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DEPARTMENT OF STATE FOR AGRICULTURE
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THE STUDY ON AGRICULTURE AND RURAL DEVELOPMENT IN THE UPPER RIVER DIVISION, THE REPUBLIC OF THE GAMBIA

FINAL REPORT
ANNEX

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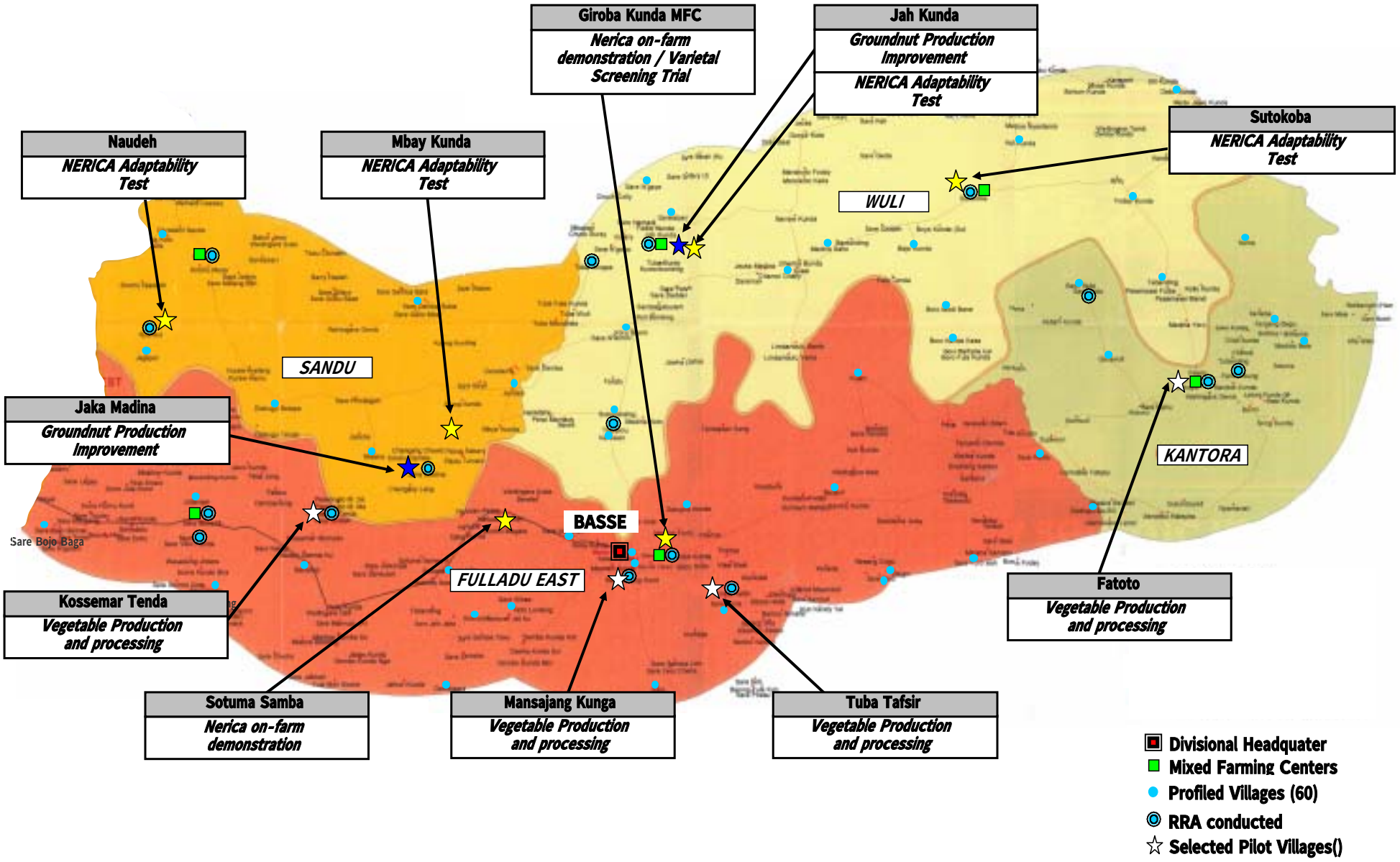

Location of Verification Project Sites

LIST OF ABBREVIATIONS

ADB	:	African Development Bank
AFET	:	Association of Farmers, Educators and Traders
ANR	:	Agriculture and Natural Resources
CAP	:	Community Action Plan
CBO	:	Community-Based Organization
CDO	:	Community Development Officer
CPMS	:	Crop Produce Marketing Societies
CRD	:	Central River Division
D/GMD	:	Gambian Dalasi
DAC	:	Divisional Agricultural Coordinator
DAO	:	Divisional Agricultural Office
DAS	:	Department of Agricultural Services
DCC	:	Divisional Coordinating Committee
DCD	:	Department of Community Development
DCO	:	Divisional Cooperative Officer
DDC	:	District Development Committee
DEC	:	District Extension Centre
DES	:	District Extension Supervisor
DLO	:	Divisional Livestock Officer
DLS	:	Department of Livestock Services
DOCD	:	Department of Cooperative Development
DOP	:	Department of Planning
DOSA	:	Department of State for Agriculture
FAO	:	Food and Agricultural Organization
FASE	:	Fight Against Social Exclusion
GDP	:	Gross Domestic Product
ha	:	Hectare
JICA	:	Japan International Cooperation Agency
LADEP	:	Lowland Agricultural Development Programme
LRD	:	Lower River Division
MDFT	:	Multi-Disciplinary Facilitation Team
MFC	:	Mixed Farming Center
NARI	:	National Agricultural Research Institute
NERICA	:	New Rice for Africa
NGO	:	Non-Governmental Organization
PER	:	Public Expenditure Review
PMU	:	Project Management Unit
PRSP	:	Poverty Reduction Strategy Paper
PVS	:	Participatory Varietal Selection
SDF	:	Social Development Fund
SDRD	:	Support to Decentralization Rural Development
SMS	:	Subject Matter Specialist
SPA II	:	Strategy for Poverty Alleviation II
TAC	:	Technical Advisory Committee
UNDP	:	United Nations Development Programme
URD	:	Upper River Division
VDC	:	Village Development Committee
VEW	:	Village Extension Worker
WAD	:	Wuli Association for Development
WARDA	:	West African Rice Development Association
WASDA	:	Wuli and Sandu Development Association

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Final Report
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I. Background

1.1 Preamble

In this Annex, the details of verification projects are described according to the sequence of the Study. This is because only the summary of verification projects is provided in Chapter 6 of the main report, and some parts, especially on activities and outputs are not fully described. In this regard, this Annex was developed, showing the details of processes, activities and outputs of the projects. Furthermore, it is appreciated if this Annex would be utilized in developing other projects and referred to for obtaining detailed information on special techniques for agriculture and rural development.

In Chapter 1, the relationship between the master plan, which is mainly described in the Main Report, and the verification projects is highlighted. Then, from Chapter 2 to 5, each verification project is explained.

Objectives of this Annex

- ✓ To elaborate the details of the verification projects
- ✓ To provide the vast data attained from the verification projects
- ✓ To be referred to in developing projects
- ✓ To be referred to in extending useful agricultural technologies
- ✓ To be referred to in attaining information on agriculture
- ✓ To be referred to in attaining information on project development

1.2 Objectives of the Verification Projects

The objectives of the Verification Projects of this Study are as follows:

To carry out technology transfer to Gambian counterpart personnel to enhance their capacity in the delivery of extension services to their areas; and,

To carry out technology transfer to local communities in the target area through the implementation of pilot projects.

These can be translated to the overall mission:

“To seek a model for an effective agricultural service system”

by which the agricultural extension staff can work more efficiently to deliver services, and farmers can obtain necessary inputs such as information and technical advices from available sources, which could complement the effort of other donors. By achieving this result, the final target group of the Master Plan, the poor in the Upper River Division (URD), could attain the

maximum benefits from the agricultural related projects, and will contribute towards the rural livelihood improvement.

There is another more important objective of the Study. Since this Study is to implement some projects derived from the Provisional Master Plan as pilot projects, feeding back the results of the projects to the Provisional Master Plan has to be informatively made so as to finalise the formulation of the Master Plan. Hence, there is an objective of:

"To obtain the necessary information for the programmes in the Master Plan"

1.3 Procedure

Before the Study, provisional Master Plan was developed, which comprised of several projects that could be tried as verification projects. Then, based on this and the above objectives, verification projects were prepared. Steps followed from the selection of verification sites until the achievement of the results of verification study are mentioned below.

Firstly, selection of the verification sites were conducted, profiling potential 60 villages and RRA (Rapid Rural Appraisal) was carried out for 16 villages out of the 60 villages.

Secondly, selection of the verification projects was conducted.

Thirdly, verification projects were confirmed at each site and were implemented for two seasonal years, 2003/2004 (hereinafter referred as "first cycle" or "first year") and 2004/2005 (hereinafter referred as "second cycle" or "second year").

Finally, the lessons learned from the verification projects were fed back to the final Master Plan.

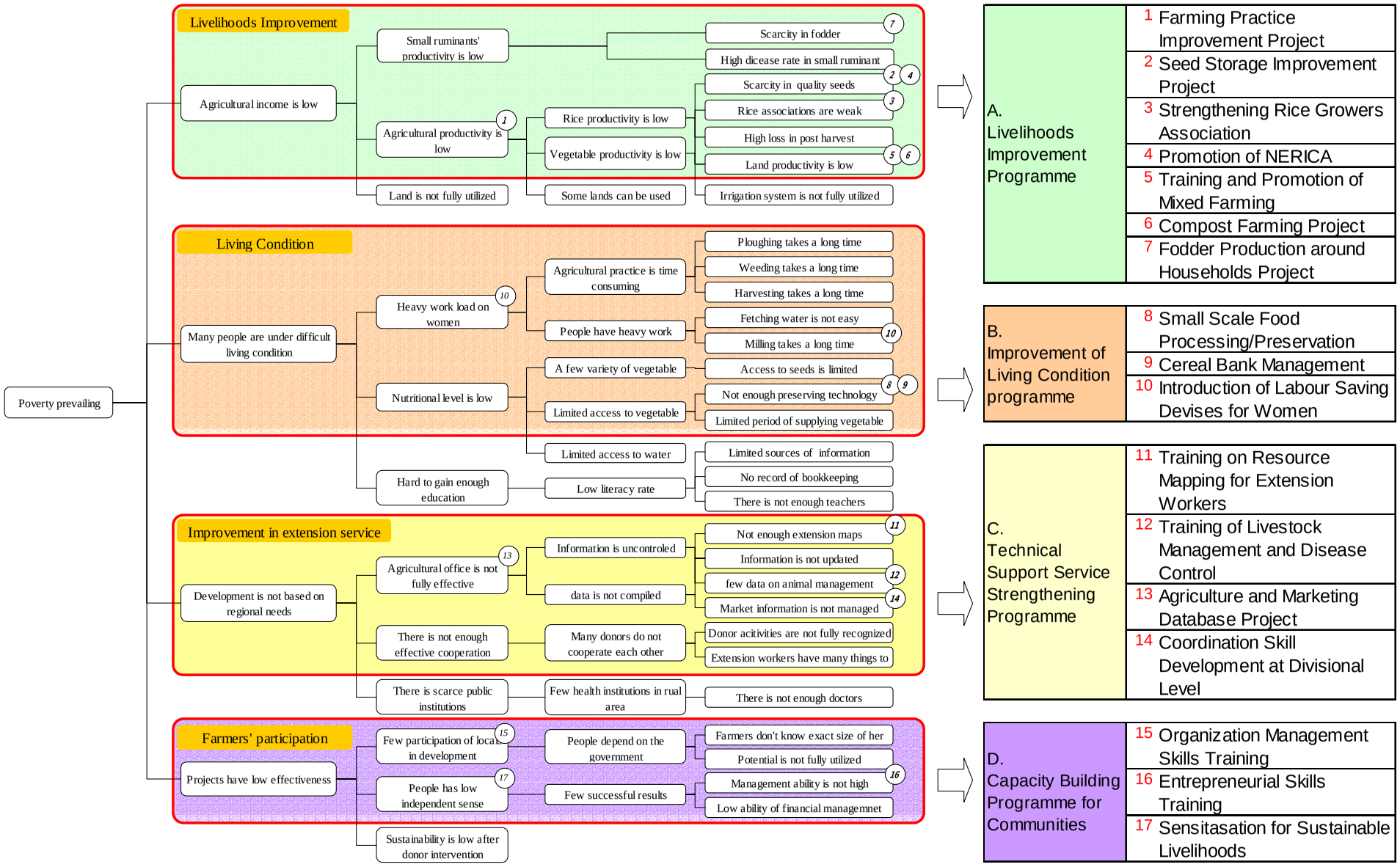
Table 1.1 Schedule of Verification Projects Study

Period / Items	2003		2004												2005										
	Dry							Rainy				Dry								Rainy				Dry	
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
1.Preparation																									
Additional Survey	■	■																							
Baseline Survey	■	■																							
Workshops	■	■	■		■	■																			
2.Implementation*																									
Groundnut		■	■					■	■	■	■	■	■	■						■	■	■	■	■	■
Vegetable		■	■	■	■	■	■					■	■	■	■	■	■	■	■						
NERICA		■	■					■	■	■	■	■	■	■						■	■	■	■	■	■
Coordination Skill		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3.Evaluation Workshops				■	■											■	■				■	■			

*Note: Details of project selection is shown in the chapter 2 and details of the implemented projects are shown in the following chapters.

1.4 Contents of the Provisional Master Plan

The selection of the programmes in the Master Plan was made following the analysis of rural livelihood conditions in URD. The constraints and potentials elucidated from the preliminary examination of the five capitals (social, human, natural, financial, and physical capitals) in rural area are carefully reviewed. The development components addressing the constraints and capitalising on the potentials are identified through problem and objective trees prepared in the Project Cycle Management (PCM) session with Divisional Agricultural Office (DAO) staff. Among the development components, the Plan extracts those components that are the most promising and highly likely to be practiced with low cost and materials available in the area, and integrates with the components aiming at similar objectives into programme. The extracted components are integrated into four programmes, namely: A) Livelihood Improvement; B) Improvement of Living Conditions; C) Technical Support Service Strengthening; and, D) Capacity Building for Community. Figure 1 shows the Draft Master Plan consisting of the development components identified from the problem tree.



Agricultural related problem tree built together with agricultural office workers

Project menu (Provisional MP)

Figure 1.1 Formulation of Draft Master Plan

II. Preparation before Implementation

2.1 Selection of the Verification Sites

2.1.1 Village Profile Survey on 60 Villages

In order to identify the villages for implementing verification projects, data from the village profile surveys which were conducted at the beginning of the Study were used. Sixty villages were selected for the survey in consideration of population, ethnic composition, number of households, family size, literacy levels, food habits etc. In addition, the following information were collected: the number of development groups in the village; their affiliation to NGOs and CBOs; the existence of a VDC and Community Action Plan (CAP) and, whether or not the VDC was trained. Based on this 60-villages-profiles, several villages were chosen for further understanding. Details are shown in Appendix 2.1 ID of 60 villages. As can be seen, major staple foods are rice, sorghum, and millet, and major problems expressed by villagers are water shortage, lack of seeds and fertilizers, lack of skill, poor soil fertility, and so on.

2.1.2 RRA Survey on 16 Villages

Based on the information collected in the profile survey, 16 villages were selected considering their potential for agriculture and rural development. Then a detailed survey using Rapid Rural Appraisal (RRA) was conducted later on in the 16 villages in order to grasp the present conditions of the villagers and possible activities of the verification projects to be implemented. This was done taking into consideration both potentials and constraints towards sustainable development. These villages are to be as closer as possible to any of the 5 Mixed Farming Centres (MFC) which are dispersed in the division, in order to ensure a close working relationship between the said villages and the farming centres.

2.1.3 Villages Selected

Finally, the following five villages are selected; 1) Kossemar Tenda and 2) Touba Tafsir from Fulladu East district; 3) Jaka Madina from Sandu; 4) Jah Kunda from Wuli and 5) Fatoto from Kantora, shown in the following table.

Procedure to get detailed information is shown in Appendix 2.2 Report on Problem Analysis on Selected Villages.

Table 2.1 Selected Villages for Verification Project

District	MFC (DEC)	Village	Basic Information of Village
Fulladu East	Mankamang Kunda	**Kossemar Tenda**	【Population】470 【Ethnic】Mandinka, Fula 【CAP】 1st CAP formulated at Jun.2001 【Access】3km from main road 【Remarks】A weekly market is located in this village.
	Giroba Kunda	**Touba Tafsir**	【Population】1,000 【Ethnic】Mandinka, Fula 【CAP】 1st CAP formulated at May 1999 【Access】7km from main road 【Remarks】Communal activities led by Cohesive VDC are seen.
Sandu	Naudeh	**Jaka Madina**	【Population】200 【Ethnic】Mandinka, Fula 【CAP】 1st CAP formulated at May 2001 【Access】4km from main road 【Remarks】This is a small but very cohesive community.
Wuli	Jah Kunda	**Jah Kunda**	【Population】920 【Ethnic】Mandinka 【CAP】 1st CAP formulated at Apr. 1999 【Access】0km from main road 【Remarks】MFC and an active CBO's office are located.
Kantora	Fatoto	**Fatoto**	【Population】1,300 【Ethnic】Fula, Mandinka 【CAP】 1st CAP formulated at Dec. 2000 【Access】0km from main road 【Remarks】MFC and a permanent market are located.

2.2 Selection of the Verification Projects

2.2.1 Agriculture and Rural Development Information at Verification Sites

Presence of a cohesive VDC, MFC and a market structure is regarded to be the biggest potential for further development of the above villages. These could be the vehicles of the villages' development. However, agriculture remains the most important among their ways of living, being the core activities in the villages, like other villages in The Gambia. Therefore, agricultural related activities practiced in the villages are thoroughly surveyed. In addition, crop preference ranking was also carried out in order to grasp the agricultural characteristics specific to the villages. The result of the ranking and the reason for the preference are summarized as follows.

Table 2.2 Crop Preference Ranking in the Five Villages

Village		Ranking				
		1	2	3	4	5
Kossemar Tenda	Male	Rice	Groundnut	Sorghum	Millet	Maize
	Female	Rice	Groundnut	Vegetable	Sesame	
Touba Tafsir	Male	Food Grains	Groundnut	Watermelon	Cassava	Fruit
	Female	Groundnut	Vegetable	Rice	Sesame	
Jaka Madina	Male	Sorghum	Groundnut	Millet	Maize	
	Female	Rice	Groundnut	Sorghum	Vegetable	Millet

Village		Ranking				
		1	2	3	4	5
Jah Kunda	Male	Groundnut	Sorghum	Maize	Millet	Findo
	Female	Groundnut	Findo	Sesame	Cocoyam	beans
Fatoto	Male	Sorghum	Groundnut	Millet	Rice	Maize
	Female	Groundnut	Rice	Vegetable	Cereals	

Table 2.3 Reasons of Preference on Crop

Crops	Reason for Choice
Sorghum	Food crop, Easy to process, Animal feed, Fencing materials, Adaptability to low soil fertility
Groundnuts	Cash crop, Food crop, Animal feed (also can be sold), Various dishes
Rice	Staple diet, Easy to cook, Animal feed, Easy to store, Straw for mattress fillings
Vegetable	Cash crop, Food crop, Cultivated during dry season
Millet/Maize	Food crop, Cash crop (but only when desperate for cash)
Fruit	Cash crop, Food crop, Easy market

There are other two sites to be included in the Verification Project, which are Giroba Kunda and Mansajang Kunda.

The former is the village where Giroba Kunda MFC is located. The MFC is the nearest farming centre to the capital of URD, Basse Santa Su. In this Verification, NERICA variety, a strategically disseminated variety in the West Africa, is introduced to examine its suitability to the area. In order to maximize the effects of its demonstration to as many people as possible, the MFC and its village are selected. The village, in fact, has a big potential of expansion of rice cultivation both in volume and land area. It is adjacent to the river and the project called LADEP funded by ADB and IFAD has been intervening for several years surveying the potential of land, constructing small dykes and spillways and providing technical backstopping for rice cultivation.

The latter, Mansajang Kunda bordering the divisional capital, Basse Santa Su, is conveniently located for vegetable production in the peri-urban area. Since this Verification includes a vegetable production and processing project as explained later, such peri-urban area is identified for making a contrast with the other selected target areas. It is important for the target areas to know the activities of peri-urban areas and the difference due to those activities. This verification offers the opportunity for the farmers to visit the other sites and see their development. It is expected that they discuss the problems which they face, and exchange their technical knowledge during such meetings.

2.2.2 Project Components at Each Site

There are two categories of the Verification projects;

(1) Technical Support Project

(2) Community Based Project

The selection of the former type of project was led by the JICA Study Team (herein after referred as "the Study Team") and the counterparts in consideration of the national agricultural policy and its regional context. The selection of the latter was based on the needs of people in the target villages. Also considering the period of 2 years allocated for the verification projects, projects which, in the short term, could bear fruit on the rural life or give important information for feed back to the Master Plan were carefully identified.

For the purpose of selecting community based projects, a meeting was held on 13th August 2003 with attendance by the DAC, 4 SMSs, 1 DES, 5 VEWs, 2 volunteer workers and 3 of the Study Team members. At the meeting, through assessment of the needs of the targeted village, 3 projects were tentatively proposed; Farming Practice Improvement, Mixed Farming Promotion and Small Scale Food Processing/Preservation. Then finally, 6 projects were selected by supplementing another 3 projects which are geared towards experimentation and capacity building; NERICA trial, Promotion of Coordination Work and Sensitisation for Project Sustainability. The table below shows these 6 projects for the Verification and their relationship with the Master Plan.

Table 2.4 Selected Verification Projects and their relation to the Master Plan

Provisional Master Plan		Verification Components
A. Livelihood Improvement Programme		
1. Farming Practice Improvement Project	→	(1) Farming Practice Improvement Project
2. Seed Storage Improvement Project		
3. Strengthening Rice Growers Association		
4. Promotion of NERICA	→	(2) Promotion of NERICA
5. Training and Promotion of Mixed Farming	→	(3) Training and Promotion of Mixed Farming
6. Compost Farming Project		
7. Fodder Production around Households Project		
B. Improvement of Living Condition Programme		
8. Small Scale Food Processing/Preservation	→	(4) Small Scale Food Processing/Preservation
9. Cereal Bank Management		
10. Introduction of Labour Saving Devises for Women		
C. Technical Support Service Strengthen Programme		
11. Training on Resource Mapping for Extension Workers		
12. Training of Livestock Management and Disease Control		
13. Agriculture and Marketing Database Project		
14. Coordination Skill Development at Divisional Level		(5) Coordination Skill Development at Divisional Level
D. Capacity Building Programme of Community		
15. Organization Management Skills Training		
16. Entrepreneurial Skills Training		
17. Sensitasation for Sustainable Livelihoods	→	(6) Sensitasation for Sustainable Livelihoods

Each of the 6 selected projects has its own targets and expected impacts on rural life in the study area. It is, however, also assumed that coordinating them and arranging into a package could give much bigger impact to the targeted villages. Therefore, instead of introducing them one by one, this verification suggests to implement several projects in a village. With careful consideration to a sequence of from production to post-harvest, 4 packages including the 6 projects are finally proposed in order to exploit positive interaction between the projects. This arrangement makes project implementation much smoother, more efficient and gives more information about production cycles within the short period. The table below shows the proposed package projects and their components.

Table 2.5 Proposed Package Projects and their Components

Package Projects	Individual Projects
(1) Groundnut Production Improvement	(1) Farming Practice Improvement (3) Training and Promotion of Mixed Farming (4) Small Scale Food Processing/Preservation (6) Sensitisation of Project Sustainability
(2) Vegetable Production and Food Processing	(1) Farming Practice Improvement (3) Training and Promotion of Mixed Farming (4) Small Scale Food Processing/Preservation (6) Sensitisation for Project Sustainability
(3) NERICA Trial and Extension Planning	(2) Promotion of NERICA (6) Sensitisation of Project Sustainability
(4) Coordination Skill Development	(5) Promotion for Coordination Work

A description of the 4 package projects and the process of the Verification Study are shown at the end of this chapter. The final arrangement of the projects and the villages made considering crop preference and agricultural characteristics of each village is summarised in the following table.

Table 2.6 Verification Package Projects in the target villages

	Village	(1) Groundnut Production Improvement	(2) Vegetable Production /Processing	(3) NERICA Trial and Extension Planning	(4) Coordination Skill Development
South bank	Giroba Kunda			○	-
	Sotoma Samba			○	
	Mansajang Kunda		○		
	Touba Tafsir		○		
	Kossemar Tenada		○		
	Fatoto		○		
North bank	Jaka Madina	○			
	Jah Kunda	○			

2.3 Confirmation before Implementation

(1) Objective

As was stated in the planning document, the work plans prepared in advance for the verification projects were modified on the basis of discussions with parties involved in the projects, mainly targeting the farmers and the technical personnel in DAS, in line with the guidelines below, to make a detailed implementation plan of the projects. To do this, confirmation workshops were held to elaborate on the preliminary working plans for community-based projects. This process is expected to build beneficiary sense of ownership of the project. Thus, participatory planning in community-based projects has been incorporated as an important activity for the Verification Projects.

The Vegetable Production and Preservation Projects were all concentrated on the south bank of the Gambian river at URD and included Kossemar Tenda, Fatoto, Touba Tafsir and Masanjang villages, while the Groundnut Production Improvement Projects were to be implemented in the north bank of the same river at Jaka Madina and Jah Kunda. In order to confirm the target villager's willingness to participate in the projects and their perceptions, two-day workshops were conducted in each site from 17th November to 25th November 2003. For this purpose, two facilitation teams were formed, consisting of DAS staffs in Basse and the Study Team members including hired consultants.

(2) Time Schedule and Timetable of the Workshop

One team conducted confirmation workshops in three villages of the south bank, comprising of Kossemar Tenda, Fatoto and Touba Tafsir identified as sites for vegetables projects. The other team covered the rest; Mansajang for vegetable project, Jaka Madina and Jah Kunda for groundnut projects. The first day was devoted to clarifying the needs of the villagers for the selected project and to discuss selected issues related to the project, namely the selection of project members, the expected outcomes of the project from the villagers' point of view, required inputs, cost estimates, etc. The second day was devoted to follow up on the first day and to conduct the baseline survey after clarification of all pending issues from the first day workshop. Appendix 2.3 shows Results of Baseline survey.

