/	Si NON 3.18
3.17	Quelles sont ces techniques d'agro entreprise que vous avez adopté ?	Intégration élevage agriculture.....1 Valeur ajouté des cultures (transformation, séchage solaire du niébé, ensachage).....2 Accès amélioré aux marchés et aux informations sur les marchés3 Notions de base de la comptabilité. (analyse coup/bénéfice).....4 Identification des opportunités de	

No	Questions	Codes	Passez à												
		marché.....5 Capacités de négociation.....6													
3.18	Avez-vous adopté au moins une technique améliorée de production agricole vulgarisée par le projet DCC dans votre village ?	Oui=1 Non =0 /___/	Si NON 3.20												
3.19	Quelles sont ces techniques améliorées de production agricole que vous avez adoptées ?	Test de germination.....1 Analyse Agro écosystème2 Traitement phytosanitaire (neem) du niébé.....3 Gestion intégrée du striga 4 Technique améliorée de production du niébé.....5 Techniques de protection des mil et niébé contre les insectes.....6 Micro doses des engrais chimiques..7 Traitement des semences8 Démariage du mil9 Association des cultures (mil & niébé).....10													
3.20	Avez-vous appartenus à un groupement SILC depuis le début du projet?	Oui=1 Non =0 /___/													
3.21	Etes-vous toujours /actuellement membre actif d'un groupement SILC ?	Oui=1 Non =0 /___/													
Section 4 : Sources de revenus															
4.1	<p>En utilisant les codes suivants, indiquez les 3 principales sources de revenu du ménage</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 33%;">1 = Agriculture</td> <td style="width: 33%;">5 = maraîchage</td> <td style="width: 33%;">9 = Exode</td> </tr> <tr> <td>2 = Elevage</td> <td>6 = Artisanat</td> <td>10 =</td> </tr> <tr> <td>3 = Pêche</td> <td>7 = Commerce</td> <td>11 =</td> </tr> <tr> <td>4 = Forêt/cueillette</td> <td>8 = Ouvrier agricole</td> <td>12=</td> </tr> </tbody> </table> <p>Indiquez vos trois principales sources de revenu AVANT LA CRISE :</p> <p style="text-align: center;">1^{er} 2^e 3^e</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div> </div>		1 = Agriculture	5 = maraîchage	9 = Exode	2 = Elevage	6 = Artisanat	10 =	3 = Pêche	7 = Commerce	11 =	4 = Forêt/cueillette	8 = Ouvrier agricole	12=	
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No	Questions	Codes	Passez à
4.2	Indiquez vos trois principales sources de revenu <u>AVANT LE PROJET</u> : <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">1^{er} <input style="width: 40px; height: 30px;" type="text"/></div> <div style="text-align: center;">2^e <input style="width: 40px; height: 30px;" type="text"/></div> <div style="text-align: center;">3^e <input style="width: 40px; height: 30px;" type="text"/></div> </div>		
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	Avez-vous bénéficié d'un appui quelconque d'une autre structure après la crise acridienne?	Oui=1 Non =0 /___/	
	Quelle est la nature de cet appui ?	Vivres contre travail.....1 Formation.....2 Aide alimentaire gratuite.....3	

Annex 4.3. Survey questionnaire for control group

CATHOLIC RELIEF SERVICES

**Crise dans le cercle de Douentza :
Amélioration de la résistance des ménages
aux chocs de sécurité alimentaire au Mali**

Evaluation finale

IDENTIFICATION	
STRATE	/__/_/
COMMUNE _____	/__/_/
VILLAGE _____	/__/_/
NUMERO DU MENAGE _____	/__/_/
NOM DU CHEF DE MENAGE _____	