Table 2.7 Schedule of workshop

	TEAM 1	TEAM 2
18-Nov	Jaka Madina (1)	Kossemar Tenda (1)
19-Nov	Jah Kunda (1)	Fatoto (1)
20-Nov	Mansajang Kunda (1)	Touba Tafsir (1)
21-Nov	(Reporting)	(Reporting)
22-Nov	Jaka Madina (2)	Kossemar Tenda (2)
23-Nov	Jah Kunda (2)	Fatoto (2)
24-Nov	Mansajang Kunda (2)	Touba Tafsir (2)
25-Nov	(Reporting)	(Reporting)

The 1st day

10:00	Introduction of the Team Review of the last workshop Introduction of the project plan and its expected outcome
11:00	Selection of a group or contact farmers Detail planning of the activities
12:00	Listing necessary inputs for the project Deciding group members' contribution to the project
13:00	Close

The 2nd day

10:00	Follow up of the first day
11:30	Baseline survey
13:00	Close

(3) Review

These workshop sessions were held with communities to review and finalize the arrangements on the implementation of the verification projects. The meetings were opened with the usual Muslim Prayer (FATHIYA), followed by the introduction of the team members, Gambian counterpart side and Japanese side, before proceeding to the review of the last workshop. The reviews focused on reminding the villagers of the discussions held in which they were told that the project would lay more emphasis on helping the development of women (though men were not excluded) and would be implemented with an existing group with an active executive committee, a bank account and with some experience in the implementation of the type of project formulated.

After these reminders, the villagers were told that the team had come back this time with a project formulated on vegetable production and preservation for the village, and such project was based on the needs expressed in the crop preference ranking carried out in the last workshop, water availability in the area, nutritional value of vegetables to fight against malnourishment, income generating capacity for women and mitigation of post harvest losses through processing and preservation, these two items being the main focus of the project. Villagers were subsequently requested to confirm their needs of the vegetable project.

(4) Selection of Members

During the first day of the workshop, selection of members was explained to the VDCs and other Kafo representatives. Since this project regards VDCs as an entry point to villages, they were given a role in leading discussion concerning the selection process among villages. The selection criteria comprised of whether a group or members have experience of projects, preferably vegetable scheme; an active executive committee with its registered bylaw and a bank account. Summary of the selection process is shown in Table 3.1.

(5) Expected Outcomes

After selection of the members of the group, the opinions of the villagers were sought on what would be their expected outcomes in a vegetable project placing the main focus on processing and preservation. These are highlighted in table 2.9.

Table 2.8 Project member and their expectation at each site

Project	Village name	Selection of members	Expected outcome
Vegetable Production& Preservation	Kossemar Tenda	The VDC members were asked to select one qualifying Kafo between the two existing Kafos, taking into account the existence of an executive committee, bank account, etc. The VDC and the members of the two Kafos were given a 15-minute break to hold a meeting. After their discussion, 25 members were selected from the Fandema Kafo, consisting of 18 women and 7 men.	1. Increased income 2. Poverty reduction 3. Satisfaction of seeds 4. New techniques 5. Balanced diet
	Fatoto	Among the existing 5 Kafos, Yiriwa, Dental, Haldeforty, Kambeng, and the youth Kafo, the VDC came up with a list of 25 members selected entirely from Dental Kafo, consisting of 16 women and 9 men. There was a general consensus confirming Dental Kafo as having the best experience in gardening among the existing Kafos considering its approximately 20 years of establishment.	1. Improved health condition 2. Income generation 3. Improved standard of living
	Touba Tafsir	Among 3 Kafos, the VDC selected 25 members from the Fandema Kafo, consisting of 23 women and 2 men representing each compound and kabilo of the village. The group requested to include 3 more women who attended the meeting but were not be included, which raised the total group membership to 28, including 26 women and 2 men. The Fandema Kafo has been seeking to get registered under its new name.	1. New techniques 2. Improved health condition 3. Income generation 4. Improved standard of living
	Mansajang	Among the existing Kafos, the VDC agreed to give a chane to be a contact point of the project to Jekereh Endam Kafo, considering its experience on garden and management ability. Among the Kafo members, 25 members were selected, consisting of 22 women and 3 men. The Kafo is registed and has a bank account in Basse.	1. Increased income 2. Improved health condition 3. Improved diet 4. Knowledge and skill gained
Groundnut Production Improvement	Jaka Madina	Members for the project are almost the same as those belonging to the existing group, Yiriwa Kafo. The group was identified among two existing groups considering their experience and ability of managing a project. At first, the project intended to select only 25 farmers. In fact, Yiriwa Kafo consists of around 30 members. In order to avoid creating a kind of segregation among the members, all came in the group for the project. The members are 26 women and 4 men.	1. Knowledge and skill gained 2. Increased productivity 3. Increased income 4. Labour saving
	Jah Kunda	The villagers attending were asked to select 25 members as contact farmers. They came up with ideas of how to select members, which is the existing executive committee members of the entire Kafolu of the village, called Yiriwa, and 5 members from each of the 4 Kabilo. 3 executive members and 6 from 4 Kabilos, amounting to 27 and 3 men to support women members for heavy load, total 30 members.	1. Knowledge and skill gained 2. Labour saving 3. Increased income 4. Increased productivity

(6) Inputs Needed

The facilitation teams visited the project sites with a list of material needed for each of the vegetable and groundnut projects which had been prepared at the planning stage. Since farmers might have different opinions of what they really need for a series of activities on the projects, the facilitation teams brought the list and discussed with the project members and finalized it. At the time, the group members were requested to estimate the price of each item on the list in order for them to know, just to estimate, the cost involved in the project. The project has a policy of enhancing farmers' sense of ownership towards the project, as it is one of crucial determinants for sustainability of any participatory project. Consequently, the members were also requested to contribute a certain percentage of the total invested amount. The percentage was agreed between the facilitation team and the members at the second day of the workshop, at 5 %, although the actual amount the project collected from the members is not exactly equivalent to this. . This is because the project had the wish to collect cash from the members in order to achieve the objective of enhancing farmers' ownership, before materials or goods needed for their activities would be purchased, and when the price of the materials and goods were not exactly known.

The following table shows the final list of materials used for each project agreed with the farmers.

Table 2.9 Inputs needed for each project

Groundnut Production Improvement	Vegetable Processing / Preservation
1. Cutlass	1. Materials for fencing
2. Rake	2. Well
3. Axe	3. Hand pump (PB MarkII)
4. Sine hoe	4. Water tank (2000 liters)
5. Plough	5. Fertilizer
6. Draught power animal	・Urea (2 bags/ha)
7. Seeder	・Compound (2 bags/ha)
8. Handhoe	6. Seeds
9. Lifter	・Okra ・Bitter Tomato
10. Seed dressing chemicals	・Sweet Pepper ・Hot Pepper
11. Jutebag	・Onion ・Tomato
12. Fertilizer	・Egg plant ・Lettuce
13. Pesticide	・Cabbage ・Carrot
14. Seeds	・Green (Kereng Kereng) ・Sorrel
15. Fungicide	7. Materials for solar drier
16. Donkey or horse cart	8. Cooking utensils

Apart from these, the members of the groups at the vegetable project sites requested to be trained in compost making and in processing and preservation skills. They set tentative dates for such trainings, which were any time before planting between Dec. 1st and Dec. 31st for the

compost making training, and any time in February for the processing and preservation skills training.

(7) Final Agreement of Farmers' Contribution

The project is participatory in nature. Consequently, it requires their contributions in kind and in cash before implementation. This was explained to the farmers on the 1st day workshop. Explanation given to them was that their contribution in cash would follow rates applied by other donors and could be adjusted based on considerations related to level of poverty and rates accepted by other villages. They were also requested to suggest a rate they consider reasonable on this 1st day workshop, awaiting a final decision to be reached on the 2nd day workshop planned the following week, after the Study Team consulted with other villages of the project.
In some village, the farmers responded that they could provide all the necessary labor and 5% of the project cost, while others said 10% of it. They however urged the Team to take into account their poverty situation and the recent floods that affected their lives so as not to raise the rate of contribution too high in the final decision.

During the 2nd day workshop, the Team proposed the 5% rate to all the sites, which was the same rate accepted for a similar project at Kossemar Tenda in the past. The amount varied from 1,600 to 4,500 GMD based on a tentative project cost which the members at each project site estimated. The difference in the amounts estimated per site resulted from difference in the numbers of materials requested by each site and depended on the present condition and assets already brought to the site by other development partners. For example, in Touba Tafsir, they have 4 existing wells. Therefore, they require no well while the other villages for the vegetable project did. This resulted in Touba Tafsir requiring less amount of cash contribution. At all the sites, they were informed that the amount contributed could vary depending on possible changes on the prices of the materials. They accepted the rate and said that they could provide the money by either the end of December 2003 or the middle of January 2004.

2.4 Implementation Organization

(1) Implementation Structure

Considering the need for sustainability of the projects after this study is completed, a Project Management Unit (PMU) was set up. The PMU is composed of related counterpart agencies and shall supervise the projects. This unit undertakes coordination of implementation, monitoring to evaluation of all the projects. During the verification period, the JICA team will share a role in the supervision and management of each project with the PMU. In addition to managing the project locally, the PMU must work in close liaison with the central government

and Divisional Development Committee.
The first meeting of PMU was held December 2003.

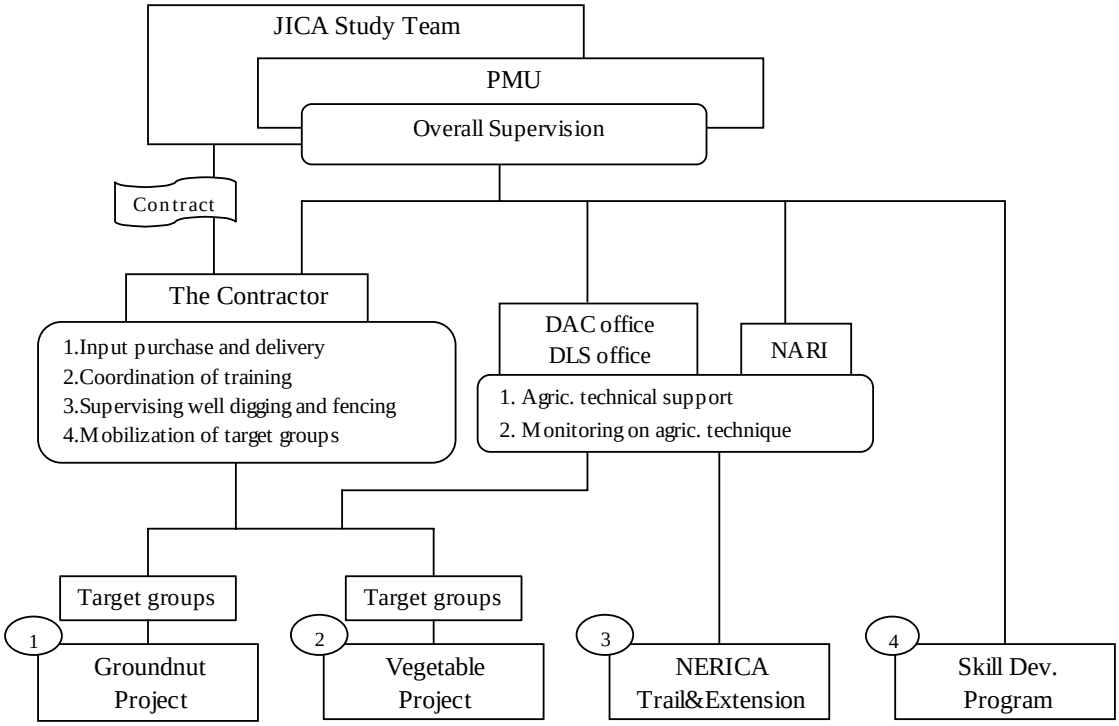


Fig.2.1 Implementation Organization of the V/P

At village level, as mentioned in the provisional plan of the verification project, an NGO as a development partner is currently working directly with the target farmers in the preparation and operation of the community-based projects.

(2) Role of PMU

The PMU is the place where each representative of line agencies and stakeholders concerned discuss issues raised in the course of project implementation and contribute comments and observations, and if necessary, propose modifications on the plan and implementation procedures of the projects. The Study Team will take the observations into consideration and work with the implementers concerned for modification as far as it can be approved by JICA.

Table 2.10 Members and Roles of the PMU

Members of the PMU	Role of the PMU
DAC, DAS (Chairman) DLO, DLS (Vice-chairman) URDC DOP DOCD Area Council DCD AFET	1) Holding periodical meetings 2) Reviewing progress reports 3) Evaluation of activities of each department 4) Reporting to DCC

(3) PMU Stakeholders

Responsibility for each task should be clearly indicated to staff of line agencies, particularly to DAS, the PMU, the Contractor and the Study Team for each project, in order to avoid mismanagement and misunderstanding that could result in project failure.

The followings are tasks each staff of the mentioned department or organisation shall take responsibility for:

1) DAS

-Issuing approvals on quality of agricultural (crop) related inputs purchased by the Contractor;

-Monitoring and Supervision of technical issues (crops) ;

-Mobilizing target groups at the project sites; and,

-Working on the tasks indicated in the skill development program .

2) DLS

-Issuing approvals on quality of donkeys and other livestock inputs purchased by the Contractor; and,

-Working on the tasks indicated on the skill development program.

3) The Contractor (AFET) [1]

-Purchasing the inputs indicated in the contract and delivery them to the indicated sites;

-Coordinating the two trainings during the designed period;

-Supervising well digging and fencing; and,

-Mobilizing target groups at the project sites.

4) The Study Team

-Coordinating overall activities of the 4 projects;

-Monitoring and Evaluation of each project and overall project management system; and,

-Preparing Progress Report based on monitoring forms collected from DAS and DLS.

[1] Note: AFET was selected as The Contractor through a tendering among three organizations submitting their proposal, AFET, GARDA and TRESI.

III Groundnut Production Improvement Project

3.1 Objective

In URD, more women are engaged in groundnut production than in other divisions of the country. Groundnut is an important produce and a source of cash for women. However, preparations of women's fields are left until men complete theirs, which is a critical constraint since the farming operations have to be conducted in a timely manner under rainfed conditions. Under such circumstance, the verification project for groundnut were conducted in two (2) selected villages in URD to verify the dissemination of the improved technologies such as animal traction in order to reduce intensive manual labour at sowing and weeding and to promote timely agronomic practices among women. Groundnut is cultivated as the main cash crop in the selected two villages of Jaka Madina and Jah Kunda.

3.2 Involved Personnel

Involved personnel are mainly women farmers, DAS extension workers, the contracted NGO and the Study Team. As the main beneficiaries of this verification project are the farmers and the Village Development Committees (VDC), firstly their sensitization was conducted.

(1) Sensitization of beneficiaries and VDC

Sensitization meetings were conducted with beneficiaries to clarify their roles and responsibilities. In this regards, beneficiaries agreed to jointly contribute crop residues as feed for work animals. Similarly, VDC to which the beneficiaries belong were sensitized on the envisaged activities, and the expectations of the communities were sought. The beneficiaries were also encouraged to contribute 5 percent of total input cost as contribution to form and enhance their ownership.

(2) Activities by Counterpart

The implementation of this project was spear headed by the SMS Soil Conservation based at the office in Basse and two extension staffs in charge of Jah Kunda village and Jaka Madina village respectively. The Animal Traction Instructors at the DEC concerned also supported the training activities under the project. During events such as Site Tours by the Minister and Farmer's Field Day, other office staff including the Divisional Agricultural Coordinator also participated and provided their expertise. DAC was also playing an important role in the monitoring of various aspects of this project with the support of the Monitoring Supervisor attached to the project. The roles of divisional agricultural staff involved are dilated below.

a. Conducting regular monitoring (SMS: bi-monthly, Extension staff: when necessary)

b. Preparing Monitoring Sheets (Extension staff)
c. Participating in several workshops (SMS, Extension staff)
d. Conducting Training of Trainers (SMS, Animal Traction Instructor)
e. Supervising Training (SMS), Conducting Training (Animal Traction Instructor)
f. Submitting a brief monitoring report (SMS: monthly, Extension staff: bi-monthly)
g. Providing technical advice (SMS, Extension staff, Animal Traction Instructor)
h. Coordinating groundnut production activities by farmers

3.3 Inputs

3.3.1 Summary of Inputs

On the implementation of the project, several inputs were introduced, as shown in the following table. Material inputs were provided form the Study Team only in the first year (2003), then from the following years the farmers arranged necessary inputs by themselves.

Table 3.1 Summary of the Inputs

Site	Village	Target	
	Jah Kunda	1 group, 30 members (26 women and 4 men), Total area 1.0 ha	
	Jaka Madina	1 group, 30 members (27 women and 3 men), Total area 1.0 ha	
Schedule	**First Cycle** 1) preparation：Nov. 2003～Mar. 2004 2) implementation：May. 2004～Nov. 2004 **Second Cycle** 1) preparation：Nov. 2004～Mar. 2005 2) implementation：Jun. 2005～Nov. 2005		
Personnel	**The Gambian side** 1) Farmers 2) DAS extension workers (DAC, SMS, VEW, ATI)		**JICA side** 1) The Study team
Input	**The Gambian side** Farmers - Cutluss - Rake - Axe - Handhoe - Jutebag DAS - Fuel and Gasoil for monitoring		**JICA side** 1. Sinehoe ・Plough ・Lifter 2. Seeder 3. Draught power animal 4. Seed dressing chemical 5. Fertilizer 6. Seeds 7. Fungicide 8. Donkey cart 9. Fuel and Gasoil for monitoring
Villagers' contribution	Villagers contributed for 5 % of invested equipments and materials on the project cost (1 to 9 in the above), the condition of which was decided referring to the condition of other donors. This share of cost was kept in the JICA team's bank account with the intention to be later returned to their bank account for their project sustainability.		

3.3.2 Purchase of Inputs

Collecting Contributions
in Jaka Madina, Dec. 2003

In preparation for the cropping season in June 2004, necessary materials for the projects including farm inputs, implements and work animals were procured by AFET, the NGO contracted to perform that task. In purchasing the required inputs, AFET was asked to obtain the necessary guarantee, including quality assurances from the suppliers. Furthermore they were required to obtain formal approval from the departments office concerned in URD and the Team before the delivery of materials to the target villages. For example, donkeys were to be checked by DLS office, seeders by DAS office in URD, and so forth. In addition, donkeys and groundnut seeds were to be purchased with either the executives or representatives of the target groups in order to enable them select their preferred choices. The following is the status of the procurement of inputs by AFET.

Table 3.2 Purchase of Inputs

Item	Quantity Bought	Comments
Groundnut Seeds	6bags	Decorticated seednuts in 50 kg bags
Fertilizers	18 bags	Compound and Urea
Insecticides Marshal 25 %EC Cypamethrine 2% Dust Sumi Combi 20%	 7 litres 225 sackets 2 bags	Seed dressing
Farm implements Seeders Sine hoes	 9 9	Could not get farmers' satisfaction, therefore repaired
Donkeys	9	All fit for work, still very young
Donkey Cart	5	

3.4 Schedule

Table 3.3 illustrates the work schedule of the groundnut project. Except for the periodical technical supervision provided through extension workers, almost all the activities have been completed.

Table 3.3 Work Schedule of the Groundnut Project

		2003			2004								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Preparation of schedule	DAS and The Team												
Sensitisation workshop	DAS												
Identifing NGO	The Team												
Modification of schedule	DAS and The Team												
Purchasing items	AFET(NGO)												
Training on Animal draft	DAS and The Team												
Seed selection	DAS												
Sowing	DAS												
Cultivation	DAS												
Harvesting	DAS												

		2004			2005								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Cultivation	DAS												
Harvesting	DAS												
Seed storage	DAS												
Seed Selection	DAS												
Sowing	DAS												
Cultivation	DAS												
Participatory Evaluation	DAS and The Team												

3.5 Activities and Outputs

3.5.1 Preparation

The activities carried out from the commencement of the project are summarised as follows.

This project provided production inputs (seeds, fertilizer), implements (seeders and sine hoes), draught animals (donkeys) and several skill training for the beneficiaries.

3.5.2 Trainings

3.5.2.1 Selection of Trainings

The trainings conducted during the project period included:

1) Seed selection (2 days, middle of May, 2004)

   Through the extension staff for all members and at both the sites

2) Animal Traction (8 days, end of May, 2004)

   This included introduction of farm implements, ploughing training, maintenance of the implements and carrying out recommended agronomic practices.

3) Field day (1 day, end of September, 2004)

   Twenty one (21) farmers, 10 male and 11 female, were invited to study the situation at the impressive Jaka Madina field.

4) Harvesting (2 days, end of October)

   Just before the harvest season, trainings were conducted at both the sites using farm implements with an attachment lifter.

3.5.2.2 Animal Traction (Training on Draught Animals)

Training on draught animals is one of the key activities of this project, as one of the principal objectives of this program is to investigate women's capacity in handling draught animals. Women are generally not used to handling animals, especially draught animals. There is nonetheless, a big potential for improved production and productivity if they could effectively handle and use draught power.

Prior to the training for farmers, a Training of Trainer (TOT) was conducted from 23rd November for two days. Participants included four (4) Animal Traction Instructors (ATI), two (2) District Extension Supervisors (DES), two (2) Village Extension Workers (VEW) and one (1) Subject Matter Specialist (SMS) for Soil and Water Conservation. The objective of the TOT was to refresh their knowledge, harmonize the level of understanding at ATI's level, and even introduce newly acquired techniques among them.

Training of Trainer (TOT) in Naudeh DEC, May. 2004

A women under the training at Jaka Madina, May. 2004

From the 26th to 29th May 2004, thirty (30) farmers, selected as a member were trained at each site. These consisted of twenty seven (27) women and three (3) men at Jaka Madina, and twenty six (26) women and four (4) men at Jah Kunda. During the first two days, most of the time was devoted to introduction and familiarization with implements. The remaining 2 days were utilized by the women mainly to practice animal traction in their fields. The training covered the use and management of farm implements and as well as how to harness implements on draught animals during farm work. Various other methods ranging from seeding, ploughing and the importance of proper spacing were covered. Implements introduced during the training were purchased from Farafeni, NBD, March 2004. These can be used for three purposes: ploughing, weeding and lifting (harvesting) using different attachments. Therefore, detaching and attaching these tools were also taught to women as wells as ways of maintaining them.

At the end of the training, an evaluation workshop was conducted among them. Almost all members were able to detach and fix farm implements on their own. However, there was need for a few of them to take more time on training. Some members due to the limited time could not assemble farm implements and were also not opportuned to practically train their draught animals.

The rainy season began in the middle of June in most parts of the Division, but as usual, some portions experienced extended dry spells which delayed sowing, which allowed the already germinated weed continued growing. This impeded the use of animal traction implements but increased the demand for tractor ploughing. It is common for portions of URD to experience extended dry spells at the beginning of the rainy season. The portions that suffered most this year were Sandu and Wulli, where the JICA sponsored G/nut VP trials were located.

Due to the above situation, ploughing by animal traction became difficult, but was somehow managed at the project trial site. However, some farmers hired a tractor for ploughing the lands which were already covered by weeds. An area of 1.1 hectares of groundnuts field at Jaka Madina was planted on the 12th July 2004. Five (5) hectare of field was ploughed and planted by members at Jah Kunda comprising 1.5 hectares initially allocated for project purposes and another 3.5 hectares which was added by the member's initiatives. Seeds were provided only for 1 hectare for Jaka Madina and 1.5 hectares for Jah Kunda. Consequently, seeds for the additional field at Jah Kunda had to be provided by the members and as finaly obtained as loan from the DEC. The group members, mainly women, start sowing exercises at 8 am and end at 12 noon. Seventy kilogram of groundnuts seeds, 73/33 variety, were sown in this trial site. The planting exercise was almost entirely done by the women members of the group. All the planted seeds were treated with seed dressing chemicals (supper Humai).
By the end of July, the seedlings were established and first weeding was done. All the two sites are doing fairly well. Although a low germination percentage was realized at the Jah-kunda field due to the poor quality of the seed, the crop at vegetative growth was good. The second and third weeding were also accomplished by the end of August.

3.5.2.3 Field Day

At the peak growth of the cropping season, a one-day field trip was conducted at the groundnut verification project site at Jaka Madina through the initiative of the DAS office's.
The field day visit was held on September 2004 from neighbouring villages to Jaka Madina, one of the verification project sites.

Twenty one (21) participants, ten male and eleven female, attended the field trip, drawn from the Misira VEW's coverage area. Similarly, participants from Jah kunda were also expected, but they could not attend due to various reasons. Nonetheless, the field trip whose aim was to motivate farmers in the surrounding areas especially women farmers and to emulate their fellow women of Jaka Madina, was successfully conducted.

The project staff opened the field trip by explaining the objectives of the trip to the participants. The DAS office staff highlighted that the women group is an exemplary role model of the project to complement government effort to increase productions, especially since women farmers generally are left behind, in terms of having access to farm land, inputs and skills.

Farmers' Field Day at Jaka Madina, Sept. 2004

Training on Harvesting by Animal Traction at Jaka Madina, Oct. 2004

3.5.2.4 Harvesting by Animal Traction

Before starting harvesting their groundnuts, members received training on harvesting using animal traction, held on the 26th and 27th October 2004. At the training, women acquired knowledge and familiarity with the groundnut lifter, an attachment specifically utilized for harvesting groundnut and how to use it with a donkey. The training was conducted under appropriate soil moisture conditions using a donkey; which is regarded as not powerful enough to harvest groundnuts in hard soils. It actually proved slightly difficult for a donkey to pull the implements during the lifting (harvesting) process.

3.5.2.5 Results of the Trainings

Participants for the trainings are summarised below.

Table 3.4 No. of participants for each training

	Seed selection	Intro. of Implements	Harvesting
Jaka Madina	30	30	18
Jah Kunda	30	28	25
Total	60	58	43

3.5.3 Production

The direct beneficiaries comprised 60 farmers at 2 sites, Jaka Madina and Jah Kunda. The surrounding villagers can be regarded as indirect beneficiaries, especially those who visited Jaka Madina for the Field Days. The area of the project site is 1 ha at each village, although an additional 0.5 ha at Jaka Madina and 4 ha at Jah Kunda were undertaken on members' own initiative for the first year. The second year the size of the project field remained same at 1 ha but the size of additional field changed to 1 ha at both the villages, 100% increase and 75% decrease each. Moreover, the women members' individual farms Indirectly benefited by using implements provided by the project, the area of which are 13.1 ha for Jaka Maidna and 21 ha for Jah Kunda in total for the first season, and 20.5 ha and 21 ha each for the second season.

The amount of produce and sales are summarised in the table shown below. With intensive supervision by the extension staff, both the villages achieved very high yield, which is 30% and 60% more than average in the division.

Table 3.5 Status of Project field (1 ha under extension staff' supervision)

	Yield	Kg sold	Sales
Jaka Madina (1ha)	1,288 kg	896 kg	D 6,680.00
Jah Kunda (1 ha)	1,650 kg	1,057 kg	D 8,561.70
URD average	1,000 kg	-	-

Given the above, the sales achieved at the project field, even if shared by the members; can be regarded as increase of income for both villages.

The objective of the project not only focused on improved production at the 1 ha project site, but also investigating the impact of improved access by women farmers to farm implements by observing any changes in their individual farms.