**CATEGORIE
DE
MENAGE**

**NON
BENEFICIAIRE**

/__/_/

ENQUETEUR NOM _____ /__/_/ DATE _____	CONTROLEUR NOM _____ /__/_/ DATE _____
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No	Questions	Codes	Passez à
Section 1 : Démographie			
1.1	Sexe du chef de ménage	/___/ Masculin=1 Féminin=2	
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1.3	Combien y a-t-il de personnes qui vivent dans le ménage ?	Masc 0-6ans Fem 0-6ans _ _ _ _ Masc 7-14ans Fem7-14ans _ _ _ _ Masc 15-59ans Fem 15-59 ans _ _ _ _ Masc 60 ans et + Fem 60 ans et+ _ _ _ _	
Section 2 : Biens de production			
2.1	Dans votre ménage, combien y avait-il avant la crise de	BICYCLETTES /___/ MOBYLETTES /___/ CHARRETTES /___/ CHARRUES /___/ DABA /___/ PIOCHE /___/ HACHE /___/ CHEVAUX /___/ CHAMEAUX /___/ ANES /___/ MOUTONS /___/ CHEVRES /___/ BOVINS /___/ VOLAILLES /___/ AUTRE _____	
2.2	Dans votre ménage, combien y a-t-il actuellement de	BICYCLETTES /___/ MOBYLETTES /___/ CHARRETTES /___/ CHARRUES /___/ DABA /___/ PIOCHE /___/ HACHE /___/ CHEVAUX /___/	

No	Questions	Codes	Passez à
		CHAMEAUX /___/ ANES /___/ MOUTONS /___/ CHEVRES /___/ BOVINS /___/ VOLAILLES /___/ AUTRE _____	
2.3	Avez-vous de la semence de mil pour ensemen- cer :	100% du champ /___/ 75% du champ /___/ 50% du champ /___/ 25% du champ /___/ 0% (pas de semence) /___/ Autre (a préciser) _____	
Section 3 : Production			
3.1	Quelle proportion de votre champ avez-vous cultivé en 2005-2006?	100% du champ /___/ 75% du champ /___/ 50% du champ /___/ 25% du champ /___/ 0% du champ /___/ Autre (a préciser) _____	
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3.4	Quelle est la principale source des semences de mil que vous utilisez	Stock personnel =1 Achat au marché =2	

No	Questions	Codes	Passez à
	actuellement?	Achat semences améliorées =3 Don ONG/partenaire =4 Aide gouvernement =5 Emprunt/achat a crédit =6 Troc =7 Autre(a préciser)_____ =8	
3.5	Quels sont les intrants agricoles que vous utilisez actuellement ?	Fertilisants organiques1 Fertilisants minéraux..... 2 Pesticides.....3 Autre _____ 4	
3.6	Combien de mois de nourriture couvrirait votre production agricole avant la crise ?	/ ____ / mois	
	Combien de mois de nourriture couvrirait votre production agricole pendant la crise ?	/ ____ / mois	
3.7	Combien de mois de nourriture couvre votre production agricole actuellement ?	/ ____ / mois	
3.8	Quelles sont les spéculations autres que la principale pour lesquelles vous avez augmenté la superficie ou introduit depuis la crise ?	MIL 1 SORGHO 2 RIZ 3 MAIS 4 WOUANDZOU 5 NIEBE 6 ARACHIDE 7 SESAME 8 OSEILLE DE GUINEE 9 DAH 10 GOMBO 11 CALEBASSE 12 PASTEQUE DOUCE 13 AUTRE _____ 14 AUCUNE 15	
3.9	Quelle est l'ampleur de cette augmentation ?	Grande1 Assez grande.....2	

No	Questions	Codes	Passez à												
		Moyenne.....3 Petite.....4 Autre (préciser).....5													
3.10	Depuis la crise acridienne votre production totale a-t-elle	Sensiblement augmenté.....1 Assez augmenté.....2 Moyennement augmenté.....3 Peu augmenté.....4 Stagné (pas changé).....5 Légèrement diminué.....6 Assez diminué.....7 Autre.....8													
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4.2	<p>Indiquez vos trois principales sources de revenu <u>ACTUELLEMENT</u> :</p> <p style="text-align: center;">1^{er} 2^e 3^e</p> <p style="text-align: center;"> <input style="width: 40px; height: 30px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 30px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 30px; border: 1px solid black;" type="text"/> </p>														
4.3	Avez-vous bénéficié d'un appui quelconque d'une autre structure depuis la crise acridienne?	Oui=1 Non =0 /___/													
4.4	Quelle est la nature de cet appui ?	Vivres contre travail.....1 Formation.....2 Aide alimentaire gratuite.....3 Aide financière gratuite.....4 Autre (préciser)5													