Table 3.6 Change in several indicators of the project farmers on average

	Jaka Madina		
	03/04 season (before project)	04/05 season (project 1st year)	05/06 season (project 2nd year)
Hectare	0.31	0.47	0.77
Produce	204.7 kg	338.7 kg	-
Yield per ha	649.1 kg	720.2 kg	-
	Jah Kunda		
	03/04 season (before project)	04/05 season (project 1st year)	05/06 season (project 2nd year)
Hectare	0.79	0.72	0.78
Produce	630.7 kg	533.8 kg	-
Yield per ha	796.7 kg	744.8 kg	-

*No. of respondents; 21 women for Jaka Madina, 15 women for Jah Kunda

At Jaka Madina, there were big increases in land size and amount of produce, which was due to introduction of the farm implements, although it was not much reflected in terms of yield increase. On average, members' field sizes, and consequently amount of produce, showed a 50 % increase, which somehow boosted their income. On the other hand, as stated earlier, at Jah Kunda, the members complained about quality of the implements brought to them. Consequently, they worked on the individual plot in the way they did last year, which is to use the hand hoe. In addition, farmers at Jah Kunda basically suffered from scarcity of good seednuts. Hence, it was observed that some of the members even reduced the size of their individual fields in Jah Kunda in the first season. To see whether the increase is actually derived from this project, another observation was made in the second season on the same 21 women in Jaka Madina and 15 women in Jah Kunda. The result was again positive, with 63% increase against the previous season, approaching to 0.77 ha on average in Jaka Madina, whereas the size of Jah Kunda on average remained almost the same as that of last season, 0.78ha. Although the observations were made only from the two seasons, it could be inferred that a woman with less than 0.5 ha land cultivated could expand her land size with the availability of farm implements as far as the other conditions allowed her to do so.

3.5.4 Some activities for expansion to other areas

3.5.4.1 SOS visit to Jaka Madina

The DAS office chose Jaka Madina for the Honourable Secretary of State for Agriculture, Mr. Sulayman Sait Mboob in August, during his mid-season tour to URD.

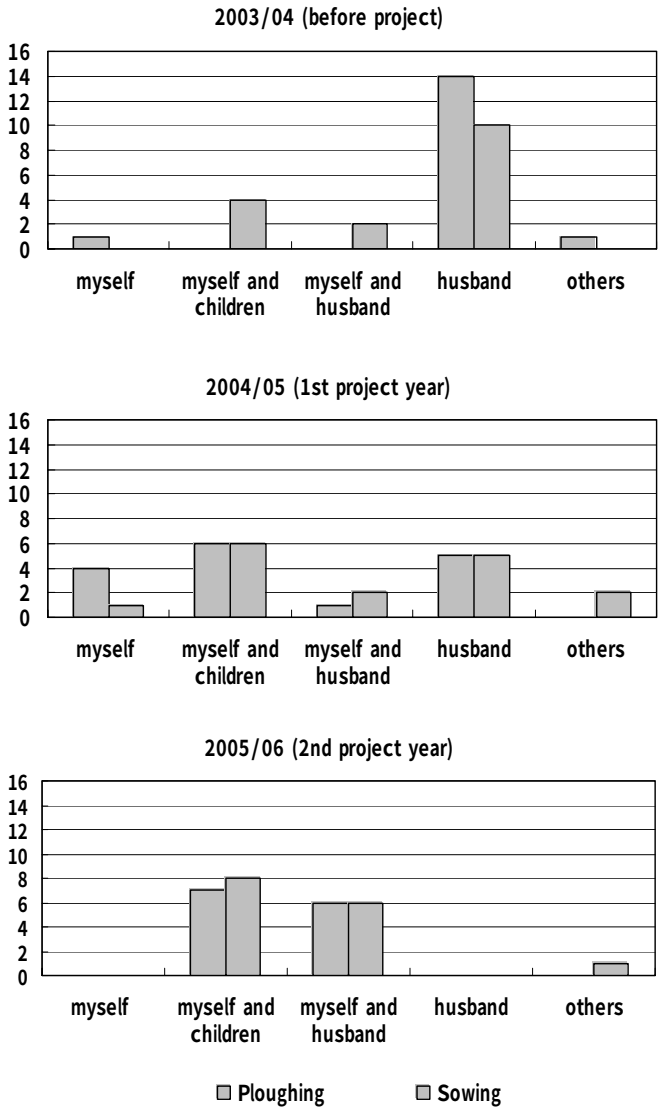
3.5.4.2 Contribution to Capacity Building of Counterpart Personnel

Among the above, monitoring report writing and TOT have provided them additional

knowledge and management skills which are of necessity in project implementation and coordination. Review of their reports indicates improvement in its quality. This has strengthened not only their monitoring activities on this particular project but also their routine activities. TOT provided an opportunity where five Animal Traction Instructors acquired new teaching methods and made themselves more easily understood by farmers.

3.5.5 Roles and Timing Changes

Since the project comes to completion in October 2005, it will not be feasible to monitor the entire crop production cycle including harvesting. Therefore, monitoring for this cropping season has focused mainly on ploughing and seeding by women members using farm implements. Whether they maintain the techniques acquired last year constituted the key observations. The results are shown in figure 3.1. Using data collected from 16 members in Jaka Madina, comparison of participants in ploughing and seeding during the last three seasons was made. In the 2003/04 season, one year before the project started, more women were dependent on their husbands both for ploughing and seeding; 14 women out of 16 requested help from their husbands for ploughing and 12 for seeding (both 'myself and husband' and 'husband'). In the 2004/05 season, the year of introducing the farm implements under the project, the number of women requesting help from husbands for ploughing declined to 6 for ploughing and for seeding 7. Instead, either 'myself' or 'myself and children' appeared more. In the second year of the project, which is the 2005/06 season, observations on ploughing and seeding which



*'myself' means a project member herself

Figure 3.1 Three-year comparison of actors

have been completed indicate that, no women requested help from their husbands to plough or seed but instead worked with them and these were reported by only 6 women. This is what the project was aiming at; women, without waiting for the husband were able to carry out their field operations on time.

3.5.6 Financial Analysis

To obtain the financial status of the individuals having access to the farm implements, the assumptions below are set based on the data collected through the verification project.

Table 3.7 Assumptions for Financial Analyses

>Without Animal Traction	>Other conditions
1) An average size of 0.5 ha is cultivated. 2) A yield is 0.7 t, since the average yield of 1.0 t in URD also reflect men's plot which normally achieve higher production. 3) Fertiliser is not applied.	a) The same size of field is to be cultivated for the next season. b) Seeds required for the next season are kept from own harvest (*Required amount of undecorticated seeds for 1 ha is 140 kg) c) For home consumption, 2 bags (approx.100kg) are to be kept. d) The buying price per kg by cooperative is 8.1 dalasis. e) The cost of fertiliser is 340 dalasis per bag.
>With Animal Traction and fertiliser	
1) Increase in the size of cultivated land by 50 % is achieved by introducing animal traction. 2) Productivity improve by 20% due to timely agronomic practices, proper weed management and fertiliser application. 3) Fertiliser is applied with half of minimum requirement.	

Table 3.8 Comparison of net revenue with and without animal traction (without consideration of the investment cost on the traction set)

	without	with
Size (ha)	0.5	0.75
Yield (kg)	600	720
Produce (kg)	300	540
Home consumption (kg)	100	100
Seeds for next year (kg)	70	105
Amount sold (kg)	130	335
Price per kg (dalasi)	8.1	8.1
Sales (dalasi)	1053	2713.5
Fertiliser (bag)	0	0.75
Cost of fertiliser (dalasi)	0	255
Profit (dalasi)	1053	2,458.5

3.5.7 Implication to other field crops

Groundnut marketing has become an increasingly important issue among the farmers. Despite

difficulties in marketing groundnuts, women in URD still maintain groundnut as their main cash crop since they are more confident growing groundnut than other crops due to their long involvement and familiarity with the crop.

When marketing difficulties of groundnut become persistent, or when a crop rotation is required on the land, there might be need to choose crops other than groundnuts. As the verification project shows, the introduction of farm implements provided an opportunity for them to expand their land area under cultivation and to carry out timely operations without waiting for their husbands. The result of the study can be applied to other crops, such as maize, sesame and rice, since the implement, the sinehoe, is adjustable to weed row spaces between crops. The table below shows recommended input requirements by the National Agriculture Research Institute (NARI).

Table 3.9 Recommended Input Requirements, variable cost and average yield

	Groundnut	Maize	Sesame	Rice
Seed Rate (kg/ha)	70kg	30kg	3kg	80kg
Fertilizer (kg/ha)	100kg	300kg	200kg	150kg
Variable cost	D1,030	D2,280	D1,405	D1,420
Yields (kg/ha)	1,000kg [1)]	2,043kg	700kg [2)]	2,115kg

*The above table does not consider labour cost and stock both for next year seed and for home consumption.

[1)] Average harvest in URD with fertiliser application

[2)] Projections by NAWFA/CRS with recommended fertiliser application

Using the figures, profitability of each crop is computed in the table below. Maize shows the highest profitability among the four crops analysed, followed by rice, groundnut and sesame as far as marketing of the crops is assured.

Currently some organizations are working towards establishing marketing channels/mechanism for these crops even in URD. Women farmers in URD also need to look for other possibilities of gaining more income from their farming activities. It is also true that some women have started shifting their crop preference given the marketing problems of groundnut. In this regard, it was observed that some women members in the project sites cultivated sesame and cotton in this 2005/06 season. In the lowland women are engaged in rain-fed rice production. Another verification project, NERICA trial and planning, under the Study shows the possibility of expanding upland rice cultivation even for women.

The introduction of farm implements requires some investment. Therefore, consideration has to

be made for the possibility of borrowing money from micro finance and other financial institutions. The selection of the more profitable crops such as maize or rice could be promoted when considering the repayment of loans.

3.6 Lessons and Recommendations

3.6.1 Hypotheses and Results

Three hypotheses were set for this groundnut verification project in order to draw important information from the project before finalising the formulation of the Master Plan. The results of verification of each hypothesis, and the lessons learnt which should be fed back to the Plan, are mentioned below.

Hypothesis 1: Small ruminants are more easily accepted by women for a traction purpose both socially and physically.

This was proved throughout the project period, since a donkey is tamer and easier to control compared to other animals used for traction, such as oxen and horses. Depending on soil conditions, it might be hard for a donkey to pull the implement especially in lifting groundnuts.

Hypothesis 2: Timely operations could give farmers higher labour productivity and better yields.

It was observed that members obtained more than 1.2 ton from the project site of 1ha. This was attributed to timely agronomic practices but response to yield seems to depend more on rainfall pattern and use of fertiliser, since it reflects on the weight of each groundnut pod.

Hypothesis 3: The introduction of animal traction implements could reduce women's drudgery in their field.

Expansion of land cultivated could be due to the fact that they found it much easier to undertake ploughing and weeding by using the implements. They utilized the implements to save time and expand the farm sizes of their groundnut fields. Therefore, the time they spent on their farm is similar to the last year. However, given that they earned more groundnuts, the impact of the implements can be regarded as positive. If other non-farm income generating activities such as petty trading, tie and dye, soap making etc can be introduced, there is greater possibility to diverse sources of income which could result in better welfare at household level.

3.6.2 Feedback to the Master Plan

Apart from the hypotheses, in the course of the project, periodical monitoring and observations were made in order to find lessons for revising the tentative plan. Considering the characteristics of this project, lessons have been sought from three points of view: agricultural techniques, extension approach and implementation structure. The lessons learnt from the project and possible feedbacks to the plan are together summarised below.

Table 3.10 Feedback to the Master Plan from Groundnut Verification Project

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
Agricultural Technology	• Careful and intensive seed screening before sowing should be carried out by sensitising farmers continuously.	⇒ At lease, one day training by extension staff before seeding and selling produce is to be conducted. **(A-2, A-9)**
	• Donkey is tamer but does not have enough power to lift groundnuts at harvesting when soil gets harder.	⇒ An ox is another option for draught animals, but the project should stick to using donkeys, considering women's ability in handling animals and their tolerance to disease. **(A-9)**
	• Without using farm inputs such as fertiliser, use of animal traction may not achieve significant production increase.	⇒ In addition to appropriate fertiliser use, improvement of soil fertility is to be promoted through tethering. **(A-1, A-9)**
Extension approach	• If projects provide farm implements for farmers, quality of farm implements matters in terms of farmers' motivation and sustainability of project.	⇒ Involvement of farmers in selecting farm implements has to be more encouraged. **(All the projects involving procurement)**
	• Less availability of quality implements and their attachments in the division caused problems for both timely introduction of the project and proper maintenance in the course of the project.	⇒ Extension staff have to take a role in being intermediaries between farmers and outsiders, such as factories, spare part dealers and blacksmiths, by accessing information prepared by the office level. **(C-16, C-17)**
	• Farmers attending the Field Day and being exposed to the impact of newly introduced technique has been highly motivated.	⇒ Expansion of the target areas is to be done from the verification sites to their neighbouring villages. Facilitation to the motivated farmer to access micro finance for starting up is to be carried out. **(All projects)**
	• The project gave less impact on the villages	⇒ To maximise impact of the project,

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
	where there are some other alternatives to minimise hardship such as accessing to casual labours or family owned implements.	target villages are to be selected from ones at remote area and with less population. These villagers should be invited for attending the Field day. **(A-9)**
Improvement of livelihood	• Women farmers with smaller land less than 0.5 ha have a possibility to expand their land size up to 0.7 ha with the project.	⇒ Targeting smaller size farmers could give better cost benefit ration, and also contribute more to poverty mitigation. **(A-9)**
	• On the other hand, women with more than 0.7 ha may be difficult to achieve additional land expansion with the introduction of animal traction.	⇒ Priority should be given to the villages where there is no other alternative to reduce hardship of agricultural practice. **(A-9)**
	• As far as the training on animal traction is conducted just before using it on farm, even for only one season it gives positive impact on production.	⇒ A training to women on agricultural technique and a follow up by extension workers are to be more encouraged. **(All projects)**
Implementation structure	• NGOs have problems of scarcity of capable staff. They normally contract out to governmental departments when it comes to the technical aspects.	⇒ More participation of the extension workers in the projects is to be promoted whereas involvement of the NGO is reduced. **(All projects)**
	• Only a few NGOs have their branch offices in URD, and such branch offices normally face problems of personnel and infrastructure.	⇒ If they are to be involved, those with active local branch are to be selected as partners. **(Programme B and C)**
	• There are few interchanges of information between the NGOs/CBOs and Extension workers.	⇒ This is to be incorporated into the program of coordination skill development and continue to be fully promoted. **(Programme A and B)**
	• Ability in project management including reporting of progress to the central government or to funding organisations, financial arrangement etc. has been strengthened, but not yet reached a satisfactory level.	⇒ One of the most efficient approaches could be that the Divisional Agricultural Office implements projects. Considering extension workers available and also their expertise, at least, a few staff concentrating on a project should be appointed from the central government. **(All projects)**

IV Vegetable Production, Processing and Preservation Project

4.1 Objective

Problems of malnutrition and food shortage occur in villages during the rainy season. Vegetables are regarded as the strategic products to overcome the problem. In this regard, there are gardening activities being implemented for women at the verification sites. However, women involved in vegetable production do not always gain much income from them. This is because vegetables easily perish, and lack of access to markets results in losses to farmers. To address them, in this project, training on compost making, preservation and processing techniques were offered.

4.2 Involved Personnel

4.2.1 Roles of Stakeholders

The main stakeholders comprised of farmers, staff of the DAS office including SMS and field extension workers, and the Study Team. Farmers, as the principal beneficiaries of vegetable production, held village or group (kafo) meetings as implementation progressed. The staff of DAS (SMS and Extension workers) have been regular and frequent visitors to the sites. In fact the field extension workers visited sites almost daily during the production season to ensure that the project production activities are undertaken efficiently and on time.

Table 4.1 Role of Each Stakeholder

Farmers	DAC office	The Study Team
Conducting Discussions on; ・Cost sharing (5% of fence cost, well digging cost and hand pump cost) ・Plots demarcation to selected members ・Land cleaning and fencing activities ・Benefit sharing (among group)	Particularly active in; ・Regular monitoring ・Technical advice to farmers and groups ・Skills training in vegetable production through method demonstrations and farmers participation in all the production operations.	Particularly active in; ・Procurement of the equipment and materials (at initial stage, procured materials as follows) ・Regular monitoring ・Technical advice to farmers and groups

4.2.2 Beneficiaries

The project intervention targeted 0.25 ha vegetable schemes in Fatoto, Touba, Mansajang and Kossemar and comprised of 25 participants in each village of Fatoto, Mansajnag, and Kossemar, and 28 in Touba, selected by the communities themselves. The project purchased fencing materials for 1 ha to be able to accommodate the non-selected farmers to undertake vegetable production in the same communal garden. This is because one of the objectives of the verification project is to observe the impact made by this intervention on the non-selected

farmers. The following table presents details of the composition of beneficiaries, sizes and number of beds, and crop status by site.

Table 4.2 Number of Beneficiaries and Garden Status

Site (village)	Number of beneficiaries	Size of beds	Number of beds per beneficiary	Status of Crop
Fatoto	25 women	1m by 5 m	10 (250 beds)	Tomato, cabbage, onion, bitter tomato etc
Touba	28 (26 women and 2 men)	1m by 5 m	13 beds (men 10) (293 beds)	Onions, cabbage, okra, tomato etc
Mansajang	25 women	1m by 5 m	9 (225 beds)	Cabbage, okra, egg plant, tomato, onion etc
Kossemar	25 women	1m by 5 m	10 (250 beds)	Egg plant, cabbage, onion, okra, tomato, Pepper etc

4.3 Inputs

4.3.1 Summary of the Inputs

Before implementing the project, several inputs were introduced, as shown in the following table. Material inputs were provided by the Study Team only in the first year (2003), and then the farmers arranged inputs by themselves from the following years.

Table 4.3 Summary of the Inputs

Site	Village	Target
	Fatoto	1 group 25 persons per group Total area 0.25 ha
	Touba Tafsir	1 group 28 persons per group Total area 0.25 ha
	Mansajang Kunda	1 group 25 persons per group Total area 0.25 ha
	Kossemar Tenda	1 group 25 persons per group Total area 0.25 ha
Schedule	**First Cycle** 1) preparation：Nov. 2003～Feb. 2004 2) implementation：Dec. 2004～Mar. 2004 **Second Cycle** 1) preparation：Nov. 2004～Feb. 2005 2) implementation：Dec. 2005～Mar. 2005	
Personnel	**The Gambian side** 1) Farmers 2) DAS Extension Workers (DAC, ADAC, SMS, VEW) etc.	**JICA side** 1) The Study Team
Necessary Inputs	**The Gambian side** **First Cycle** Farmers 1) Fencing Poles 2) Seeds 3) Labour DAS 1) Fuel and Gasoline for monitoring	**JICA side** **First Cycle** 1) Materials for fencing 2) Well 3) Hand pump (PB MarkII) 4) Water tank (2000 litres) 5) Fertilizer - Urea (2 bags/ha) - Compound (2 bags/ha) 6) Seeds 7) Materials for solar drier 8) Cooking utensils - Fuel and Gasoil for monitoring

Necessary Inputs	**Second Cycle** Farmers 1) Fencing Poles 2) Seeds 3) Labour DAS 1) Fuel and Gasoline for monitoring	**Second Cycle** None
Allocation to Villagers	Villagers compensated 5 to 10 % of invested equipments and materials, the condition of which was decided referring to the condition of other donors. This share of cost was kept in their bank account and used for their project management.	

4.3.2 Input Materials

The summary of input materials for each site is shown in the following table. All were provided in the first cycle. In the second cycle, The Study Team did not purchase any materials, and equipment with the seeds and fertilizers were provided by the farmers themselves to continue this garden activity.

Table 4.4 Input Materials for each site

Site(village)	Material for Fencing	Well	Pump(PB MarkII)
Fatoto	○	1	1
Touba	○	-	-
Mansajang	○	1	1
Kossemar	○	1	1

(1) Input Procurement and Distribution

In the first cycle, the Study Team purchased fertilizers (Urea 2 bags and compound NPK 2 bags for each site), seeds (okra, eggplant, bitter tomato, lettuce, sweet pepper, cabbage, hot pepper, carrot, onion, sorrel, tomato, green) and watering cans (10 cans for each site). Also provided were materials for vegetable processing and preservation comprising 1 set of cooking utensils and 1 set of vegetable dryer (Solar Dryer).

(2) Fencing

Fencing was requested by the communities to secure their crops against stray animals. In this regard, they requested that the project provide a strong and lasting fence with a partnership arrangement in which the communities contribute wooden poles and the Study Team provides the chain linked fencing materials. Fencing has been completed in Kossemar, Fatoto, Touba and Mansajang with chain linked material purchased and transported to the sites by AFET, the contracted NGO under the Study. The beneficiaries contributed to fencing poles and were assisted by the DAS office in transporting them to the sites.

(3) Wells and Reservoir Construction

Well digging and reservoir construction were requested by beneficiaries to address the constraints related to water during vegetable production and to complement several wells installed before at the sites. As Touba had sufficient wells, no watering facilities were provided. All the wells were dug in the 3 sites, being fitted with hand pumps once they attained the required depth of water.

Table 4.5 Number and Status of Wells and Reservoirs

Site	No. of wells	No. of Reservoirs	Status
Fatoto	1	1	Reservoir constructed and well with depth of 12 metres
Kossemar	1	1	Reservoir constructed and well with depth of 10 metres
Mansajang	1	2	Well with depth 8 metres to which one reservoir is connected

4.3.3 Contributions

Farmers agreed to contribute to the revolving fund, which was utilized for purchasing materials for the next season, by saving a proportion of the income gained from selling the produce. This amount of contribution is shown in the following table.

Table 4.6 Farmers Contribution

Site (Village)	Number of the member	Contribution Amount in 2003/2004		Contribution Amount in 2004/2005	
	farmers	D/member	Total Dalasi	D/member	Total Dalasi
Fatoto	25	160	4,000	100	3,000
Touba	28	214	6,000	-	-
Mansajang	25	-	-	5/week	-
Kossemar	25	112	2,800	-	2,900

Though several inputs were provided by the Study Team in the first cycle, the team mainly focused on the technical transfer during the second cycle. Thus, the inputs were supposed to be provided by beneficiaries through utilizing revolving fund, as well as several other issues that were supposed to be solved by the group and extension workers.

Some villages could not achieve high yield due to damages by pests and diseases. These damages were the most severe on tomato and eggplant, and hence there was a necessity to diversify the crops planted. Despite the above caution, beneficiaries in Touba, who planted a lot of onions, did not observe severe pests and diseases damages. Meanwhile, farmers in Mansajang did not sell much and consequently their income from the vegetable scheme was very low, and it was impossible to collect contributions in the first cycle. In Fatoto, the production was not so high, but contributions were collected from each member.

4.4 Schedule

The project was conducted as the following schedule. Vegetable productions were conducted both in the first year (2003/2004) and the second year (2004/2005)

Table 4.7 Work Schedule of the Vegetable Project

		2003			2004								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Preparation of schedule	DAS and The Team												
Sensitisation workshop	DAS												
Identifing NGO	The Team												
Modification of schedule	DAS and The Team												
Purchasing items	AFET(NGO)												
Well Digging	AFET(NGO)												
Nursery Period	DAS												
Cultivation	DAS												
Compost Training	DAS and AFET												
Training for Neem	DAS												
Training for Processing	DAS and AFET												
Harvesting	DAS												
Participatory Evaluation	DAS												

		2004			2005								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Nursery Period	DAS												
Cultivation	DAS												
Compost Training	DAS and AFET												
Training for Neem	DAS												
Training for Processing	DAS and AFET												
Harvesting	DAS												
Participatory Evaluation	DAS												

4.5 Activities and Outputs

Major activities of the project were vegetable production, processing and preservations, based on trainings. In this section, 1) preparation, before verification implementations 2) trainings, that are compost, integrated pest management (IPM), processing and preservation, and 3) results of vegetable productions are discussed.

4.5.1 Preparation

In the first cycle of the verification project, fencing was settled at four sites by beneficiaries and well digging at three sites, excluding Touba, was conducted. In addition, in the first cycle, fertilizers, seeds, watering cans, materials for processing and preservation, were provided by the Study Team. Then, the vegetable production was performed by farmers, using input materials. In the second cycle, there were no inputs from the Study Team. Farmers continued vegetable production using first cycle inputs, collecting and arranging other inputs by themselves.

Technical manuals on compost making, integrated pest management (IPM), and processing /

preservation are shown in the Appendix 4.1.

4.5.2 Trainings

4.5.2.1 Selection of Trainings

In this project, training on Compost Making, Food Preservation and Processing and Integrated pest management (IPM) were offered. All the trainings were relevant and within the capacities of farmers to accept and adopt.

The subject and frequency of the trainings are presented in the following Table.

Table 4.8 Frequency of the Trainings

Trainings	Frequency	
	2003/2004	2004/2005
Compost	4	7*
IPM	4*	4*
Processing/Preservation	4	1*

*Done by only SMS or extension worker

4.5.2.2 Training on Compost Making

(1) Objective

The objective of using compost for vegetable production is to improve soil fertility and consequently to attain improved production both in yield and quality. In this sense, training on compost making was conducted

(2) Schedule

In the first production cycle of 2003/2004, training was conducted four times at the four verification sites, and in the second cycle, it was conducted seven times at the four verification sites, Banjul, Basse, and SMS's backyard.

Table 4.9 Schedule of the Compost trainings

	First Cycle (2003/2004)		Second Cycle (2004/2005)	
Place	Fatoto	2004 January ～	Fatoto	2004 October ～November
	Touba	2004 January ～	Touba	2004 October ～November
	Mansajang	2004 January ～	Mansajang	2004 October ～November
	Kossemar	2004 January ～	Kossemar	2004 October ～November
			Banjul	2004 June 9 ～
			Basse	2004 June 16 ～
			SMS	2004 June 13 ～
Total	4 times		7 times	

(3) Participants

The number of the training participants is shown in the following table. All the participants who

attended the trainings replied that they understood the contents of the trainings. In addition, 80 people in the first cycle and 2 people in the second cycle gained the information from the farmers who directly attend the trainings.

Table 4.10 Participants to the Compost trainings (Unit : Person)

Cycle	Content	Fatoto	Touba	Mansa-jang	Kosse-mar	Total
First Cycle	No. of participants	5	5	5	5	20
	No. of participants who understood the contents of the training	5 (100%)	5 (100%)	5 (100%)	5 (100%)	20
	No. of farmers who obtain information from the trained farmers	35	0	N/A	45	80
	No. of farmers who continued the training method	40	0	0	70	110
	No. of farmers who are intending to continue the training for the next cycle	25	28	25	25	103
Second Cycle	No. of participants	16	17	17	15	65
	No. of participants who understood the contents of the training	16 (100%)	17 (100%)	17 (100%)	15 (100%)	65 (100%)
	No. of farmers who got information from the trained farmers	2	0	0	0	2
	No. of farmers who continued the training method	18	5	4	5	32

Note : Though the trainings were also conducted at Basse, Banjul, and SMS's house, the results are not included in the above table as these were only demonstration trainings.

(4) Inputs

Inputs for compost training are shown in the following tables. Table 4.11 shows the materials used and their amounts in the four verification sites, and Table 4.12 shows the summary of demonstration compost making in the three sites besides the verification sites.

Table 4.11 Material for compost making at four sites

Material	2003 / 2004	2004 / 2005
Rice bran	4 bags	-
Cereal husk	4 bags	-
Cereal Husk(rice mille sorgam)or Ground Nuts husk	-	15 bucket
Animal dung(Cow, Sheep, Goats Chicken)	2 bags	25 bucket
Top soil	some	5 bucket
Animal Bone(lime)	2 bags	-
Hemp cloth(cloth)	-	-
Dry soft grass	-	5 bucket
Urea (Ash, Chicken Manure)	-	5 teaspoon
Vinegar	-	5 teaspoon
Sugar	-	20 teaspoon
Water	some	20 little

Table 4.12 Summary of Compost Trial in three sites besides verification sites (2004/2005)

	Banjul	Basse	SMS
Materials and Amount (Replacements)	Sow dust 400kg Animal Manure 500kg Top Soil 100kg Urea 1kg Sugar 1kg Vinegar 0.5kg Water 40L	Animal Dung 10 kg Dry soft glass 5 kg Cereal Husk 5 kg Ash small amount Vinegar small amount Sugar small amount Water 10L	Rice husk 4 bags Groundnut Husk 4 bags Animal Dung 2 bags Top soil Water 10 buckets
Replacements	Sow dust→soft grass, Cut rice straw, cereal host or ground nuts host	Vinegar → Sour milk Urea → Chicken Waste	-
Heap or pit	Pit (0.2m depth, 2m wide, 4m long)	Pit	Heap
Period	2 weeks (14 days)	4 weeks	11 days
Advantage	No mixing after Preparation	No need to mix	2 weeks only composting
Disadvantage	Need for mixing well before put into the pit.	-	Need to mix every two days, Very laborious
Remarks	We used plastic sheet to cover the compost to avoid rain.	-	For dry season we don't need cover sheet but control the moisture of Compost to avoid drying.

(4) Procedure

There are various ways in making composts; 1) quick compost making, 2) heap compost making and 3) general compost making.

Mainly quick compost making was demonstrated at the verification sites and heap compost making was demonstrated at Banjul, Basse, and SMS's backyard, though heap compost making was also demonstrated at some of the verification sites.

(5) Results

The training on compost making was conducted in all the four sites by DAS office and AFET in the first cycle. In the second cycle, training was conducted in all the four sites by only DAS. Also compost making trial in rainy season was conducted at Mansajang in June 2004. The contents of the trainings covered materials required, procedures and the importance and usefulness of compost.

The use of compost is not only another means of fertilizing the soil but also maintaining a good soil structure. The increment of organic matter from composting can improve the soil condition in terms of structure, circulation of water, air and nutrients. Compost added to sandy soils increases the water retention capacity, water therefore stays longer in the soil and thus remains available to plants for a longer time even in drought periods.

The training was conducted in two phases; 1) theoretical and 2) practical for farmer participants.

Thus while 80% of the participants was devoted to practical compost preparation, the rest 20% was on lectures and discussions.

Compost Making at Fatoto

Compost Making at Basse

4.5.2.3 Training on Integrated Pest Management (IPM)

(1) Objective

Neem was found to be very effective in the control of many insect pests especially in Gambian vegetable production. Hence chemical use in the alleviation and control of pest and diseases is not easily accessible in the area even where it is accessible the handling and use could pose some threat and risk to human, livestock and even our environment. Therefore for food production and productivity, it is importantly advisable to engage upon the use of easily available local resources within the concept of IPM.

(2) Schedule

A four days refresher training on IPM concept preparation of neem extract as local formulation or product was successfully completed in the four verification sites.

Table 4.13 Schedule of the IPM trainings

Year	2003/2004		2004/2005	
Place	Fatoto	2004 / July	Fatoto	2005 / January / 31
	Touba	2004 / July	Touba	2005 / January / 31
	Mansajang	2004 / July	Mansajang	2005 / February / 7
	Kossemar	2004 / July	Kossemar	2005 / February / 8
Total No.	4 times		4 time	

(3) Participants

This refresher training was conducted in the four sites both in the first and second cycle. The details are shown in the following table. In this training also, all the participants replied that they understood the contents. The number of the farmers who got the information from the

trained farmers exceeded the trained farmers, and they were 33 people in the first cycle and 15 in the second cycle.

Participants were located in the four verification sites, and they were exposed to brain storming group discussion, demonstration and practical exercise which were prepared during the training.

Table 4.14 Participants to the IPM Trainings (Unit : people)

	Content	Fatoto	Touba	Mansajang	Kossemar	Total
First Cycle	No. of participants	25	28	13	25	91
	No. of participants who understood the contents of the training	25 (100%)	28 (100%)	13 (100%)	25 (100%)	91 (100%)
	No. of farmers who got information from the trained farmers	15	2	16	0	33
	No. of farmers who continued the training method	40	6	29	0	75
	No. of farmers who are intending to continue the training for the next cycle	25	28	24	24	102
Second Cycle	No. of participants	12	10	9	8	39
	No. of participants who understood the contents of the training	12 (100%)	10 (100%)	9 (100%)	8 (100%)	39 (100%)
	No. of farmers who got information from the trained farmers	15	0	0	0	15
	No. of farmers who continued the training method	27	6	6	3	42

(4) Inputs

For IPM liquid, mostly local materials were used, and they were;

Neem seeds, Neem leaves, Jalo (Mahogany) back, Neem back, Benefing Jongo (Grass) Garlic, Hot pepper, Groundnut oil, Kerosene, Laundry soap etc

There were also other materials which were called active ingredients and these were;

Table 4.15 Materials for IPM

Materials	Quantities
Water	10 litter formulation
Empty Bottles	15 (3 per site)
Pepper and garlic	2 Kilos
Laundry soap	3 Bars per site
Pepper	1 Pepper

(5) Procedure

Firstly, general information on the effective use of local material for pest management was introduced to the farmers. Followings are the topics provided.

- The IPM concept

- Identification of local materials of different types
- Preparation of water base solution as local formulation

Secondly, liquid for IPM was produced together with SMS and farmers.

Steps followed in the preparation process are as follows;

1) one bulb of garlic was crushed
2) one handful of pepper was crushed
3) one bar of laundry soap and ten litters of boiled neem leaves were mixed with the materials above sieved into fine solution of formulations

The application techniques are as follows;

1) apply the product in every two days interval after watering both morning and evening
2) use hand pump sprayer when available
3) use watering cans to spray on the vegetables
4) use local brooms to sprinkle on the plants
5) use local calabas to splash on the plants etc

(6) Results

According to the SMS concerned, trainings made positive impact. When farmers continue application of the products, it can definitely boost the crop yield and safe both human and animal lives. It also enhances female farmers particularly, to attain more knowledge and skill in the safe use of chemicals in vegetable production schemes.

It is recommended that 1) farmers should continue the preparation of these local formulations as water base solution, 2)farmers should apply the product regularly, and 3) proper sanitation of the schemes should be maintained.

Table 4.16 Remarkable Observations

Crop	Name of Insect or Disease	Part Affected	Period Affected	Symptoms	When to Apply
Tomato	Aphids TMV White flies	Leaves or fruits	flowering and fruiting phase	fruits get rot leaves coiled	seedlings phase
Bitter tomato	Aphids virus	Leaves and fruits	vegetative and flowering phase	Virus sucked the sharp from the leaves	seed treatment and uproot the had plant
Okra	Leaves beetles	The leaves are perforated	vegetative phase	The leaves are perforated	At seeding and vegetative
Cabbage	Cabbage head borer	Bulb or the head	Bulb formation phase	The head becomes rot	At vegetative phase
Sorrel	Leave beetles	Leaves	vegetative phase	Leaves are perforated	At seedling and vegetative

4.5.2.4 Training on Processing and Preservation

(1) Objective

Processing and preservation of fruits and vegetables tend to be major issue for the producers in URD, as a result most harvested produce perish shortly after harvest.

In light of the above, knowledge and skills in processing and preservation are pre-requisite in securing income, as the attractiveness to the local markets would be greater than unprocessed and unpreserved produce that perish within a short period.

Processed and preserved products go a long way in addressing quality foods for the community and farm families thus cutting down cost in buying essential food.

Major objectives of the training are

- ✓ To provide training for vegetable growers on modern processing and preservation techniques
- ✓ To expose vegetable growers better manage and store produce for longer time
- ✓ To strengthen the capacities of vegetable growers on modern processing and preservation techniques
- ✓ To enhance a conducive learning environment for vegetable growers and group management and mobilization

(2) Schedule

In the first cycle, training was conducted four times at the four sites.

In the second cycle, it was conducted only at Fatoto, as there was a strong demand from the farmers at the site.

Table 4.17 Schedule of the Processing and Preservation trainings

	2003/2004		2004/2005	
Place	Fatoto	2004 October	Fatoto	2005 February 24 – 27 (4 days)
	Touba	2004 October		
	Mansajang	2004 October		
	Kossemar	2004 October		
Total No.	4 times		Once	

(3) Participants

The number of participants was 101 in the first cycle and 30 in the second cycle.

Table 4.18 Participants to Processing and Preservation Training (Unit : people)

	Content	Fatoto	Touba	Mansajang	Kossemar	Total
First Cycle	No. of participants	25	28	23	25	101
	No. of participants who understood the contents	25 (100%)	28 (100%)	23 (100%)	25 (100%)	101 (100%)
	No. of farmers who got information from the trained farmers	30	25	2	45	102

	Content	Fatoto	Touba	Mansajang	Kossemar	Total
	No. of farmers who continued the training method	15	2	0	70	87
	No. of farmers who are intending to continue the training for the next cycle	25	28	25	25	103
Second Cycle	No. of participants	30	-	-	-	30
	No. of participants who understood the contents	30 (100%)	-	-	-	30 (100%)
	No. of farmers who got information from the trained farmers	15	-	-	-	15
	No. of farmers who continued the training method	30	15	6	20	71

- : Trainings were not conducted

(4) Inputs

In the first cycle, method to make tomato paste and pepper source were demonstrated at four sites. In the second cycle, the training was conducted in Kassi Kunda village and Fantumbu village, respectively. All aimed at strengthening the capacities of vegetable growers.

Table 4.19 Topics at Fatoto in the second cycle (2004/2005)

Date and Time	2005 February 24 10:00 – 16:15	2005 February 25 10:00 – 16:15	2005 February 26 10:00 – 16:15	2005 February 27 9:00 – 14:00
Participants	• Adama Sidibeh • Seray Baldeh • Hagi Camara • Salimata Camara • Mariama Drammeh • Jari Baldeh • Habie Baldeh	• Hadijatou Jallow • Hulaymatou Jallow • Gibba Jallow • Fatou Sanyang • Jainabou Jallow	• Fatou Touray • Fatou Drammeh • Fatou Sanyang • Maimuna Danso • Fatou Bah	• Ramatoulie Jallow • Fatou Jallow • Kajatou Camara • Oumie Bah • Oumie Faye
Material and Quantity	• Tomato 11.4kg • Salt 3 table spoon	• Tomato 15 kg • Salt 3 table spoon	• Tomato 15kg • Salt 3 table spoon	• Tomato 9 kg • Salt 3 table spoon
No. of Products	3 bottles (weight 1.85kg)	4 bottles	4 bottles	2 bottles
Topics	• Hygiene • Effects of micro organism (bacteria, fungi) • qualities of product and training materials and storage condition • Sterilizations (why and how) • Processing and preservation techniques • Marketing constraints	• Proper Hygiene • Effects of micro organism (bacteria, fungi) • Store and storage condition • Product type and quality • Sterilizations (why and how) • Bottle type and condition	• Hygiene • Effects of micro organism (bacteria, fungi) qualities of product and training materials storage condition. • Sterilizations (why and how) • Processing and preservation techniques • Marketing constraints	• Hygiene • Effects of micro organism (bacteria, fungi) qualities of product and training materials storage condition. • Sterilizations (why and how) • Processing and preservation techniques • Marketing constraints

Questions and Answers	No questions were raised from farmers. The topics dealt with were clearly stated by the resource person and the demonstration was simple and precise.	Question: Can small tomatoes be process to tomato paste? Answer: Not only fresh and big tomatoes can be process in to paste. Small tomatoes are not fleshy.	No questions were raised from farmers.	Question: How long can the product be stored? Answer: Under proper processing and storage condition, the product can be kept for 3 months.

(5) Procedure

As vegetable processing and preservation had effectiveness in both improving nutrition and income increase, firstly its utility and effectiveness were explained to the farmers. Then, methods were conducted together with the participants, and concluded.

(6) Results

Impression of farmers was clear that processing and preservation of their vegetable produce enable their income to increase as a result of reduction in vegetable and fruit losses. They also pointed out the availability of quality food during the off-season when they were not available and when they had to save money for them. In short, it is an income generating activity for sustainability of the vegetable growers in the garden.

The training ended successfully in Fatoto. For processing tomato paste, 50.4 kg of tomato fruit was used and 15 bottles with an average weight of 0.6 kg and was sold at 25 Dalasies per bottle. The processing of tomato was time consuming, though it is cheaper than other process of other recipe. The training was slightly late hence fresh ripen tomato fruits were scares during the training period. It was very crucial to schedule this training as soon as fruits start to ripen.

The difficulty of this training was a lack of proper enclosed site for the processing and preservation. An open environment may expose processed products to be contaminated, reducing the quality and the duration if to be preserved longer.

The continuity of the activity depends greatly on the availability of proper equipments, materials and an enclosed site with a wider range of training on other recipe development.

4.5.2.5 Results of the Trainings

Though the number of direct beneficiaries among the four verification sites was 103 people, it was more than 600 people-days in total number of beneficiaries, who got information from trained farmers from neighbouring farmers and villages. The project intervention targeted 0.25 ha vegetable schemes in Fatoto, Touba, Mansajang and Kossemar, and comprised of 25 participants in each of the sites (except 28 in Touba Tafsir), selected by the communities

themselves. The project purchased fencing materials for 1 ha to be able to accommodate the non-selected farmers later for the vegetable production at the same communal garden. This was because one of the objectives of the verification project was to observe the impact made by this intervention on the non-selected farmers.

Table 4.20 Number of farmers who got information from trained farmers (Unit: People)

	Fatoto	Touba	Mansajang	Kossemar	Total
Compost	37	0	0	45	82
IPM	30	2	16	0	48
Processing/Preservation	45	25	2	45	117
Total	112	27	18	90	247

SMSs and extension workers participated in the trainings as facilitators or assistants, also conducting some training.

Through these trainings, SMSs and extension workers prepared training manuals. These are very useful for technical transfer not only to farmers, but for training other extension workers.

This manual is useful for continuous training activities by farmers themselves requiring occasional assistance from extension workers.

The manuals prepared by project include the following;

- Quick compost making manual prepared by SMS Horticulture
- IPM manual (use of neem extract) prepared by SMS Pest Management
- Training Programme for Processing and Preservation prepared by the Extension Worker from Food and Nutrition Unit

4.5.3 Production

(1) Production and Yield

After the first cycle, evaluation workshops were conducted at the four verification sites in October 2004. Some stated that they could not start the project on time, while others could not achieve sufficient production due to outbreak of pests and diseases, and lack of weed control. In Touba, farmers aspired to attain high income by selling their produce through middlemen.

In February 2005 during the second cycle, evaluation workshops were conducted again, although the harvest was not yet completed. During this second cycle, the direct intervention of the Study Team was minimized as much as possible; therefore, farmers encountered some difficulties in getting seeds. Consequently in some villages, farmers delayed seeding and germination of seeds was poor, such that some of the farmers seeded again. Although such constraints were encountered, farmers generally participated actively in the group garden; particularly in Fatoto, they showed very positive results.

In July 2005 after the second cycle, final evaluation workshops were conducted. Farmers

continued using the group gardens and it was observed that some farmers had the capacity of cultivating, controlling, and maintaining their group garden themselves. However the difficulties in access to the seeds and lack of water persisted in some villages with farmers confronting their constraints and trying to develop strategies of solving them.

Outputs of vegetable production and processing projects are shown in the following section. In Mansajang, farmers could not harvest during this period, because animals damaged the seeds and seedlings.

The types of vegetable grown and their quantities varied according to villages. Amount and types of produced vegetables by each verification site are shown in the following graphs. It could be observed that only total productions were recorded in the first cycle, while data on total production, consumption and marketed volumes were recorded in the second cycle.

From the graphs, following characteristics of each verification site can be observed;

a) All the four verification sites encountered constraints with regards to access to the seeds. Currently most of the seeds and fertilizers available as they are provided by DAS; however in the long run, it is necessary for farmers to find their own way to get seeds sustainably. Some farmers already crossed the border to Senegal to acquire cheaper and greater choice of various seeds.

b) In Fatoto, where the underground water level is about five meters from the land level and farmers do not have private gardens, group garden was actively promoted, planting various kinds of vegetables for both consumption and sale. It is noteworthy that production and sale of vegetables increased, and accordingly the consumption of these products particularly by needy groups such as pregnant mothers and children improved markedly.

c) In Touba Tafsir, where the underground water level is very shallow, anyone can easily have their own well by digging a few meters; consequently, many people have their own private garden to grow various vegetables and utilize the group garden uniquely to produce onion mainly for sale.

d) In Mansajang, which is located close to the regular market of Basse and where the underground water level is about three meters from the land level, many young farmers do not have a strong eagerness to participate in group farming, and consequently maintenance of the group garden was not conducted on a regular basis.

e) In Kossemar Tenda, where the underground water level is relatively deep, it is difficult to access enough water for vegetable production. Furthermore, most of the vegetables produced were consumed. As it is difficult to find reliable marketing channels, farmers in Kossemar generally resort to the marketing in groups.

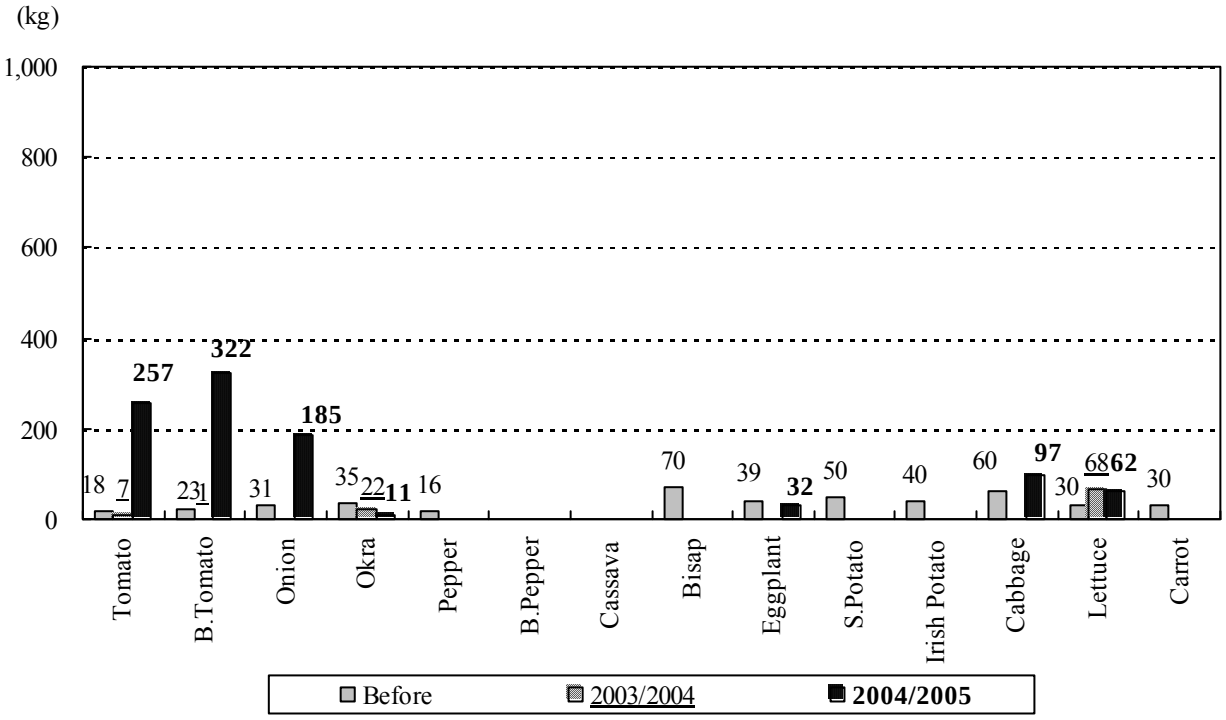


Figure 4.1 Production Changes in Fatoto

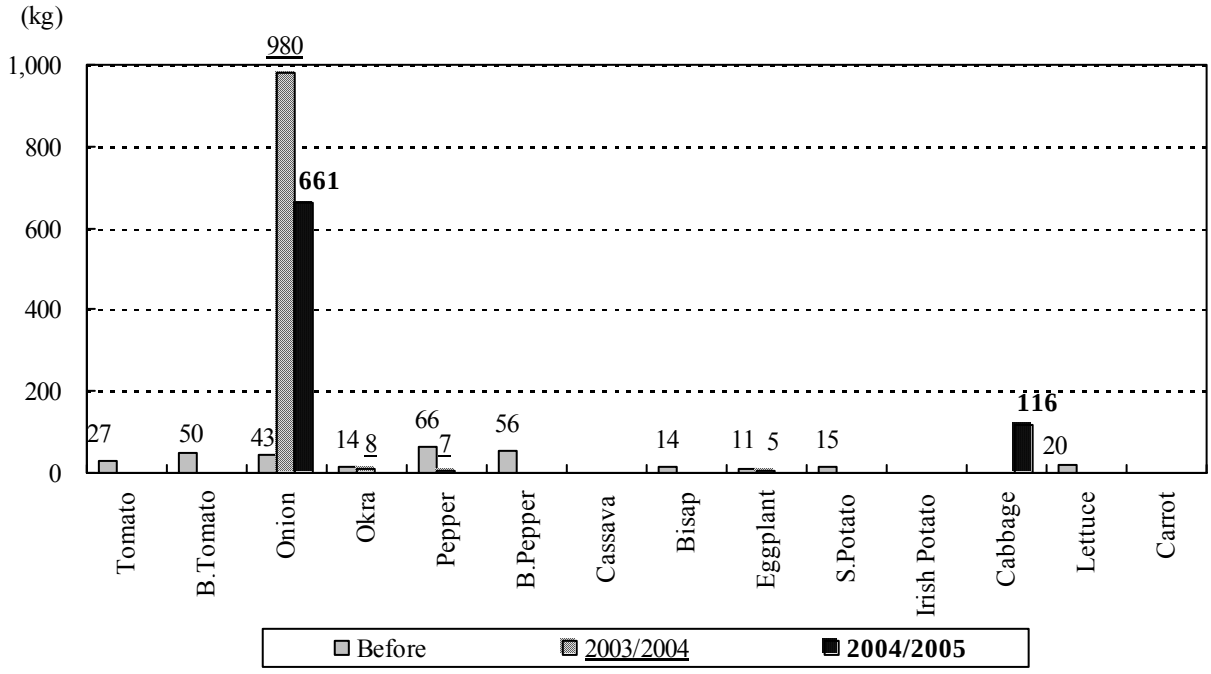


Figure 4.2 Production Changes in Touba

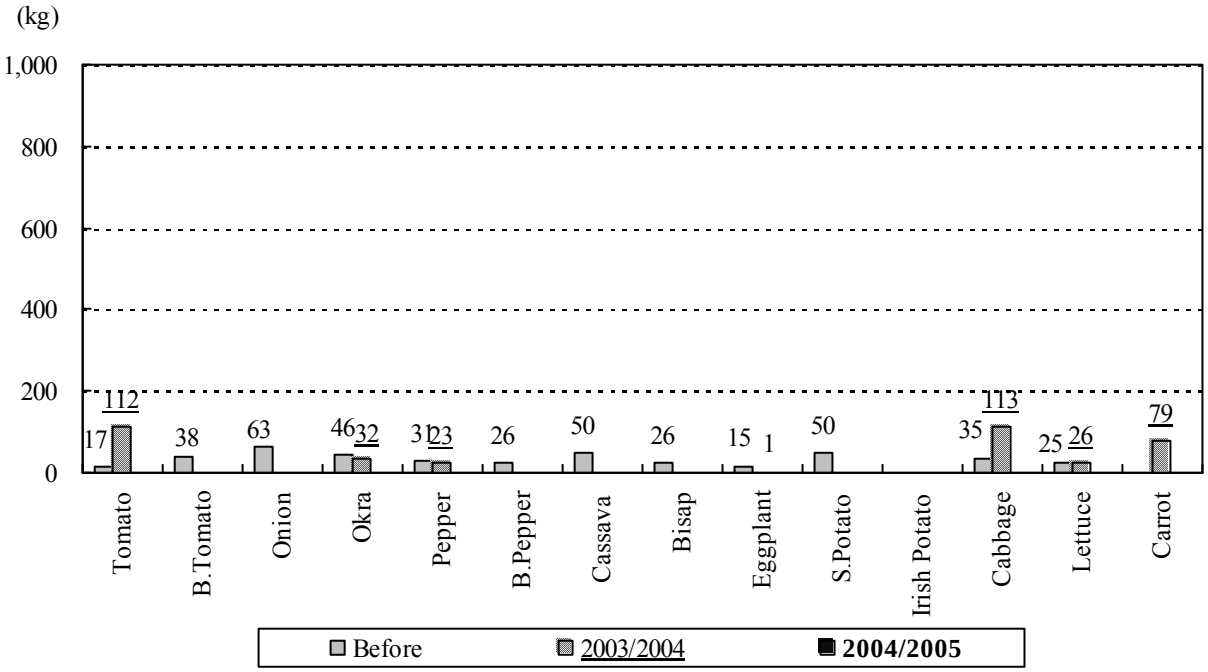


Figure 4.3 Production Changes in Mansajang

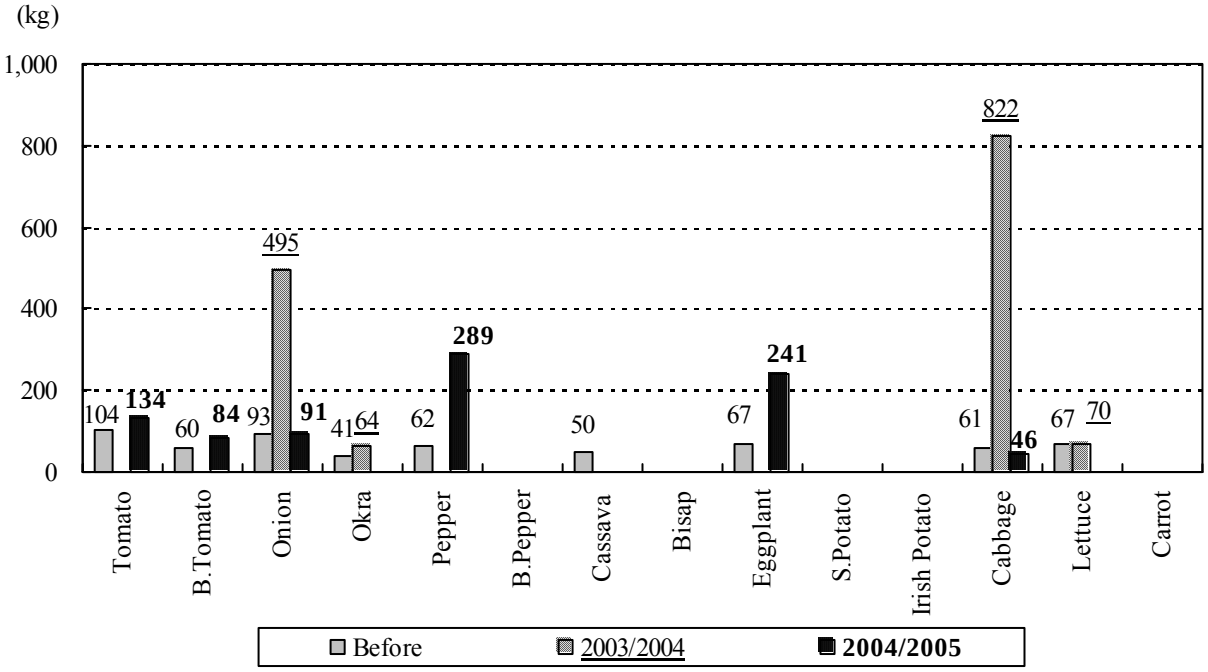


Figure 4.4 Production Changes in Kossemar

(2) Consumption and Sales

Based on the data from the second production cycle, "correlation between production and consumption" and "correlation between sellings and income" were analysed. As there was no production in Mansajang in the period because of damages by animals, the analyses were conducted for Fatoto, Touba and Kossemar. Production in Touba was greater compared to the two other villages, but the amount consumed was not so large, probably because only onion production was undertaken at this time. In Kossemar, about 80% of the produce were consumed at home, which is the highest rate among the three villages. In Fatoto, while greater part of produce were consumed at home, a lot was also sold at the market. During the first cycle, beneficiaries in Touba sold 80% of the produce, and achieved the highest income among the four verification sites. This is because farmers group in Touba had market information of what crops could be sold at higher prices at which market. Consequently they knew that vegetables could be sold at better prices in Vellingara in Senegal, located about 15km from Basse. Meanwhile in Kossemar, the farmers marketed in weekly market; however they had difficulty in selling their products at good prices due to the glut in the market

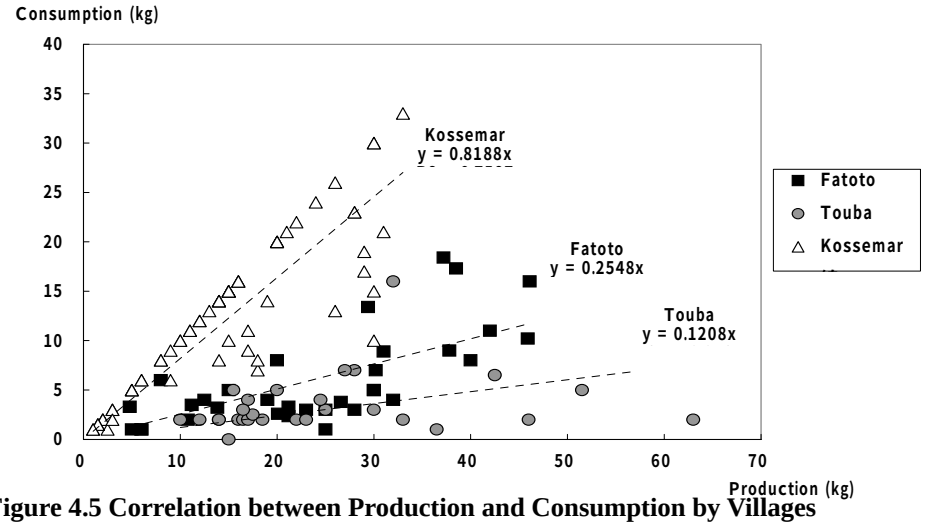


Figure 4.5 Correlation between Production and Consumption by Villages

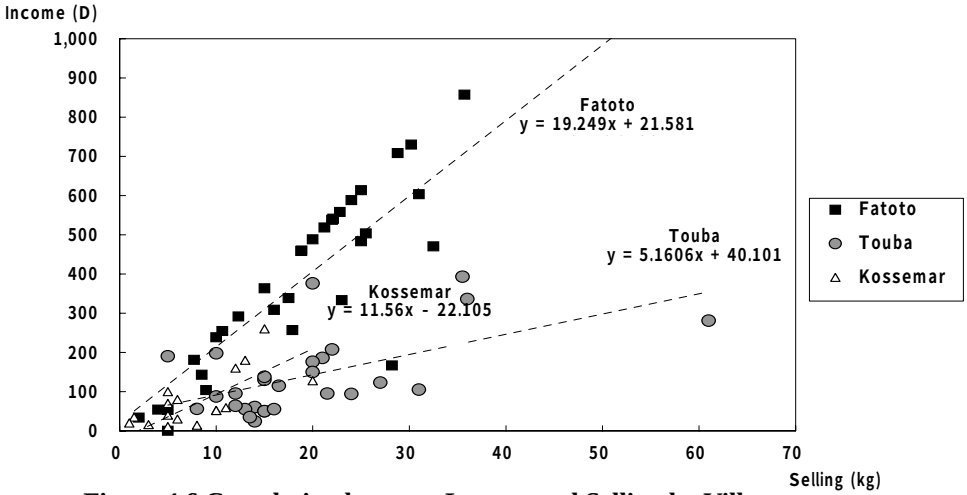


Figure 4.6 Correlation between Income and Selling by Villages

(3) Trends by Producing Products

Among the crops produced, okra registered the highest consumption rate, with about 90% of the production being consumed at home. As beneficiaries in Touba, focused on marketing their onions in Vellingara, total consumption of onion was registered as the lowest.

Among the vegetable produced, pepper attained the highest income due to the larger amount marketed.

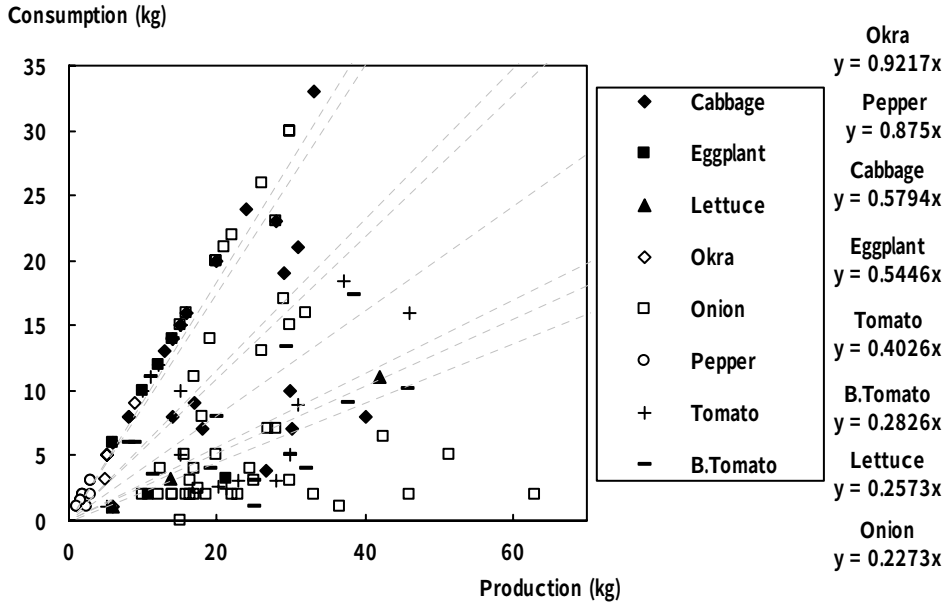


Figure 4.7 Correlation between Production and Consumption by Vegetables

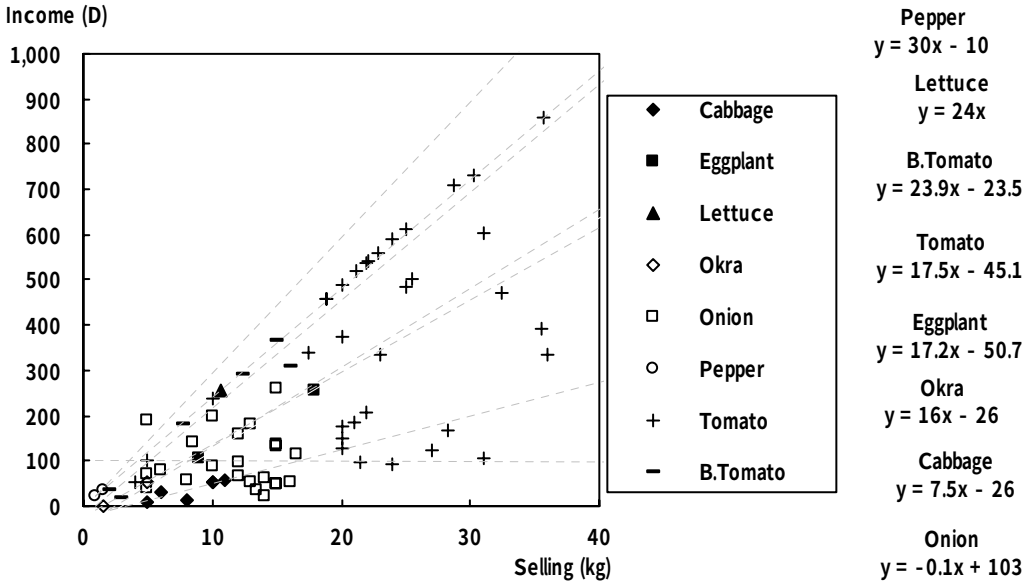


Figure 4.8 Correlation between Income and Selling by Vegetables

(4) Individual Survey

While production and marketing in each village were surveyed, survey on changes on individual beneficiaries in terms of household income sutuation was also conducted.

According to the individual household survey, while the income of some farmers declined, it increased for others. In general, for most people their incomes increased or did not decline after the project.

Through the vegetable production, many farmers in Touba obtained higher income than those in Fatoto.

Differences were also observed based on villages' characteristics. While farmers in Fatoto with smaller household sizes, increased their income drastically, those with large family sizes experienced decreased income. The reverse was the case among farmers in Touba, where those with larger family sizes increased their income.

Detailed results of the individual survey are shown in the Appendix 4.2.

Table 4.21

General Information on Interviewees

	Place	Age	No. of people to eat together
F1	Fatoto	40	10
F2	Fatoto	45	5
F3	Fatoto	40	50
F4	Fatoto	42	50
F5	Fatoto	35	50
T1	Touba	40	36
T2	Touba	30	10
T3	Touba	30	8
T4	Touba	40	9

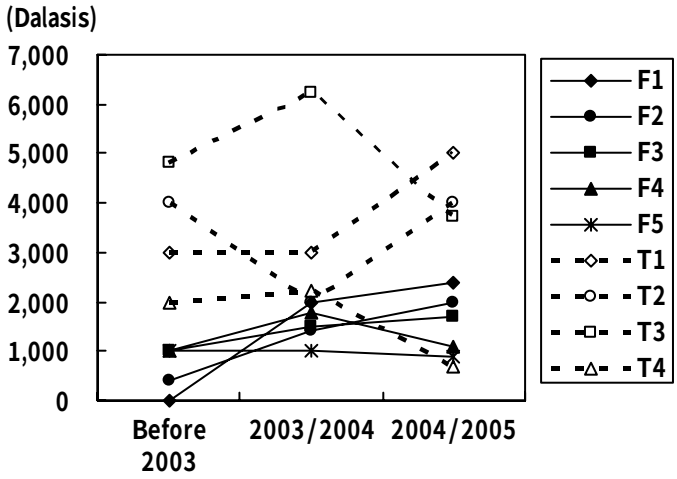


Figure 4.9 Income changes by farmers

All the interviewees had positive responses with regards to the following:

- Increased Income
- Increased consumption of vegetables
- Increased variety in types of Vegetable consumed
- Increased use of farm implements
- Greater interest in marketing
- Greater interest in bookkeeping
- Greater interest in new adopting improved technologies

4.5.4 Midterm Workshops

The objectives of mini-workshops before the starting the second cycle at the end of October

2004 were 1) to confirm the purpose of the trials, 2) to confirm the roles of villagers, extension officers and the Study Team, 3) to confirm the cultivation schedule, 4) to confirm the savings and members contribution.

From second cycle, farmers played an important role in vegetable production trials to keep the sustainability in the next season.

4.5.5 Evaluation Workshops

In order to evaluate the verification projects on vegetable production and processing, workshops were conducted in each verification site in the middle of July 2005.

(1) Vegetable Cultivation

Regarding the vegetables grown, beneficiaries in Fatoto, Mansajang, and Kossemar produced many different types, while those in Touba focused on producing only onions. The reason for this was that many farmers in Touba own private gardens, where they produce many other vegetables for home consumption. At the beginning of the project, people in Touba, mainly men, who had information on market, recommended the production of onions.

Beneficiaries in Touba and Mansajang expressed the desire to increase both the production and processing volume of crops, while those in Kossemar did not have strong eagerness for increase. In Mansajang, the youth were observed not to be very active in vegetable garden, while in Fatoto and Kossemar they were very active in gardening.

Table 4.22 Vegetable Production

	Fatoto	Touba	Mansajang	Kossemar
Year 2004/2005 Produce	Amaranths, Banana, Bitter Tomato, Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Pepper, Pumpkin, Sorrel, Tomato	Onion	Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Pepper, Sorrel, Tomato	Amaranths, Bitter Tomato, Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Pepper, Sorrel, Tomato,
[Rainy season]	Cassava, Okra, Sweet Potato			
Year 2005/2006 Produce	Apart from ones produced year 2004/2005, want to produce irish potato.	Apart from ones produced year 2004/2005, want to produce tomato, cabbage, lettuce, bitter tomato, large pepper and eggplant.	Apart from ones produced year 2004/2005, want to produce Irish Potato.	Same varieties as year 2004/2005.
[reason]	• Do not want to change so much, as the current produces are useful.	• Onion takes too long to be matured. • Diversify the produce.	• Year 2004/2005 produces were severely affected by insects/pests	• Familiarity with cultivation • Lack of seeds of other species

Table 4.23 Vegetable Processing

	Fatoto	Touba	Mansajang	Kossemar
Year 2004/2005 Processing	Tomato: Paste Pepper: Sauce Okra: Dried Sorrel:Jam,Chutney Amaranthus:Dried	- [From private garden] Tomato: Paste Pepper: Sauce	Tomato: Paste Pepper: Sauce and Pickles Chilly: Dried Moringa: Dried	Tomato: Paste Pepper: Sauce Sorrel: Jam Okra: Dried Amaranthus: Dried
Year 2005/2006 Processing	Apart from ones processed year 2004/2005, want to process dried eggplant and dried/powdered okra.	Apart from ones processed year 2004/2005, want to process pepper sauce, mango chutney, and tomato paste.	Same varieties as year 2004/2005.	Same varieties as year 2004/2005.

(2) Marketing of the produced vegetables

In all the villages middlemen or middlewomen existed, and they bought from producers only to resell in various surrounding markets. Farmers also sometime commuted or walked to sell within neighbouring villagers. In Kossemar, the marketing activities were conducted as group, while it was done individually in Fatoto and Mansajang.

With regards to their plans for next cycle, beneficiaries in Fatoto and Mansajang expressed eagerness to increase the marketed varieties.

Table 4.24 Marketing of produce

	Fatoto	Touba	Mansajang	Kossemar
Selling Produce in Year 2004/2005	Bitter Tomato, Cabbage, Lettuce, Okra, Onion, Tomato	Onion	Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Pepper, Sorrel, Tomato	Amaranths, Bitter Tomato, Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Sorrel Pepper, Tomato
Selling Place[*1]	1.Weekly market in Fatoto 2.Garawol: 6km 3.Turnal in Senegal: 17km	1.Weekly market in Dingri 2.Regular market in Basse 3.Through middlemen to Senegal 4.Neighboring villages: 1~2km	1.Regular market in Basse 2.Through middlemen	1.Weekly market: 15km 2.Through middlemen 3.Regular market in Basse: 25km 4.Neighboring villages (e.g. Bakadagi): 3km
Transportation Cost [*1]	1. D 0 by walk 2. D 10 by walk 3. D40 ~ 50 by car D10~60 by donkey cart D 0 by bicycle	1. D 10 by donkey cart D 0 by bicycle D 0 by walk 2. D 30 by car 3. D 0 by middlemen 4. D 0 by walk	1. D 0 by walk D10 by donkey cart [If the load is heavy, use donkey cart] 2. D 0 by middlemen	1.D 40 by donkey cart 2. D 0 by walk 3. D 50 by car 4. D 0 by walk

	Fatoto	Touba	Mansajang	Kossemar
Earnings	• No group selling • Individual selling	• Basically no group selling • Details are not sure	• No group selling • Individual selling	• Group selling
	Not processed ・Bitter Tomato D395～1,044 (2～6 pans) **Processed** ・Pepper sauce D75～630/person (2～12 bottles)	**Not processed** ・Onion D500/person (2pan = 23Kg)	**Not processed** ・Tomato D150 ・Tomato and Okra D200 **Processed** ・Not for marketing [Only for consumption]	**Not processed** ・Onions D20~25 **Processed** ・Tomato D625~1,250 /group (25bottles) ・Pepper D500~1,000 /group (20bottles) ・Sorrel D220/group (11bottles)
Changes of Selling Produce	• Apart from ones sold year 2004/2005, want to sell Irish potato.	• Same varieties as year 2004/2005.	• Apart from ones sold year 2004/2005, want to sell pepper, onion and processed products.	• Same varieties as year 2004/2005.
[reason]	• Irish potato is important • Want to sell through middlemen	• If better marketing channels are available, want to sell more	• Want to sell more varieties including processed vegetables	• Want to sell part of the production as usual

*1: The numberings in "Selling Place" correspond to those in "Transportation Cost".

(3) Consumption

Part of their produce was consumed in all the four verification sites. Overall vegetable consumptions increased in all the four verification sites after project implementation. Although it was difficult to have quantitative data on the incremental volumes some estimates were made and the overwhelming response was that the varieties of vegetables and the amount they consumed increased after the project. The consumption in Fatoto was estimated to have increased from 5 kg to 25 kg per family, and that in Touba was estimated from 20kg to 33kg per family, according to data of the first cycle.

While vegetables are now widely produced and consumed, few people have sufficient knowledge and skills on how to prepare them as balance diet.

It is noteworthy that produce were more consumed by pregnant women and children in Fatoto.

Table 4.25 Consumption

	Fatoto	Touba	Mansajang	Kossemar
Consumed Produce	Amaranths, Banana, Bitter Tomato, Eggplant, Lettuce, Cabbage, Carrot, Cassava Okra, Onion, Pepper, Pumpkin, Sorrel, Sweet Potato, Tomato	Onion [From private garden: Bitter Tomato, Cabbage, Eggplant, Lettuce, Okra, Pepper, Sorrel, Tomato]	Cabbage, Carrot, Eggplant, Lettuce, Okra, Onion, Pepper, Sorrel, Tomato [After the production period finish, buy from the market]	Amaranths Bitter tomato, Cabbage, Carrot, Lettuce, Okra, Onion, Pepper, [Bought: Onion, Pepper, Tomato]
Consumed Form	• With rice • Other vegetables in groundnut or oil	• Mixed with other food	• Mixed with other food	• Mixed with other food
Consumed People	• Whole Family [Especially, pregnant women and children]	• Whole family	• Whole family	• Whole family
Changes in Consumed Varieties	• Number of consuming varieties increased.	• Number of consuming varieties increased. [Increased varieties are pepper sauce, tomato paste, dried chilli, potato leaves, and amaranths.]	• Number of consuming varieties increased from that of before the project [Year 2003/2004 Increased, but Year 2004/2005 decreased]	• Number of consuming varieties increased as accessibility to seeds increased.
Changes in Consumed Amount	• Consumption amount increased in overall, especially vegetables.	• Consumption amount increased in overall.	• Consumption amount increased in overall. [Year 2003/2004 Increased, but Year 2004/2005 decreased]	• Consumption amount increased in overall.

*1: The result of cooked ratio is taken from Interim Report II, April.2004.

(4) Planting Strategies

All the four garden schemes had strategies based on the easy marketability of crops grown. While "short duration" and "high yielding" varieties had higher priority in Fatoto and Mansajang, "timeliness of marketing" was preferred in Touba and Kossemar, and in Fatoto "popularity or high demand in the market" was considered as the first priority.

Table 4.26 Planting strategies (selection of planting variety)

Points that farmers care		Fatoto	Touba	Mansa-jang	Kosse-mar
Cultivation	short duration	2		2	
	high yielding	3		1	
	familiarity				1
Consumption	nutrition improvement		2		4
Preservation	easiness in preservation	4			

Points that farmers care		Fatoto	Touba	Mansa-jang	Kosse-mar
Marketing	popularity or high demand in the market	1			3
	timeliness in marketing		1		2
Adaptability	adaptability to soil		3		5

Note: Numbers are the priority order. High priority = 1 > 2 > 3 ・・・

(5) Agricultural Techniques

Several improved agricultural techniques were transferred to beneficiaries during the project period through the trainings. These included compost which was considered to be cheaper than inorganic fertilizer as the materials were easily available leading to increased production. In view of these observations, three of the villages showed positive responses. The solar driers introduced for enhanced processing and preservation were used in Fatoto and Mansajang, but the number of the dryers provided was small therefore they were not enough for everyone to use timely.

Table 4.27 Usefulness of agricultural techniques

	Fatoto	Touba	Mansajang	Kossemar
Compost	Many farmers found its usefulness as it increased productivity.	Not many farmers found its usefulness, except one person.	Many farmers found its usefulness and continued practicing.	Many farmers found its usefulness and continued practicing.
Solar Drier	Many farmers found its usefulness. In the first year, low quality products were made with 4 big dryer, and in the second year, 1 small good dryer was used but produced amount was not enough. Dried products are for consumption.	Not many farmers found its usefulness.	Many farmers found its usefulness. Solar dryers are used for drying chilli, moringa, onion leaves.	Not many farmers found its usefulness because materials for dryers get damaged easily.

(6) Impacts

Beneficiaries in all the four verification sites indicated that their incomes increased. Though it was difficult to quantify these in monetary terms, they felt that their income increased by about five times in Fatoto and about ten times in Touba.

Table 4.28 Income Change

Fatoto	Touba	Mansajang	Kossemar
Increased (5 times)	Increased (10 times)	Increased	Increased

With respect to impacts on individuals, responses from all the four villages indicated “acquiring

knowledge for processing and preservation" and "acquiring production techniques" as positive impacts to individual. In Fatoto, "improvement in group cohesiveness" together with "increase in income" was highlighted. In Touba, "increase in food security" was mentioned.

Table 4.29 Impacts on individuals

		Fatoto	Touba	Mansajang	Kossemar
1	Acquiring knowledge for processing and preservation	Yes	Yes	Yes	Yes
2	Acquiring production techniques	Yes	Yes	Yes	Yes
3	Acquiring compost making techniques			Yes	Yes
4	Infrastructure improvement	Yes		Yes	
5	Increase in income	Yes			
6	Improvement in group cohesiveness	Yes			
7	Increase in food security		Yes		
8	Increase in access to seeds				Yes
9	Nutrition improvement	Yes			
10	Acquiring IPM techniques				Yes

With regards to impacts on groups, those in Fatoto, Touba, and Mansajang raised "improvement in group cohesiveness", whilst in Kossemar "conducing regular meetings" was mentioned. At the same time, Fatoto and Touba reported "success in increasing group income". Beneficiaries in Fatoto did not market vegetables before the project but market about 37 kg per family with the project, while those in Touba increased the volume marketed from 15 kg to 71 kg per family.

Table 4.30 Impacts on groups

		Fatoto	Touba	Mansajang	Kossemar
1	Improvement in group coherence	Yes	Yes	Yes	
2	Success in increasing group income	Yes	Yes		
3	Conducting regular meeting				Yes
4	New technology acquirement	Yes			

(7) Constraints and Solutions

Although many constraints encountered in the villages were resolved through conducting group activities, some still remain.

Touba, Mansajang, and Kossemar all encountered constraints of having group-cohesive activities and meetings, which can be solved by rearranging the meeting times. Meanwhile, water shortage and access to seeds which were also raised in Fatoto were difficult for them to resolve by themselves.

With regards to those constraints which could resolve on their own, farmers from Fatoto said that they want to resolve them by using group contributions. Farmers from Touba, Mansajang, and Kossemar said that they could resolve these by imposing fines or increasing fine levied.

Table 4.31 Constraints

Constraints that farmers have		Fatoto	Touba	Mansa-jang	Kosse-mar
Constraints that could be resolved by own	Having meetings in rainy season		Yes		Yes
	Participation in group work		Yes	Yes	
	Marketing in group				Yes
	Low utilization of garden			Yes	
	Accessibility to seeds	Yes			
	Punctuality for meetings			Yes	
	Lack of storage facilities	Yes			
Constraints that are difficult to resolve by own	Water Shortage	Yes		Yes	
	Pests	Yes			
	Accessibility to seeds	Yes			
	Lack of containers for processed products	Yes			
	Lack of storage facilities	Yes			

Table 4.32 Solutions for constraints that could be resolved by own

Ideas for Solutions	Fatoto	Touba	Mansajang	Kossemar
Through group contribution (for repairing group materials)	Yes			
Imposing fines (for not attending the meeting)		Yes	Yes	Yes
Arranging meeting date				Yes
Reallocation of plot			Yes	

(8) Group Fund

All the four verification sites relied on their group funds for the purchase of vegetable seeds as well as for repairs and maintenance of garden perimeter fences. Group funds were saved with various banks within the division.

The funds were accumulated through weekly, monthly or regular contributions, and as well as annual contribution from garden proceeds.

As can be seen in the table, Mansajang had the highest amount of 7,000 Dalasies in total group fund, collected on monthly basis; whereas Kossemar had the lowest, charging different fees for group members and non-members.

In Touba, group contribution was set to be 55% of garden proceeds in the year of 2003/2004 and there were complaints that this was high, consequently, this was reduced to 20% in the following year.

In Touba, they normally did not buy seeds because they kept their own seeds, whilst in Fatoto and Mansajang they relatively depended on outside help for seeds. Kossemar bought seedlings from the school nearby, and that was why they did not buy seeds.

Table 4.33 Group Fund

	Fatoto	Touba	Mansajang	Kossemar
Total Amount	D 5,000	D 6,074	D 7,000	D 4,300
Contribution System	• Weekly Contribution : D2,500 • Garden Contribution : D2,500 (D100 × 25 members)	• No regular contribution system Year 2003/2004 Group 55% Producers 45% Year 2004/2005 Group 20% Producers 80%	• D5.00/month ×25people	• Group members: D25/annum ×25people • None members: D10/annum ×46people

Table 4.34 Usage of group fund

	Fatoto	Touba	Mansajang	Kossemar
Buying seeds	Yes	Yes	Yes	Yes
Maintenance of fence	Yes		Yes	Yes
Buying fertilizers		Yes		
Loan to group				Yes

(9) Future plan

All the four villages had plans in the near future to buy seeds. In this regard, beneficiaries in Touba, Mansajang, and Kossemar want to expand the current sizes of their vegetable gardens to be almost doubled. Beneficiaries in Touba and Mansajang want to change the sites of their gardens. Reallocation of the Mansajang garden was proposed for a new site around Basse Nding areas, which was about 1.5km from where most members live. Some farmers in Fatoto want to start animal breeding in the future when they have sufficient income. In Kossemar, it is part of their future plan to purchase a milling machine for their community.

Table 4.35 Future plan

Ideas for future plan		Fatoto	Touba	Mansajang	Kossemar
Group Garden	Extending the garden area		Yes	Yes	Yes
	Changing the site for the garden		Yes	Yes	
	Providing enough water	Yes		Yes	
Production	Diversification of products		Yes		
	Introduction of new crops and vegetables	Yes			
	Buying seeds	Yes	Yes	Yes	Yes
	Buying fertilizers	Yes	Yes		
Others	Extending marketing	Yes			
	Starting new business	Yes			
	Animal breeding				Yes
	Buying milling machine				Yes

4.6 Lessons and Recommendations

4.6.1 Hypotheses and Results

In this project, four hypotheses were set with the purpose of providing feedback to the Master Plan. The results of the hypotheses and the lessons learnt through the verification project are highlighted below.

Hypothesis 1: In villages that are located close to markets, it is easier to reduce marketing risks to the farmers.

In the case of villages which have Lumos (weekly market) like Fatoto, farmers sell their products not only on market days but also to other non–market days as well. In this way, they could earn some amount of money every day. However, some farmers do not sell at the Lumo as many other farmers from surrounding villages market their product at the Lumo, culminating in a glut and lower retail prices. An alternative marketing strategy is to sell the product to adjacent markets in Senegal.

Hypothesis 2: Villages, in which both crop and livestock are managed intensively, should be selected as target villages, to achieve an optimum combination between crop and animal husbandry. Such villages should have easy access to animal manure, which is ideal for producing organic fertilizer.

In compound which have domestic animals, it is easier to access animal manure and also to manage the compost. This facilitates compost production at the compound and its eventual transfer to the garden. Consequently, such farmers prefer to make compost at their compounds than at their gardens. In the target area, many small ruminants are raised, it is therefore easy to link vegetable production with livestock raising. However, if the demand for organic materials increases, farmers will have to collect them not only from their neighbours but also from the community.

Hypothesis 3: Promotion of compost making will increase availability of organic matter and improve the fertility of soils.

In URD, many farmers simply apply dried cow dung or a mixture of dung and dried grass directly on the soil around plants. After the project, farmers who participated in the training started to make and apply compost. Farmers also recognized the advantages of the compost as soils on which compost has been applied are dark and have better water retention.

Hypothesis 4: Promotion of small-scale vegetable processing and preservation will reduce post-harvest losses, minimize marketing risks and improve household nutrition.

In the workshops, participants of the processing and preservation training indicated that the impact of the training has contributed greatly to improving their nutritional status and reducing the amount of post-harvest loss to their products (perishing due to spoilage). Many farmers also recognized the importance of nutrition improvement.

4.6.2 Feedback to the Master Plan

Apart from the above mentioned hypotheses, lessons learned from the project and ways to feedback them to the Master Plan are shown in the following from four points; agricultural technology, extension approach, improvement of living condition and implementation structure.

Table 4.36 Feedback to the Master Plan from Vegetable Verification Project

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
Agricultural Technology	• In addition to the training within their communities, farmers should be accorded more opportunities to visit other advanced areas to get new ideas on agricultural techniques and to compare it with what they practice.	⇒ The need to conduct exchange visits and group field trips in the Master Plan activities. **(All)**
	• Compost making should start from September or October. This will enable the farmers to use their compost in vegetable gardens in the dry season.	⇒ The need for extension workers to frequently communicate with farmers. Also, Continuous training should be provided through DES or VEW through groups. **(B-10)**
	• Compost materials can be collected from small ruminants which are grazed in their villages.	⇒ Farmers should know the difference between manure and compost usage by better utilizing of organic materials in the village. **(A-6)**
	• At the end of March in URD, temperature increases and the vegetable production is degraded.	⇒ Planting period should be considered carefully. If it is shifted later, vegetables need to be shaded under the sun. **(B-10)**
Extension Approach	• There are two types of vegetable production in URD. One is at private garden in small No. and the other is at communal garden in large number.	⇒ Different approaches should be considered as production potential or social states between private garden and communal garden is different.

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
		(A-9, B-10)
	• A community garden can be used effectively as a kind of agricultural school for new technologies. While farmers try to acquire new technologies on the field, they bring it to their individual farms to increase productivity and production.	⇒ Communal garden should be fully utilized for technology transfer. **(A-9, B-10)**
	• Marketing activity is not fully effective, as it is carried out individually on either private or communal production.	⇒ In order to maximize the merit of group farming, it is essential to encourage group organization. **(B-10)**
	• By conducting trainings on vegetable production and processing, these techniques can be extended to other farmers and applied to other vegetables.	⇒ Better selection of training participants and contents of the trainings, which match to farmers' needs, should be considered carefully in order to achieve effective extension. **(A-1, B-10)**
Improvement of Living Condition	• As production increases, home consumption increases, especially by pregnant women and children.	⇒ Effects of nutrition improvement by vegetable consumption should be published by collaborating with FNU at DOSA. **(C-15)**
	• Many farmers at all the verification villages had high interest on vegetable production, processing and preservation techniques.	⇒ Techniques on verification projects and group management will be continued. **(B-10)**
	• By acquiring vegetable processing and preservation techniques, the quantity of vegetable consumption at home and selling will increase.	⇒ Vegetable can be consumed more at home and have better value as farmers, especially women attain vegetable processing and preservation techniques. **(B-10)**
	• Farmers take risk-averse strategies no matter of how far their location is from markets.	⇒ Every village had better conduct vegetable production and processing using marketing maps and price database. **(B-10)**
	• Farmers use water wells in gardens both for vegetables and domestic use. In the morning, women come to the	⇒ It has become more important that beneficiaries plan their water use for their crop and domestic use before

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
	well for watering their vegetable crops and for washing their clothes, at the same time. The well also functions as the place where they can chat and exchange information on daily life. Hence, there might be problems of water shortage for their crops.	deciding the size of the vegetable garden. If well digging is considered in the M/P, it has to cover support for both irrigation and domestic water. **(B-10, B-12)**
	• Consumption amount at home increases by increasing processed tomato and pepper at village which has wells but not deep ones and produce vegetables.	⇒ It is preferable to conduct training on tomato and pepper process especially on villages which focus vegetable production on home consumption. **(B-10)**
Implementation Structure	• A few projects conducted under other agencies have enough technique or technical support.	⇒ Technical support is to be provided to coordinate agriculture related projects mainly by DAC. **(C-15, C-16)**
	• Extension Workers did monitoring and management, but they had difficulties in data collection.	⇒ It is inevitable to have reports on effectiveness of projects, when projects are conducted, using funds and donations. It is required to continue capacity building of extension farmers in collecting data. **(C-15, C-16)**
	• There is no need to distinguish tribes in order to promote mixed-farming.	⇒ It is not necessary to establish tribe-specific projects. **(All)**

V. NERICA Trial and Extension Planning

5.1 Objective

The verification study on NERICA aimed at investigating the development potentials and future perspectives in URD through collection of data and information concerning the growth performance of NERICA and farmers' impressions. The analysis of data and information on the adaptability of NERICA to local conditions in URD was followed using extension plan for URD upland farmers.

5.2 Involved Personnel

As the objective of this verification project is to research the potential of NERICA diffusion in URD, main research parts were conducted by JICA expert together with SMS, who has the main role in extension especially to the farmers in the near future.

5.3 Summary of the Trial

In the Verification Study, three types of trials were carried out.

One was to identify acceptable upland NERICA varieties through URD farmers' own observation on growth, yield and post-harvest processing, and also palatability tests, and referred to as "On-farm Demonstration Trial".

The second one was to investigate differences in performances of suitable varieties relating to the inclination among different hydrological conditions, and between fertilizer application levels (including no application), and referred to as "Varietal Screening Trial".

The last one was "Adaptability Trial" in which adaptability of NERICA rice to upland area with less moisture is verified since upland rice requires more water compared to other cereals. Thus, it was conducted in the north bank.

On-farm Demonstration Trial and Varietal Screening Trial were conducted in the first cycle, and Adaptability Trial was conducted in the second cycle.

Table 5.1 Summary of the Inputs

	Farm	Target
Site	**a. On-farm demonstration**	
	Sotuma Samba farm	1 field, total area 0.5 ha
	Basse Nding farm	2 field, total area 0.4 ha
	b. Varietal Screening Trial	
	Mansa Jang Kunda farm	1 field, 15m x 70m
	c. Adaptability Trial	
	Naudeh, Mbaye Kunda Jah Kunda, Sutukoba	2 fields each, total 8 fields, 10 x 9.6m each

Schedule	**First Cycle (a and b)** preparation：Nov. 2003～Mar. 2004 implementation：May 2004～Nov. 2004 **Second Cycle (c)** preparation：Feb. 2005～May 2005 implementation：June 2005～ Nov. 2005	
Personnel	**The Gambian side** DAS - DAC, ADAC, SMSs, DES, VEW Farmers	**JICA side** The Study Team
Input	**The Gambian side** **First Cycle** **a. On-farm Demonstration** Farmers Labour DAS Fuel for monitoring **b. Varietal Screening Trial** Farmers Labour DAS Fuel for monitoring	**JICA side** **First Cycle** **a. On-farm demonstration** NERICA Seeds Fertilizer **b. Varietal Screening Trial** NERICA and non NERICA seed Fertilizer Sampling bag Sickle Scale Fencing pole and Fence Soil analysis
	Second Cycle **c. Adaptability Trial** Farmers Labour DAS Fuel for monitoring	**Second Cycle** **c. Adaptability Trial** NERICA and Common Upland Variety Seed Fertilizer, Sampling bag, Sickle Scale ,Fencing pole, Fence, Soil analysis

5.4 Schedule

Work schedule of each trials are as following.

Table 5.2 Work Schedule of On-farm Demonstration Trial

		2003			2004								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Preparation of schedule	DAS,The Team		■										
Information collecting	DAS,The Team			■									
Procurement of inputs	The Team						■	■					
Introductrory workshop	DAS,The Team								■				
Seeding and weeding	DAS									■			
1st soco-eco evaluation	DAS											■ ■	

		2004			2005								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
2nd socio eco evaluation	DAS,The Team	■											
Harvest ans measure	DAS		■										
3rd socio eco evaluation	DAS,The Team		■										
Data analysis	DAS,The Team		■										
End of 1st season worshop	DAS,The Team						■						

Table 5.3 Work Schedule of Varietal Screening Trial

		2003			2004								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Preparation of schedule	DAS,The Team		■										
Information collecting	DAS,The Team			■									
Procurement of inputs	The Team						■	■					
Seeding and weeding	DAS,The Team									■			
Germination check	DAS,The Team									■	■		
Plant height & tillering	DAS,The Team										■	■	■
Heading check	DAS,The Team												■
Water level measurement	DAS,The Team										■	■	■

		2004			2005								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Plant height & tillering	DAS,The Team	■											
Heading check	DAS,The Team	■											
Water level measurement	DAS,The Team	■											
Sampling for yield	DAS,The Team	■											
Yield components	DAS,The Team	■	■										
Data analysis	DAS,The Team		■										

Table 5.4 Work Schedule of Adaptability Trial

		2005								2006			
Activity	person in charge	5	6	7	8	9	10	11	12	1	2	3	4
Site selection for 2005	DAS,The Team		■										
Preparation of seeds	The team		■										
seeding	DAS,The Team		■										
Growth measurement	DAS,The Team			■	■	■	■						
Yield measurement	DAS,The Team						■	■					
Meteorological data	DAS, Meteorology	■	■	■	■	■	■						
Data analysis	DAS,The Team						■	■					

5.5 Activities and Outputs of On-farm Demonstration Trial

(1) Objective

On-farm Demonstration Trials have been carried out in two villages, namely, Sotuma Samba Koi and Basse Nding. In two on-farm trial sites, locally recommended cultural and husbandry practices were observed. Farmers from the surrounding villages were invited to visit the farms to make observations on the varieties at tillering, flowering or maturity and at post-harvest stages of crop development. These visits provided the farmers with the opportunity to identify and score varieties based on varietal performance and farmers' selection criteria.

(2) Sites

〔Sotuma Samba Koi site〕

At Sotuma Samba Koi site, a farm size of 0.4 ha was planted in 21st – 24th June 2004 to three NERICA varieties in equal plots measuring 0.133 ha per variety.

Data collection has been done on plant height at harvest, grain yield and lodging susceptibility per plot or variety using a 1 sq.m quadrat. Soil characteristics of the sites also were recorded. The National Agricultural Research Institute (NARI) has carried out the data collection by contract under the supervision of the Study Team and counterpart personnel in URD. Five male villagers were cooperating to cultivate NERICA varieties in their farms. And 30 evaluators were invited from surrounding 5 villages.

〔Basse Nding〕

At Basse Nding site, a farm size divided into two 0.25ha equal fields was planted in 26th June 2004 with three NERICA varieties sown in equal plots measuring 0.083ha per variety in two fields, upper and lower. The crop husbandry and data collection were the same as in the Sotuma Samba Koi site mentioned above.

Two women were involved in the cultivation of NERICA as on-farm trial in their farm. Also 35 participants were involved from six surrounding villages.

(3) Inputs

All the input materials were provided by the Study Team; NERICA Seed, Fertilizer.

Input seed for On-farm demonstration are the following three type of NERICA.

Table 5.5 Input Seed Varieties for On-farm Demonstration

Type	Abbreviation	Variety
NERICA	P31	WAB450-1-B-P105-HB
	P105	WAB450-11-1-1-P31-HB (NERICA5)
	P163	WAB450-1-B-P163-4-1-HB

(4) Procedure

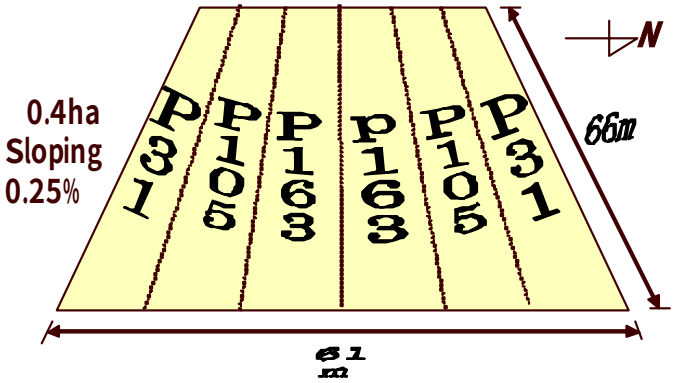
Collected data and other aspects at each site are as shown in the following.

〔Sotuma Samba Koi〕

Farm:	Sotuma Samba Koi Demonstration Farm, 1 acre (=0.4ha)
	Paddy condition from late rain season to early dry season
Plot design:	refer to drawing below
Planting date:	21st - 24th June 2004
Planting:	Direct seeding by drilling at the rate of 60kg/ha in 30 cm row spacing
Fertilizer:	Basal dressing: NPK 15-15-15 at 100kg/ha
	Topdressing: Urea at 50kg/ha on 28 August

Data collection: Agronomic traits/characteristics: plant length at harvest, grain yield (kg/ha) and lodging susceptibility

Sociological score of traits/characteristics: vigorous growth, vigorous tillering, pests and diseases, height, leaf color, weed suppression, panicle, grain, easy harvest, yields, post harvest processing, milling quality, palatability, swelling capacity. etc.



〔Basse Nding〕

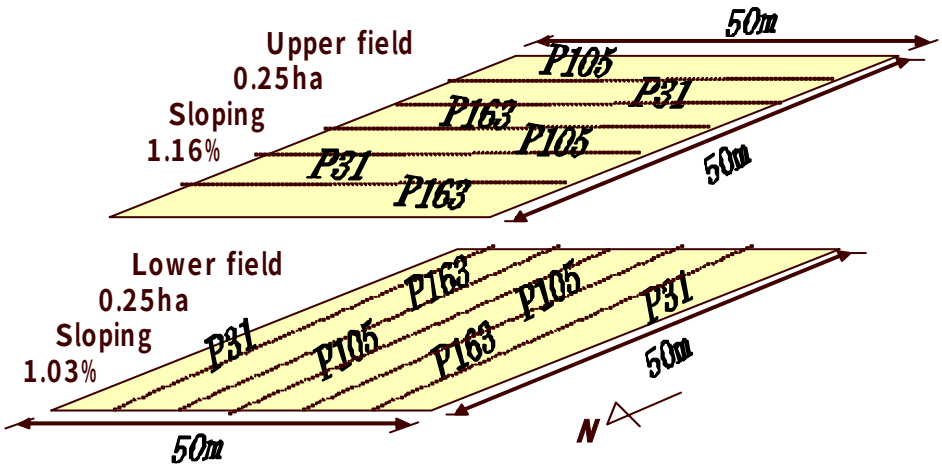
Farm: Basse Nding Demonstration Farm, 0.5ha
(divided into upper field: 0.25ha and lower field: 0.25ha)

Plot design: refer to drawing below

Planting date: 26th June 2004

Fertilizer: Basal dressing: NPK 15-15-15 at 100kg/ha
Topdressing: Urea at 50kg/ha on 30 August

Varieties, Planting, Data collection: These are the same as the case at Sotuma Samba Koi, above



(5) Background Information

1) Soil Analysis

The Study Team carried out two types of soil testing analysis, namely: physical property and chemical property analysis in the verification trial sites. The physical property was determined by soil texture, and the chemical property was determined by the analysis of pH(H_2O), EC, organic matter, available phosphate and total nitrogen. The samples were taken from two depth or strata as follows: 0-15cm and 15-30cm per spot.

All of the NERICA verification trial sites in first cycle are located nearby the River or a swamp, and are therefore enormously affected by seasonal floods. That is why most of them have clayey type soil texture as shown in the table below. The area of on-farm trial site in Sotuma Samba Koi is submerged every year, while the other two sites are submerged in maximum flood years and only partly.

Table 5.6 Soil Texture at On-farm Demonstration Sites

Farm site	Depth (cm)	% Clay	% Silt	% Sand	Soil classification, International method
Sotuma Samba Koi	0-15	23.6	16.7	59.7	Sandy clay loam
	15-30	43.6	20.7	35.7	Light clay
Basse Nding	0-15	31.6	28.7	39.7	Light clay
	15-30	45.6	20.7	33.7	Heavy clay

The figures on contents of organic matter indicated in the table below are normal for rice cultivation, however, the pH(H_2O) are considerably low, implying strong acidity, a factor which must be causing poor properties of exchangeable cation in all sites. And low values of EC, available phosphate and total nitrogen are indicative of a farming system in which no fertilizer has been applied for a long time on these farm sites. Recommended soil pH(H_2O) and available phosphate contents for paddy rice are 5.0~6.5 and more than 100ppm respectively.

Table 5.7 Soil Condition at On-farm Demonstration Sites

Sample identity	Depth (cm)	Soil pH (H_2O)	EC mS/cm	Organic matter % LOI*	Avl. P ppm	Total N %
Sotuma Samba Koi	0-15	4.2	0.03	3.75	2.0	0.04
	15-30	4.7	0.03	4.65	2.5	0.04
Basse Nding	0-15	4.0	0.02	2.86	2.5	0.08
	15-30	3.9	0.03	2.33	10.0	0.08

*LOI : Loss on ignition for organic matter

2) Hydrology

The water level of seasonal floods during 2004/2005 rainy season was much higher than the average level. However, in comparison with the 2003/2004 rainy season, which inundated large

areas along the Gambia River culminating in an unusual disaster, 2004/2005 season had a lower flood level. Unfortunately, the measurement facility of the River water level under the Basse Meteorology Station was swept away by the flood during the 2003/2004 season, consequently the data on the River water levels in 2004/2005 season are not available.

3) Meteorology

The rainfall figure for the rainy season in 2004 at Basse was 949mm, exceeding the average rainfall over the past 13 years (864mm). Monthly rainfalls in May, June, and July were 28mm, 114mm and 269mm respectively which also exceeded the average rainfalls for these months over the past 13 years and thus played an important role in farming i.e. land preparation, germination and growth of seedlings etc. Also the number of rainy days in these months showed an increase compared to the normal year. Conversations with people in URD indicate that they generally expect good harvest in upland crops for the season and this is supported by rainfall data indicated below.

Table 5.8 Rainfall Data in Basse

	May	Jun	Jul	Aug	Sep	Oct	Nov	Total
Monthly Rainfall, 2004 (mm)	28.0	113.9	268.5	278.7	209.0	50.4	0.0	948.5
Monthly Rainfall, av 1900~2003 * (mm)	10.3	86.1	178.3	324.9	192.3	69.2	2.9	864.1
Monthly rainday, 2004 (day)	1	9	20	16	15	2	0	63
monthly rainday, av 1900~2003 * (day)	1.3	7.2	13.8	17.6	14.0	5.7	0.2	59.8

*: data of 1993 not available

(6) Results

1) General Growth Progress

〔Sotuma Samba Koi〕

Plant growth went on well as the farmers weeded their fields early and also applied fertilizer on time.

In addition to the skilled male rice growers in the village, the hydraulic condition was also helpful for vigorous growth of plants. Despite the fact that plant growth was delayed after sowing as a result of one week drought, this trend changed after normal rainfall started. There was only one rainy day for a week after sowing, however, in the following weeks it was raining almost every day or every two days. Seasonal inundation occurred in the trial field in early September as expected, and the surface water had continuously been covering the trial field even after the harvest. When the inundation started, the rice plants had reached the height of

over 50 cm, which was high enough not to be submerged. The flooded water could help the growth of rice and inhibition of thick weed; however, it makes harvesting activities difficult. Upland NERICA could be grown in paddy field conditions.

The results obtained are indicated in the table below.

Table 5.9 Results of Yield Components at Sotuma Samba Koi

Plot / Condition	paddy		
Variety*1	P31	P105	P163
Plant height at harvest (cm)	76.2	103.6	110.0
Lodging susceptibility	No lodging		
no. of panicles /m^2	103*3	175	183
no. of spiklets /panicle	76.8	103.7	74.9
no. of spiklets /m^2	7,910	18,148	13,707
000grain wt（g）	29.3	29.6	34.6
% of rippened grains	58.6%	46.8%	51.4%
paddy yield (g/m^2) *2	135.8*3	251.6	243.9

*1) P 31: WAB450-11-1-1-P31-HB (NERICA 5)
P105: WAB450-1-B-P105-HB
P163: WAB450-1-B-P163-4-1-HB

*2) moisture contents converted at 14%

*3) figure after off-types removal

〔Basse Nding〕

The lower field had high groundwater table and was located at the seepage zone. When a tractor was plowing the lower field, seepage water started to come out from the underground. And the field has gentle undulations. So after heavy rain, puddles could be found in this zone. Along the way according to observations from extension workers and farmers on the ground, young seedlings at the bottom of the undulations were damaged or their growth inhibited due to the stagnant water, and vigor hydrophytic weeds aggravated the damaged rice seedlings. So the growths were uneven and there were missing plants galore in lower field. However, the rice plants which stood on top of the undulations showed normal growth and maturity. NERICA in upper field performed better than those at the lower level, but at the edge of the upper fields, some showed signs of attack by ruminants or donkeys.

And it was not easy to control weeds in both the upper and lower fields by the two female farmers. WARDA is emphasizing weed competitiveness as one of the NERICAs' advanced features; however, these particular three varieties did not indicate such competitiveness in the trial.

The results obtained are indicated in the table below.

Table 5.10 Results of Yield Components at Basse Nding

Plot / Condition	Upper (dry)			Lower (hydromorphic)		
Variety*1	P31	P105	P163	P31	P105	P163
Plant height at harvest (cm)	92.4	107.8	106.4	ditto	ditto	ditto
Lodging susceptibility	No lodging					
no. of panicles /m^2	145	137	123	115	91	71
no. of spiklets /panicle	112.1	179.5	117.3	116.3	116.5	116.5
no. of spiklets /m^2	16,255	24,592	14,428	13,375	10,602	8,272
000grain wt（g）	30.1	30.9	38.1	30.5	29.7	38.3
% of rippened grains	45.1%	35.7%	47.6%	51.8%	54.7%	58.2%
paddy yield (g/m^2) *2	220.8	271.1	261.7	211.4	172.2	184.4

*1) P 31: WAB450-11-1-1-P31-HB(NERICA 5)
P105: WAB450-1-B-P105-HB
P163: WAB450-1-B-P163-4-1-HB
*2) moisture contents converted at 14%

2) Results of Farmers Evaluation

〔Sotuma Samba Koi〕

Farmers' evaluation criteria for varietal selection for major agronomic traits differed from one growth stage to another. At the vegetative stage, most farmers look for varieties based on plant vigor, tillering ability, plant height, leaves, etc. In the first evaluation workshop at vegetative stage, 26 farmers ranked P105 and P163 highly, which followed by P31 for their preference. The most important criteria for the selection was vigorous tillering, followed by good germination, high plant population, green leaves and tall plant height in descending order. There was no gender difference in the criteria.

At the maturing stage, most farmers watch the harvest related traits. In the second evaluation workshop at maturing stage, 15 farmers attended and gave the highest score to P105 and P163 again, which gained a significant lead over P31 due to the traits of large panicle, tall plant, many grains, plant shape and early maturity in descending order.

When farmers evaluated the traits on cooking process and palatability of NERICAs, both farmers from Sotuma Samba Koi area (27 persons) and Basse Nding area (21persons) gathered and participated in the evaluation workshop together. Evaluation on cooking process was done by only female evaluators, because males had never cooked. There was no difference among the three varieties on milling quality and cooking easiness. However, P105 and P163 were more palatable than P31 for these farmers.

According to the integrated evaluation, P105 and P163 were preferred by the farmers around Sotuma Samba Koi area.

〔**Basse Nding**〕

In the evaluation at vegetative stage, 28 farmers attended the evaluation workshop and ranked P105 and P31 highly, followed by P163. The most important criteria for the evaluation was vigorous tillering, followed by plant height, good germination , good rooting and green leave.

The result of the evaluation at maturing stage shows that P 105 was superior to P31 and P163 due to the traits of large panicle, early maturity, tall plant, many tillering and grains in descending order.

At the evaluation on cooking process and taste, although almost no difference was found among varieties, the taste of P31 was most popular. This result of the palatability test for the farmers from Basse Nding area was completely opposite to the one for the testers from Sotuma Samba Koi area

By the evaluation throughout all workshops, P105 was more preferred due to the plant features; P31 was preferred due to the palatability. The evaluation of P163 was the lowest.

(7) Dissemination of Activities

Apart form the above benefits to counterpart staff, a lot of beneficiaries are in URD and the number of people is almost uncountable. At the beginning of the first cycle, NERICA varieties were not well-known by URD farmers. But, many observers in the surrounding villages of the trial sites observed the growth of NERICAs, because the trial sites were located at the centres of 2 highly populated cluster villages.

After obtaining satisfactory trial results, the above SMS disseminated it to URD farmers through Radio Basse. As a result of these NERICAs became known throughout URD. A lot of farmers have since then visited the DAO and wished to register their name on the list for NERICA seed purchasing for the coming season. During the 2005/2006 season may individual farmers and farmer groups planted NERICA in their upland fields. It is hoped that they can realize greater cereal harvests than before. The expansion of NERICA cultivation will not stop for a while.

5.6 Activities and Outputs of Varietal Screening Trial

(1) Objectives

The objective of this trial lays emphasis on the introduction of upland varieties, mainly NERICA varieties identified in the PVS screening by NARI along the entire stretch of the topo-sequence. These ranges from the upland ecology to the inland valley level at the MansaJang Kunda village farm. Two sets of five varieties were tested under fertilized and non-fertilized conditions to determine the response of the varieties along the slope. The plots each measuring 7.5x70m were planted to five upland varieties (three upland NERICA varieties and two non NERICA upland varieties) along the length of the entire slope and put under observation during the cropping season. In addition to collecting data on rainfall, temperature and humidity; three PVC pipe wells were

erected at regular intervals along the plot one at each of upper, moderate and paddy land ecologies to monitor the water table during the rice growing period.

(2) Sites

〔Mansa Jang Kunda〕

The varietal screening trial was conducted Mansa Jang Kunda planting 3 NERICA varieties and 2 common upland varieties.

(3) Input Materials

Planted NERICA seeds and Common Upland Variety seeds are as following.

Table 5.11 Input Seed Varieties for Varietal Screening Trial

Type	Abbreviation	Variety
NERICA Seeds	P 31	WAB450-11-1-1-P31-HB (NERICA5)
	P 105	WAB450-1-B-P105-HB
	P 163	WAB450-1-B-P163-4-1-HB
Common Upland Variety Seeds	WAB365	WAB365-B-1-H1-HB
	WAB56	WAB56-50

(4) Procedure

Experiment: Varietal screening trial (Mansa Jang Kunda village)

Plot Design: refer to drawing below, fenced to prevent entry of stray animals

Planting date: 20th June 2004

Planting method: 60kg/ha direct seeding by drilling at 30cm between rows

2 treatments (with/without fertilizer) × 5 varieties × 5 rows / variety

Fertilizer: [Treatment with fertilizer]

Basal dressing: NPK at 100kg/ha after 5days of seeding

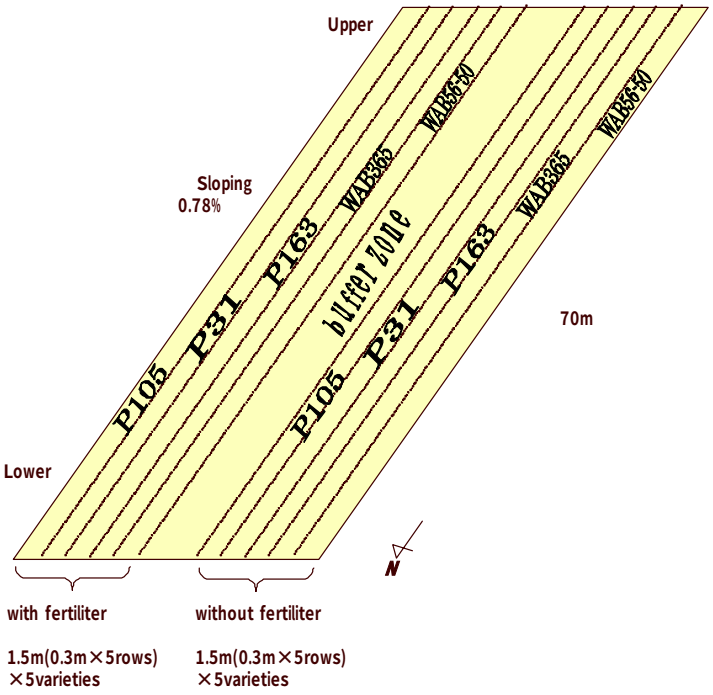
Top dressing: Urea at 50kg/ha in two split doses at vegetative and reproductive stages, namely after 21 and 45days of seeding

[Treatment without fertilizer]

Basal dressing: none

Topdressing: none

Data collection: rainfall, temperature, humidity, water table, plant length, number of tiller, heading number, grain yield (yield components), lodging susceptibility and disease damage



(5) Background Information

1) Soil Analyses

Same as the verification sites of on-farm demonstration (Sotuma Samba Koi and Basse Nding), the Study Team carried out two types of soil testing analysis, namely: physical property and chemical property analysis in the verification trial sites. The physical property was determined by soil texture, and the chemical property was determined by the analysis of pH(H_2O), EC, organic matter, available phosphate and total nitrogen. The samples were taken from two depth or strata as follows: 0-15cm and 15-30cm per spot.

All of the NERICA verification trial sites in first cycle are located nearby the River or a swamp, and are therefore enormously affected by seasonal floods. That is why some clay is contained as shown in the table below.

Table 5.12 Soil Texture at Varietal Screening Trial

Farm site	Depth (cm)	% Clay	% Silt	% Sand	Soil classification, International method
Mansa Jang Kunda	0-15	29.6	16.7	53.7	Sandy clay
	15-30	43.6	8.7	47.7	Sandy clay

Same as the verification sites of on-farm demonstration (Sotuma Samba Koi and Basse Nding), the figures on contents of organic matter indicated in the table below are normal for rice cultivation, however, the pH(H_2O) are considerably low, implying strong acidity, a factor which

must be causing poor properties of exchangeable cation in all sites. And low values of EC, available phosphate and total nitrogen are indicative of a farming system in which no fertilizer has been applied for a long time on these farm sites. Recommended soil pH(H_2O) and available phosphate contents for paddy rice are 5.0~6.5 and more than 100ppm respectively.

Table 5.13 Soil condition at Varietal Screening Trial

Sample identity	Depth cm	Soil pH (H_2O)	EC mS/cm	Organic matter % LOI*	Avl. P ppm	Total N %
Mansa Jang Kunda	0-15	3.9	0.02	3.17	10.0	0.08
	15-30	4.3	0.02	2.95	2.0	0.08

* LOI : loss on ignition for organic matter

2) Hydrology

At the Varietal Screening trial site in Mansa Jang Kunda, ground water measurement pipes were installed for observation of movements of ground water levels during the rainy season. The installation and measurement were done at 3 points in a line at each ground level, namely: upper level, moderate level and paddy level.

3) Meteorology

The rainfall figure for the rainy season in 2004 this year at Basse was 949mm, exceeding the average rainfall over the past 13 years (864mm). Monthly rainfalls in May, June, and July were 28mm, 114mm and 269mm respectively which also exceeded the average rainfalls for these months over the past 13 years and thus played an important role in farming i.e. land preparation, germination and growth of seedlings etc. Also the number of rainy days in these months showed an increase compared to the normal year. Conversations with people in URD indicate that they generally expect good harvest in upland crops for the season and this is supported by rainfall data shown in the above section, Background Information of On-farm Demonstration Trial.

(6) Results

1) General growth progress

The rectangle trial plot was designed to lay on a slope. This trial comprised 5 different varieties replicated into two replicas. One of these replicas was applied with fertilizer and the other without fertilizer, all were divided into 3 zones, namely: upper level, moderate level and the paddy level. So 30 treatment plots were totally set up in the trial farm as follows;

Table 5.14 30 Treatment Plots on Varietal Screening Trial

Plot 1	Plot 2	Plot 3	Plot 4	Plot 5		Plot 6	Plot 7	Plot 8	Plot 9	Plot 10
P105 with Fertilizer, Upper level	P31 with Fertilizer, Upper level	P163 with Fertilizer, Upper level	WAB365 with Fertilizer, Upper level	WAB56-50 with Fertilizer, Upper level		P105 without Fertilizer, Upper level	P31 without Fertilizer, Upper level	P163 without Fertilizer, Upper level	WAB365 without Fertilizer, Upper level	WAB56-50 without Fertilizer, Upper level
Plot 11	Plot 12	Plot 13	Plot 14	Plot 15	Buffer zone	Plot 16	Plot 17	Plot 18	Plot 19	Plot 20
P105 with Fertilizer, Moderate level	P31 with Fertilizer, Moderate level	P163 with Fertilizer, Moderate level	WAB365 with Fertilizer, Moderate level	WAB56-50 with Fertilizer, Moderate level		P105 without Fertilizer, Moderate level	P31 without Fertilizer, Moderate level	P163 without Fertilizer, Moderate level	WAB365 without Fertilizer, Moderate level	WAB56-50 without Fertilizer, Moderate level
Plot 21	Plot 22	Plot 23	Plot 24	Plot 25		Plot 26	Plot 27	Plot 28	Plot 29	Plot 30
P105 with Fertilizer, Paddy level	P31 with Fertilizer, Paddy level	P163 with Fertilizer, Paddy level	WAB365 with Fertilizer, Paddy level	WAB56-50 with Fertilizer, Paddy level		P105 without Fertilizer, Paddy level	P31 without Fertilizer, Paddy level	P163 without Fertilizer, Paddy level	WAB365 without Fertilizer, Paddy level	WAB56-50 without Fertilizer, Paddy level

After sowing, emergence started 10 days later. And 50 % emergence took 2 to 4 more days. The delayed emergence was caused by low rainfall before and after sowing.

However, after emergence, amount and frequency of rainfall did not inhibit the growth of seedlings. The numbers of days to 50 % emergence and rainfall record at Basse meteorology station in 2004/2005 season are shown in Table 5.21 and 5.22, respectively.

Temperature and humidity data collected at the Basse meteorology station during the rain season are attached as Table 5.23.

After emergence, plants of the different levels started growing well. According to the extension officer, plants at the moderate level where growing faster followed by the upper level and then the paddy level. However, the result of ANOVA[1] on plant length showed no significant differences.

The extension officer reported that before the topdressing on the varietal screening trial, crops of the plots where there was no fertilizer were growing faster particularly at the upper level. However, after topdressing on the other plots known as the with fertilizer area of the trial, changes occurred as their posture looks greener and growing taller than those on the without fertilizer area after a few days. This observation was ascertained by the ANOVA on plant length.

Fluctuation of the water table was observed in each field level as shown below;

Around active tillering stage, the groundwater table reached ground level in the whole field. Even the upper level field was covered by surface water for more than 3weeks. It meant the three field levels did not have big differences during tillering stage.

[1] ANOVA abbreviates for Analysis of variance and it is a statistical method in which the variation in asset of observations is divided into distinct components.

Though fertilizer was applied on all levels of the with fertilizer area, the growth with fertilizer in the paddy level was worse than without fertilizer area in the same level. Growth in the paddy level was affected by flood. Some plants particularly those located around the area where fertilizer was applied suffered greatly because of their depth, being closer to the bottom of the back swamp. All of the plants were completely submerged in paddy level, and resulted in their rotting. Though the paddy level of the with fertilizer was affected by oxygen starvation, this was more serious on the other site.

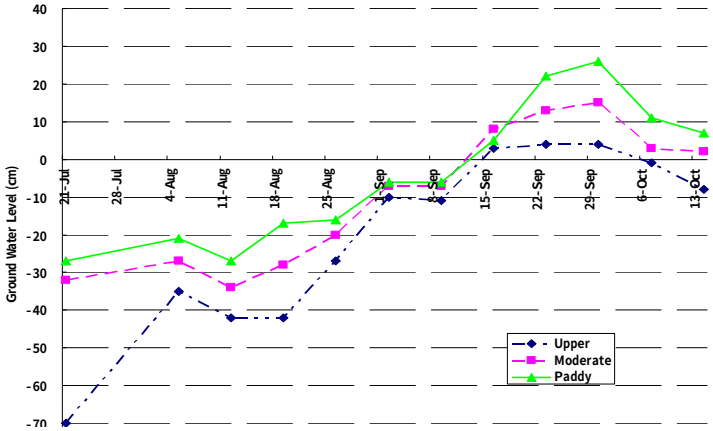


Figure 5.1. Fluctuation of Ground Water Level

Fluctuation of Gound Water Level

2) Growth characteristics

Table 5.24 and 5.25 give characteristics of plant length and number of tillers per plant, respectively. According to the result of ANOVA on fertilizer application, a significant difference at 5% occurred between with fertilizer and without it from the plant length measured on 4th October, at harvest stage, in the upper level. However, no significant difference on plant length was observed in the moderate and paddy levels. Furthermore the number of tillers showed no difference in all levels.

3) Grain yield and its components

The data of yield and its components measured by NARI are shown in Table 5.26 But those data are too unreliable for a scientific analysis because products of 4 yield components do not match the yield data, and 1000 grain weights of each variety vary widely.

Fertilizer application has a somewhat better tendency to affect growth than no fertilizer in upper and moderate levels; however, it is impossible to analyse which components contributed to that.

(7) Dissemination of Activities

Basic data for extension of NERICA are still missing namely appropriate type, amount and timing of fertilizer application and response to fertilizer by soil type, degree of drought tolerance of other NERICA varieties, appropriate cropping pattern in URD, etc. Results of these new trials will make NERICA cultivation more sustainable.

Another constraint is the low quality of seed due largely to lack of knowledge and management to

maintain seed purity.

5.7 Activities and Expected Outputs of Adaptability Trial

(1) Objectives

During the first cycle in 2004/2005, NERICA yielded well, however, the selected verification sites were located in hydromorphic areas, which were not real upland. In order to properly guide upland farmers in URD to cultivation on NERICA, information concerning local adaptability of NERICA varieties was needed. In areas where rainfall is low or the soil is poor there are some risks that the NERICA would not perform well.

(2) Sites

Four sites (Naudeh, Mbye Kunda, Jah Kunda, Sutukoba) were selected for the Verification Study for the second cycle. As the objective of this trial was to research on NERICA adaptability, all the four verification sites were located in the north bank, where water is a critical issue for cultivation.

(3) Input Materials

4 varieties were tested i.e. 3 NERICA varieties and 1 non NERICA variety. NERICA seeds were acquired from the Verification Study during the first cycle (2004/2005), and non NERICA seeds were provided by Divisional Agricultural Office in URD, which was selling rice seeds to farmers. The quality and purity of all the seeds were very poor, so seeds selection by specific gravity with salt at the rate of 1.13 and manual removal of foreign varieties were carried out on all varieties tested.

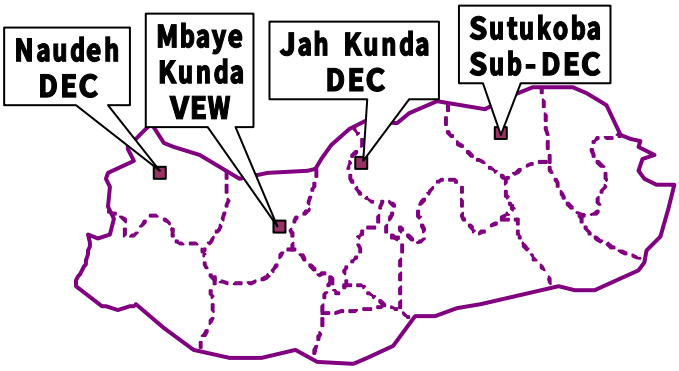
The following four varieties were used for this adaptability trial.

Table 5.15 Input Seed Varieties for Adaptability Trial

Type	Abbreviation	Variety
NERICA Seeds	P 31	WAB450-11-1-1-P31-HB (NERICA5)
	P 105	WAB450-1-B-P105-HB
	P 163	WAB450-1-B-P163-4-1-HB
Non NERICA Seeds	ATM3	ATM3 (ATM: Agricultural Taiwanese Mission)

(4) Procedure

Farm: four (4) sites
in Sandu District: Naudeh and Mbye Kunda
In Wuli District: Jah Kunda and Sutukoba



Each site has two farms, all farms are protected by barbed wire fence.
The soil texture of each farm is shown in Table 5.16.

Trial method: randomized block design

Plot design: 8 farms each 96 square meter in area and divided by 4 plots
refer to drawing below

Tractor ploughing date: Naudeh 28th June 2005
Mbye Kunda 29th June 2005
Jah Kunda 4th July 2005
Sutukoba 2nd, 7th July 2005

Manual harrowing and leveling: Naudeh 30th June
Mbye Kunda 1st July
Jah Kunda 5th July
Sutukoba 6th, 7th July

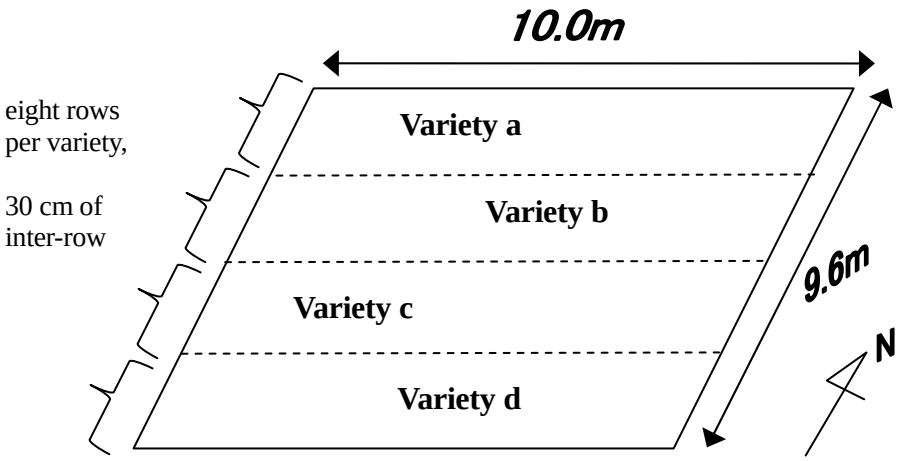
Planting date: Naudeh 30th June
Mbye Kunda 2nd July
Jah Kunda 5th July
Sutukoba 6th, 7th July

Planting: Direct seeding by drilling along east-west direction at the rate of 60kg/ha in 30 cm row spacing

Fertilizer: Basal: NPK 15-15-15 at 100kg/ha
Top dressing: Urea at 25kg/ha each, twice on 21 and 45 days after sowing

Data collection: Agronomic traits/characteristics: plant length, culm length, panicle length, flag leaf length, grain yield, yield components, growth duration, lodging susceptibility and disease damage
Soil analysis is done by Institute for Development Research, Dakar, Senegal

Meteorology data: rainfall, temperature, humidity, solar radiation



The trial was planned with the following principles:

1) Extension to small-scale upland farmers should be considered.
2) Despite the above tractor ploughing and chemical fertilizer were carried out in all the verification field plots to ensure uniformity of conditions.
3) Verification field plots should not be selected at enclosures in research station, but as demonstrations in farmers' fields.
4) Verification fields are set in North Bank of URD because the area has disadvantages in terms of access and communication..
5) Verification sites are scattered for rainfall comparison among the sites.
6) The inadaptable areas for upland NERICA will be studied, because the water requirement of rice is much more than millet, maize and sorghum.
7) The effectiveness of fertilizer applications and cropping patterns should be assigned to the Gambian side in the future. The Study Team could not deal with them in this Verification Study (due to time constraint).
8) In consideration of the importance of animal husbandry in the area, pesticides and herbicides should not be applied.

(5) Background Information

1) Soil Analysis:

Two kinds of soil analysis were carried out, namely: physical properties and chemical properties in 8 farms. The physical property was determined by soil texture, and for the chemical properties, analysis was conducted for soil pH, EC, organic matter, total C, Total N, exchangeable Mg, exchangeable Na, exchangeable K, exchangeable Ca, CEC, available Fe,

available Mn, Al, Cu, Zn were analysed. The samples were taken from two strata as follows: 0-15cm and 15-30cm per spot.

Most of the farms had loamy soil, but some parts of Mbaye Kunda had sandy texture and Sutukoba had relatively high clay content as shown in the table below.

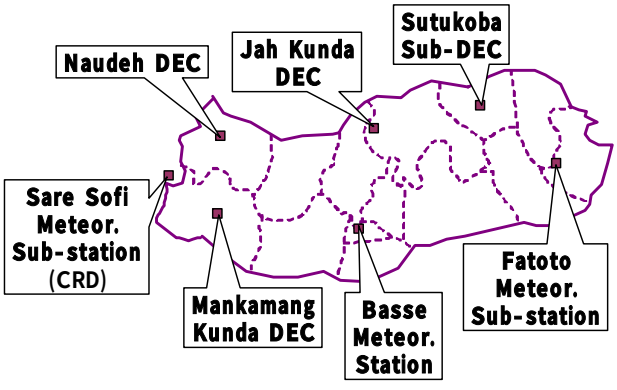
Table 5.16 Soil Texture at Adaptability Trial Farms

Village	Name of farm	Depth (cm)	% Clay	% Silt	% Sand	Soil classification, International method
Naudeh	DEC	0-15	6.8	20.5	69.9	Sandy Loam
		15-30	8.4	18.9	71.8	Sandy Loam
	Farmers'	0-15	7.8	26.6	63.5	Loam
		15-30	6.9	28.6	63.0	Loam
Mbye Kunda	South	0-15	2.5	15.0	81.7	Sandy Loam
		15-30	3.5	15.4	81.1	Sandy Loam
	North	0-15	1.7	11.0	86.6	Loamy Sand
		15-30	2.8	11.6	85.6	Loamy Sand
Jah Kunda	DEC	0-15	6.9	18.8	73.5	Sandy Loam
		15-30	9.0	18.5	72.8	Sandy Loam
	Farmers'	0-15	5.5	22.5	72.4	Sandy Loam
		15-30	8.8	19.8	71.0	Sandy Loam
Sutukoba	Mawdo	0-15	8.9	28.6	61.3	Loam
		15-30	15.9	26.4	56.2	Clay Loam
	Arafang	0-15	11.9	38.0	52.3	Loam
		15-30	10.3	37.2	52.8	Loam

Chemical properties of the soils are shown in Table 5.27. The soils were acidic in all the trial farms, with pH(H_2O) values ranging from 4.9 to 6.4. From the viewpoint of soil fertility, it is characterized by the poor content of the three nutrient elements (N, P, K) and extremely low CEC. Exchangeable cations and micronutrients also showed low values in general. These chemical properties can be attributed principally to the poor content of clay and organic matter in these soils. However, it is judged that there would not be direct damage to the crops due to the acidity or excess of harmful elements.

2) Meteorological data:

In addition to the 3 verification sites i.e. Naudeh DEC, Jah Kunda DEC and Sutukoba sub-DEC, the rainfall data have been collected from Basse meteorology station, Fatoto meteorology sub-station, Mankamang Kunda DEC



and Sare Sofi meteorology sub-station. Daily data on maximum, minimum and mean temperature, humidity and daily sunshine hours at Basse meteorology station have been also collected as shown in from Table 5.28 to Table 5.31.

(6) Results

1) General growth progress

Emergence of all tested varieties was very good in all farms because of the pre-treatments at seed selection and the availability of sufficient soil moisture. Emergence of shoots took only for 4 or 5 days after sowing, and seedling establishment was also even. After germination, constant rainfall helped the growth of seedlings. The record of plant length of varieties is shown in Table 5.32. The feature of plant length was varying among the varieties. While ATM3 which is non-NERICA has the shortest length in all farms, 3 of NERICA do not have a fixed pattern.

The observation of each trial farm is expressed as below.

〔 **Naudeh** 〕

The trials were conducted in the two agricultural fields of DEC's and farmers' group's. These 2 farms were located away from the Gambia River and the soils were loamy.

In the DEC field, the trial farm spanned two different areas in which different crops were cultivated in the previous years. Therefore difference of growth appeared between the eastern half and the western half of the DEC trial farm. The eastern part, however, had been fallowed for 10 years until 2003. On the other hand, the western part had been rotated with maize, millet and groundnuts these past years. The crops grew up much better in the fallowed eastern part. The growth differences between the east and west could be seen in 10 days after sowing. Although the western part had been top dressed, it was obvious that the growth in the west part could not catch up with the one in the east part. Moreover, the DEC farm was verminated right after heading by locust and beetle. The study team had decided not to use agricultural chemicals for a series of trials, however, a local extension officer applied insecticide to solve the problem since the Japanese Study Team was absent at the time. It is not clear if dilution was conducted appropriately by the extension officer. Spray of the insecticide, however, brought browning symptom on leaves and might affect grain filling. Plots of P163 and P105 which were located at both ends of DEC farm particularly suffered from browning symptom.

The other, which is farmers' group's field, has been cultivated since the beginning of 2005 after 10-year of fallowing. The field is located in gently sloped valley and experiences run-off water when it rains heavily, as was observed by the Study Team in the locational conditions after establishment of seedlings. In the mid of July, run-off water brought

down a wire fence and the wire fence prostrated rice plants in a part of the trial field. Fortunately the rice plants recovered after a few days and the trial was continued. The biggest problem of the farm was weeds. The farmers' group only worked on weeding on the predetermined days and weeds were not removed on a timely basis. There always, hence, were weeds in the field, which brought competitive stress to rice plants.

〔 **Mbaye Kunda** 〕

This village was selected as a low soil fertility area because of its sandy soil textured soils. The Study Team conducted trials on two farms owned by a local farmers' group. The farmers' group has been cultivating groundnuts, maize and sorghum in the fields. They were close to the Gambia River but were not influenced by fluctuations in water level. However, two farms are located in an area gently sloped to the River. When it rains heavily surface water runs from the field into the River. The Study Team noticed the condition in the beginning of the verification trial period and dug collector drain canals around the trial farms. However, due to heavy rainfall, the sandy waterway collapsed and eventually let two farms suffer from run-off water. In addition, nitrogen deficiency brought about yellowing of leaves to all the varieties in the both fields. First topdressing of urea did not seem to have reached to rice roots because there was no improvement in terms of leaves' colour or growth in both farms. Rice plants did not grow properly in the northern trial farm damaged by floods even after the second topdressing. The number of plants kept decreasing due to death; there was little yield in the end. On the other hand, the second topdressing improved leaves colour as the southern trial farm did not suffer from run-off water after the mid of the growing period. However the stagnation of plants growth affected yields badly. The farmers' group weeded appropriately. No disease or insect damage was observed.

〔 **Jah Kunda** 〕

The village is far from the Gambia River and has 45m altitude. The two trial farms were selected as typical upland condition areas. Both farm lands consist of sandy loam. One field belonged to the DEC and used to be a cashew orchard until 2002. It was converted to upland crop field where maize and cowpea have been cropped during the last two rainy seasons. The other field belonged to an individual farmer; crop rotation of groundnuts, sorghum, fallowing and sorghum has been conducted. The greatest problem in the two fields was damage by termite. P105 at the DEC farm heavily got badly damaged. The edge of farmer's farm also suffered from damage due to browsing by animals. The farmer's farm was located in the site of field where millet was cultivated last year and fallowed in 2005. The termites which came with the residues of the millet cultivated previously invaded the trial farm. Although termites caused lodging in P31 and P163 in

the farmer's farm the plants grew smoothly as a whole. Both farms did not experience competition against disease, insect damage or weeds.

〔 **Sutukoba** 〕

Although this village is located far away from the Gambia River, many farmers have experience in paddy rice cultivation. Two of them who are very good at cultivating paddy rice cooperatively allowed the Study Team to use their farm lands for the trial. The soil texture of Sutukoba contains more silt and clay: it has higher soil fertility than other areas. One farm was located in the remote hill surrounded by bush. That field was restarted for cultivation in 2005 after 15-year of fallow. The other was located in the field where upland rice has been in rotation. Both trial farms were managed appropriately in terms of weeding, disease and insect damage. The plants, therefore, grew up satisfactorily.

2) Morphological and growth characteristics on tested varieties

The Morphological and growth characteristics of the varieties are shown in Table 5.17 below.

Table 5.17 Morphological and growth characteristics on Adaptability Trial

Type	Varietal Abbre-viation	Colour				Presence of Awn
		Leaf sheath	Leaf blade	Husk	Apiculus colour	
NERICA	P 31	green	green	yellowish brown	red	non existence
	P 105	green	green	gold	red	non existence
	P 163	green	green	gold	red	non existence
Non NERICA	ATM3	green	green	gold	straw	non existence

Type	Varietal Abbre-viation	Plant length (cm) *	Culm length (cm) *	Panicle length (cm) *	Flag leaf length (cm) *	Resistibility to blast	Lodging	Thresh-ability
NERICA	P 31	68~106	50~85	18~21	19~27	no incidence	intermediate	difficult
	P 105	93～111	63~88	21~24	30~37	no incidence	intermediate	moderate
	P 163	79～106	61~95	17~21	20~29	no incidence	severe	moderate
Non NERICA	ATM3	68～80	48~59	19~21	20~25	no incidence	slight	loose

*：data of "Mbaye Kunda / south farm" were not included because of poor growth

All the varieties had green colour on leaf sheath and leaf blade. Awn could not be seen in any of them. A common characteristic seen in all three NERICA varieties was the presence of a red spot on the tip of green spikelet after heading. The red spot had disappeared after the husk maturing. It is easy to distinguish P31 from other varieties because of the brownish husk. ATM3 turned out to be the shortest culm variety in all the trial farms. However, none of the three NERICA varieties can be affirmed as shortest or highest since the plant lengths of the varieties varied in each farm. P105 had larger flag leaf

and panicle than any other varieties. In addition, flag leaves of all the NERICA varieties were standing erect. The posture, therefore, looked as a good receiver of sunshine for photosynthesis unless the rice plant lodges. While it was observed distinctly that ATM3 hardly lodges thanks to its short length and panicle number type, three varieties of NERICA lodged without obvious reason. Although the correlation between culm length or panicle weight and lodging habit was hypothesized, the relationships between them were not found. Concerning the threshability and shattering habit, P31 showed the most difficult threshability: it was very hard to remove the grains of P31 from rachises and required much more workforce to thresh all grains. Loose threshability was seen in ATM3; it was losing the grains even in the farms. Although it was reported that NERICA in Western Division was attacked very seriously by rice blast, damage has not been observed in the last few years in URD. It might mean that URD has some advantage to prevent the outbreak of blast. NERICA varieties do not seem to have strong resistance considering the example in Western Division. Regarding diseases, one particular black fungus was observed on both outside and inside of husks. Although percentage of the fungus damage on grains was not so high it was observed in all trial farms and in all varieties. The damage seemed to reduce grain filling and grain quality.

3) Growth earliness on tested varieties

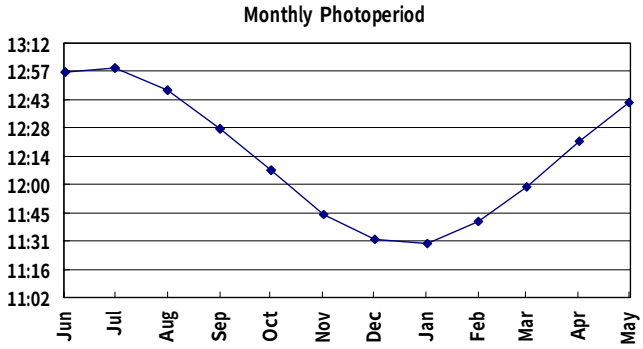
The maturing date and the growth duration were recorded as in the Table below.

Table 5.18 Maturing Period on Adaptability Trial

Village	Farm	Seeding date	Date of maturity				Growth duration (days)			
			P31	P105	P163	ATM3	P31	P105	P163	ATM3
Naudeh	DEC	30-Jun	28-Sep	3-Oct	2-Oct	30-Sep	90	95	94	92
	Farmer		27-Sep	1-Oct	3-Oct	3-Oct	89	93	95	95
Mbaye Kunda	south	2-Jul	5-Oct	8-Oct	7-Oct	2-Oct	95	98	97	92
	north		13-Oct	12-Oct	12-Oct	14-Oct	103	102	102	104
Jah Kunda	DEC	5-Jul	3-Oct	10-Oct	7-Oct	5-Oct	90	97	94	92
	Farmer		3-Oct	7-Oct	7-Oct	7-Oct	90	94	94	94
Sutukoba	Mawdo	6-Jul	4-Oct	10-Oct	6-Oct	9-Oct	90	96	92	95

In Mbaye Kunda growth of seedlings was interfered due to the low fertility and soil erosion. This delayed the starting of reproductive period and eventually might have prolonged the growth duration.

The annual variation of photoperiod in The Gambia ranges from 13 hours in June to 11 hours and 30 minutes in December: the difference is only one hour and 15 minutes as shown below.



There was 7-day lag in seeding date from Naudeh seeded on 30th June to Mawdo farm in Sutukoba seeded on 6th July. When Arafang farm is compared with two farms in Naudeh three varieties of NERICA got matured almost on the same day (28th or 27th September) in spite of 7-day seeding lag. This result seems to imply that the NERICA planted in Arafang have photoperiodic sensitivity. On the other hand, it took same durations to mature for all NERICAs tried in Mawdo farm and 2 farms in Naudeh in spite of 6-day lag of seeding dates. This result then seems to indicate that NERICAs do not have photoperiodic sensitivity.

It is not appropriate to jump to conclusions on the degree of photosensitivity only by conducting a single trial. Since NERICA can be cultivated in higher latitudes it may imply that NERICA does not have that high photosensitivity.

4) Yield and yield components

The table below is showing the results of yield and yield components on the adaptability trial.

Table 5.19 Yield and Yield Components on Adaptability Trial

Village	Farm	P31					P105				
		No. of Panicle	No. of Grain	% of Ripened	Wt. '000 grains	**Yield (t/ha)**	No. of Panicle	No. of Grain	% of Ripened	Wt. '000 grains	**Yield (t/ha)**
Naudeh	DEC	121.3	79.2	73%	28.6	**2.0**	85.9	101.1	44%	28.3	**1.1**
	Farmer	105.5	66.1	68%	26.8	**1.3**	82.1	88.6	59%	27.4	**1.2**
Mbaye Kunda	South	90.5	56.0	75%	24.3	**0.9**	89.4	88.7	76%	27.8	**1.7**
	North	-	-	-	-	**-**	-	-	-	-	-
JahKunda	DEC	164.3	93.9	73%	30.4	**3.4**	48.6	97.0	51%	27.0	**0.7**
	Farmer	144.9	70.8	72%	27.0	**2.0**	106.2	91.1	68%	29.0	**1.9**
Sutukoba	Mawdo	156.5	77.1	76%	29.0	**2.7**	126.3	84.2	68%	29.8	**2.2**
	Arafang	218.0	75.3	71%	31.9	**3.7**	129.4	109.2	76%	29.8	**3.2**

Village	Farm	P163					ATM3				
		No. of Panicle	No. of Grain	% of Ripened	Wt. '000 grains	**Yield (t/ha)**	No. of Panicle	No. of Grain	% of Ripened	Wt. '000 grains	**Yield (t/ha)**
Naudeh	DEC	82.9	70.0	69%	34.5	**1.4**	268.7	65.8	69%	26.4	**3.2**
	Farmer	82.2	56.8	76%	33.3	**1.2**	215.0	53.9	82%	26.0	**2.5**
Mbaye Kunda	South	79.7	50.1	78%	33.5	**1.0**	151.6	60.4	80%	23.5	**1.7**
	North	-	-	-	-	**-**	-	-	-	-	**-**
JahKunda	DEC	152.4	73.0	77%	38.2	**3.3**	240.8	66.9	71%	26.2	**3.0**
	Farmer	118.9	65.2	69%	36.0	**1.9**	220.3	52.6	79%	26.3	**2.4**
Sutukoba	Mawdo	131.2	66.3	83%	37.7	**2.7**	294.9	52.7	71%	28.2	**3.1**
	Arafang	132.5	65.6	81%	37.4	**2.6**	276.7	58.9	87%	28.2	**4.0**

The yields of 2 farms in Sututkoba and DEC farm in Jah Kunda are fairly good except P105 in Jah Kunda which was severely attacked by termites. In spite of the shortest maturing duration, all varieties in Arafang farm in Sutukoba except P163 particularly shows the best production. Compared with the average yield of each farm, ATM3 (2.8ton/ha) showed the best yield that is followed by P31 (2.3), P163 (2.0) and P105 (1.7).

Regarding correlation between yield and yield components of each variety, positive and high correlation between the yields and the numbers of panicles per square meter could be seen in every variety (i.e. P31:R=0.942**, P105:R=0.913**, P163:R=0.983***, ATM3:R=0.882**). Moreover, all the varieties were found to have positive correlation between the yields and the grain weights (P31:R=0.955***, P105:R=0.867*, P163:R=0.981***, ATM3:R=0.864*). Other correlation was not observed.

Three of NERICA varieties have less number of panicles per square meter and a large number of spiklets and heavy grains: they can be called heavy panicle type rice. More yield can be expected by increasing panicles and more ripening by proper maturing practice. Sandy fields tend to yield less than others which consist of rich silt and clay under the even fertilizer dosage practice. It is necessary to classify the area by the soil texture and to grasp appropriate amount of fertilizer to extend upland NERICA.

(7) Dissemination Activities

During the NERICA Verification Study in the second cycle, 4 extension staff members of URD North were involved. The SMS facilitated the process by explaining the objectives of the trials and the importance of careful data collection to the extension staff. The SMS has a rich experience as an extension officer, but, he was not very familiar with research activities. Currently however, he has learned how to plan the experiments through participating in the trials for the last two years. After the project is handed over to the Gambian side, he can design the needed trials effectively.

5.8 Lessons and Recommendations

5.8.1 Hypotheses and Results

Two Hypotheses were formulated for the NERICA Verification Sudy in order to introduce upland NERICA cultivation to URD farmers.

Hypothesis 1: Cultivation along the toposequence (upland and lowland, gently sloping land) produces different results at each level

This hypothesis has not been verified yet, because during the 2004/2005 cropping season only hydromorphic (lowland) farms were tested in the study. Almost all areas of the farms had submergence or seepage of groundwater due to high rainfall in the season.

In accordance with the lesson learnt from the study for the first season, typical upland farms were selected in the northern part of URD for the second verification study. Sandy soil farm, loamy soil farm, highland farm, farm which has been fallowed for ten (10) years and newly re-started to cultivate at bushy area are included in the trial.

The results of the trial are expected to show some differences among the farm locations and conditions.

Hypothesis 2: The positive traits (drought resistance, disease and pest resistance, low fertilizer requirement, flavour etc) of NERICA will be realized on cultivation

The study to prove the second hypothesis is also still in progress. To prove some of the positive traits will require some more years especially the evaluation of resistances, adaptabilities, and fertilizer requirements or responses under different conditions. Even after the Study Team leaves the trials needs to be continued because of the varying and fluctuating rainfall conditions.

However, according to the farmers who tasted the NERICA products at workshop in the first cycle, NERICA varieties were palatable and satisfactory.

5.8.2 Feedback to the Master Plan

It will take some time to prove the above hypotheses perfectly; however, some new constraints have been identified through the verification study. These constraints should be resolved for the expansion of upland NERICA varieties and are summarised below as lesson learnt.

Table 5.20 Feedback to the Master Plan from NERICA Verification Project

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
Agricultural technology	• Transactions in NERICA seed has started, as the result of good performance of the varieties in 2004/2005 season. But the quality, especially maturity, purity and storing condition of the seed are very poor. The seed will be degraded quickly unless proper management skills of seed production are provided. • There is still outstanding data to be collected under normal precipitation since the verification year, the second season had unusually favourable rainfall.	⇒ Training of potential farmers as seed growers throughout the production season and in transaction of NERICA seed is to be conducted. Seed business must be done with proper, strict and careful management. **(C-15, C-16)** ⇒ The trial should be continued until enough data is collected. **(A-4)**
Implementation Structure	• Extension staff has some functions to report their activity and undertake some data collection such as rainfall data monthly. But the data from them are not completely reliable. The data are important resources for analysis and prepare the development interventions; however, this is not always understood fully.	⇒ The project need to continuously let them fully understand the value of data. Trainings and sensitization aimed at extension staff needs to be continued. Capacity building of staff should be concentrated on collection of the required data in their sites.

Table 5.21 Days to 50 % Emergence

Plot Number	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10
days to 50 % emergence	13.5	10.5	12.5	13.0	13.0	13.5	10.5	11.5	13.0	13.0
Plot Number	**Plot 11**	**Plot 12**	**Plot 13**	**Plot 14**	**Plot 15**	**Plot 16**	**Plot 17**	**Plot 18**	**Plot 19**	**Plot 20**
days to 50 % emergence	13.5	na	10.0	11.0	13.5	13.5	12.5	9.5	10.5	12.5
Plot Number	**Plot 21**	**Plot 22**	**Plot 23**	**Plot 24**	**Plot 25**	**Plot 26**	**Plot 27**	**Plot 28**	**Plot 29**	**Plot 30**
days to 50 % emergence	12.5	11.5	11.5	11.5	12.5	12.5	11.5	11.5	10.5	12.5

Table 5.22 Rainfall Record at Basse Meteorology Station in 2004

2004	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May																
Jun		TR	14.0				3.0	2.1	22.0	9.8		15.0		27.2		
Jul	2.3	TR	37.2	TR	26.1	10.6		2.8	5.7	1.3	34.6	29.3	TR	25.8		
Aug	1.2	0.7	10.2					15.6					12.7			
Sep			38.1			4.1	0.8	1.8	32.6	25.6		13.0		1.0		24.6
Oct													23.4			

2004	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May								28.0								28.0
Jun					18.6					2.2					---	113.9
Jul		21.6	2.8		0.8	TR	2.1	20.2	5.3	8.9	1.1	5.4			24.6	268.5
Aug	7.2	27.2		84.3	1.6				3.5	43.0	5.2	29.8	14.9	11.0	10.6	278.7
Sep	1.0			2.0	30.3	0.3	12.2		21.6						---	209.0
Oct							27.0									50.4

TR: trace

Table 5.23 Temperature and Humidity at Basse Meteorology Station in 2004

day	Jun				Jul				Aug				Sep				Oct			
	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %
	av.	max	min	av.	av.	max	min	av.	av.	max	min	av.	av.	max	min	av.	av.	max	min	av.
1	28.0	39.9	25.6	81	28.2	31.7	25.9	82	27.1	31.6	21.4	85	26.8	32.9	22.3	85	28.1	35.0	23.4	80
2	26.8	34.4	25.1	83	27.2	36.0	24.9	90	27.8	33.2	24.0	80	28.0	33.3	23.0	84	28.5	34.6	23.4	82
3	27.5	38.1	25.4	90	27.0	31.7	20.9	99	24.5	25.5	21.8	91	24.9	27.6	24.8	91	28.3	35.7	21.9	77
4	26.8	34.5	23.0	93	26.4	34.2	21.4	93	27.5	33.9	21.5	84	26.8	33.0	20.5	86	29.4	35.5	22.2	79
5	28.3	39.1	24.0	83	25.4	34.3	23.7	94	28.3	33.6	23.2	80	28.5	34.0	20.5	81	28.9	34.6	24.6	83
6	27.8	36.8	25.5	73	25.0	30.0	21.5	97	28.1	33.0	24.4	78	29.1	34.7	23.6	85	27.6	33.4	22.9	79
7	28.1	37.0	25.9	81	26.8	33.8	21.5	95	28.1	34.6	23.6	79	26.2	30.4	21.9	85	27.2	34.4	22.3	79
8	28.1	38.2	21.6	76	27.2	34.4	24.4	88	27.5	34.1	24.5	84	27.0	33.0	22.2	82	29.3	37.0	23.0	77
9	27.5	37.2	24.9	71	26.4	34.2	23.5	97	24.2	33.1	23.3	85	26.6	31.0	22.5	86	27.3	32.4	23.8	81
10	25.9	32.0	21.4	96	26.6	32.0	21.8	97	28.9	34.7	23.2	82	26.6	32.7	21.8	87	29.1	36.6	23.0	79
11	27.6	35.0	21.4	92	27.2	32.9	22.3	91	29.5	34.9	23.9	80	25.9	32.1	22.5	88	29.3	35.7	24.9	79
12	27.4	35.9	24.7	86	26.2	32.2	20.6	98	28.7	33.0	25.6	80	27.8	32.9	22.5	85	28.4	33.5	24.3	82
13	26.0	34.2	21.9	99	25.6	32.5	21.4	98	27.1	33.6	24.6	83	26.7	33.6	22.2	84	29.3	35.8	24.3	83
14	26.0	34.6	23.5	89	25.8	33.4	24.0	96	27.8	33.9	23.9	84	26.8	30.6	22.5	85	28.6	36.0	22.0	81
15	26.0	34.5	21.2	98	26.2	31.6	22.2	96	26.8	32.7	24.0	85	28.1	35.0	24.2	85	29.4	36.0	23.2	83
16	26.5	35.1	22.5	90	26.6	33.0	22.5	92	27.5	33.1	23.5	83	24.8	28.5	22.2	91	28.1	33.6	23.2	79
17	26.8	37.0	23.9	89	27.4	33.0	24.5	95	29.3	33.9	23.5	81	28.1	34.5	22.4	85	28.6	34.0	23.2	82
18	27.2	36.5	24.0	83	27.8	33.6	24.9	95	26.2	31.5	25.1	92	28.2	35.3	22.6	81	29.1	36.0	24.0	80
19	28.0	37.3	24.2	75	28.0	31.5	21.1	98	27.8	33.2	23.5	84	28.5	34.4	22.8	82	28.4	34.8	24.2	78
20	28.2	36.2	26.0	78	27.2	32.0	21.1	94	27.9	32.5	24.0	87	28.2	34.0	24.2	82	29.1	38.1	23.0	74
21	27.4	35.9	25.0	80	27.2	32.5	23.0	92	24.6	28.1	21.6	92	27.2	33.5	22.2	81	29.4	35.2	22.5	78
22	26.3	33.2	22.0	94	26.0	32.0	21.7	95	27.7	32.8	22.1	84	25.4	30.3	21.2	89	28.6	35.0	23.0	78
23	28.1	36.6	23.1	92	28.0	33.0	23.6	94	28.6	33.5	22.9	82	28.1	34.1	21.4	82	28.6	34.4	23.4	79
24	27.4	35.4	25.2	84	27.2	28.5	23.9	96	27.8	32.4	24.5	81	26.4	33.0	21.9	82	24.7	29.2	21.0	88
25	26.4	35.6	24.7	90	26.2	30.7	21.4	96	28.2	33.9	24.2	80	25.8	31.4	21.9	88	28.7	36.8	22.3	77
26	26.9	35.4	23.9	87	26.4	31.0	23.0	95	27.6	33.5	24.0	86	27.6	33.7	21.0	84	28.4	35.4	22.4	83
27	25.6	33.8	22.0	88	25.8	31.0	23.2	98	26.5	30.7	21.6	87	27.9	34.1	23.4	79	28.1	34.0	23.9	85
28	27.2	36.0	22.8	90	27.0	33.7	23.2	98	25.8	27.6	22.2	93	28.3	32.8	24.0	82	28.3	35.0	24.8	82
29	27.0	37.1	24.5	77	27.2	34.0	23.4	98	26.3	31.5	23.5	87	27.6	34.2	22.2	80	27.3	36.1	23.0	79
30	28.3	36.9	24.9	79	26.8	34.0	24.0	98	26.3	31.1	22.2	86	28.6	34.7	22.9	79	29.0	37.9	22.5	71
31	--	--	--	--	27.2	28.0	23.8	98	26.2	32.5	21.6	85	--	--	--	--	29.1	36.5	22.0	72

Table 5.24 Plant Length (cm) Recorded in Varietal Screening Trial

Plot No.	Variety	Fertilizer application	Field level	21-Jul	5-Aug	15-Aug	25-Aug	4-Sep	14-Sep	24-Sep	4-Oct
1	P105	applied	Upper	13.5	33.7	42.3	54.4	66.1	78.5	93.2	97.4
2	P31			12.9	27.6	38.5	54.1	66.6	79.8	95.2	95.8
3	P163			13.0	29.3	39.4	54.8	70.7	85.2	95.9	102.2
4	WAB365			12.3	28.9	45.9	61.2	73.5	80.9	88.3	96.8
5	WAB56-50			12.3	29.1	41.7	54.0	62.5	73.9	80.5	90.9
6	P105	non		15.1	31.7	36.5	43.2	51.1	53.9	60.9	72.3
7	P31			18.4	35.3	44.1	49.5	63.3	74.1	84.2	91.7
8	P163			16.3	37.5	47.2	56.4	63.5	77.2	81.6	88.7
9	WAB365			17.7	35.9	47.4	50.1	61.0	68.7	75.7	86.4
10	WAB56-50			15.3	35.7	44.0	48.2	60.0	70.3	72.8	84.0
11	P105	applied	Moderate	15.7	34.2	42.9	61.7	67.2	81.2	92.3	99.2
12	P31			18.5	36.0	46.8	56.0	69.1	82.2	94.2	102.9
13	P163			19.4	38.9	51.5	69.3	82.6	89.1	102.7	107.0
14	WAB365			14.0	30.9	41.4	56.7	67.3	76.7	86.7	94.7
15	WAB56-50			13.8	29.6	40.6	52.1	63.8	66.6	79.1	90.9
16	P105	non		14.9	29.1	38.8	46.4	49.5	56.1	63.7	74.8
17	P31			16.7	32.6	53.8	56.6	59.4	68.4	76.6	86.7
18	P163			16.9	37.7	54.3	66.5	75.6	91.9	98.7	104.8
19	WAB365			17.8	39.1	46.9	64.7	73.4	87.1	88.4	93.6
20	WAB56-50			22.0	52.1	67.6	75.1	85.8	92.1	94.4	100.7
21	P105	applied	Paddy	13.7	29.6	41.9	57.3	67.2	80.0	na	93.6
22	P31			13.7	28.1	37.3	51.6	56.7	69.1	na	82.5
23	P163			14.6	28.6	41.2	49.2	56.3	67.9	na	93.8
24	WAB365			14.5	28.0	38.5	53.5	61.9	73.4	na	81.6
25	WAB56-50			14.5	29.6	40.2	51.4	63.3	68.4	na	83.5
26	P105	non		13.8	29.9	43.4	57.1	62.6	65.9	na	86.8
27	P31			14.1	29.4	44.8	60.7	68.7	73.5	na	88.3
28	P163			18.7	31.4	46.0	59.8	71.5	80.3	na	97.4
29	WAB365			17.3	39.7	52.4	64.7	75.1	81.3	na	87.6
30	WAB56-50			19.1	44.2	58.1	67.7	78.5	85.9	na	92.4

Table 5.25 Number of Tillers recorded in Varietal Screening Trial

Plot No.	Variety	Fertilizer application	Field level	21-Jul	5-Aug	15-Aug	25-Aug	4-Sep	14-Sep	24-Sep	4-Oct
1	P105	applied	Upper	1.0	1.7	3.0	4.2	4.5	5.2	4.8	4.5
2	P31			1.0	2.4	2.8	3.7	5.9	7.2	6.5	5.9
3	P163			1.0	2.6	3.1	3.9	4.8	5.7	5.2	5.3
4	WAB365			1.0	3.1	3.7	5.3	7.3	8.1	7.9	8.5
5	WAB56-50			1.0	2.8	2.7	3.5	5.1	5.5	5.8	5.7
6	P105	non		1.0	2.6	2.1	2.6	2.9	3.1	3.4	3.4
7	P31			1.0	3.6	3.6	4.5	6.6	7.1	7.6	7.5
8	P163			1.0	2.9	1.9	3.1	3.7	3.8	3.8	3.9
9	WAB365			1.0	3.2	3.4	4.6	4.7	5.9	7.9	7.2
10	WAB56-50			1.0	3.2	4.1	4.2	5.7	7.1	6.8	7.2
11	P105	applied	Moderate	1.0	3.4	2.5	3.8	4.1	4.4	4.4	4.5
12	P31			1.0	3.0	2.7	4.1	5.5	6.7	6.3	6.2
13	P163			1.0	3.6	3.3	5.0	7.1	7.4	7.3	7.4
14	WAB365			1.0	2.9	3.3	5.4	7.6	8.7	7.7	7.9
15	WAB56-50			1.0	2.6	3.5	5.1	6.6	7.9	6.2	6.4
16	P105	non		1.0	3.0	2.5	3.2	3.7	3.9	3.7	4.4
17	P31			1.0	3.3	4.2	4.5	5.5	5.7	5.7	6.1
18	P163			1.0	3.0	2.9	3.9	5.5	5.1	5.1	4.8
19	WAB365			1.0	3.5	2.7	6.7	7.1	8.4	7.8	7.8
20	WAB56-50			1.0	4.0	4.6	6.4	7.6	7.4	8.4	8.6
21	P105	applied	Paddy	1.0	2.1	2.2	2.6	3.6	3.8	na	3.5
22	P31			1.0	2.0	1.9	3.8	3.7	4.5	na	4.4
23	P163			1.0	2.7	2.4	4.3	5.5	5.3	na	4.1
24	WAB365			1.0	2.7	3.9	4.7	5.9	7.7	na	7.4
25	WAB56-50			1.0	2.3	2.8	3.5	4.6	5.4	na	4.6
26	P105	non		1.0	2.4	2.2	2.7	3.3	3.1	na	3.5
27	P31			1.0	2.7	4.0	5.2	6.0	5.3	na	5.5
28	P163			1.0	2.7	3.2	4.4	5.9	6.3	na	4.9
29	WAB365			1.0	4.5	5.7	7.9	10.2	10.5	na	11.8
30	WAB56-50			1.0	4.0	4.8	5.9	7.0	8.3	na	8.3

Table 5.26 Yield and its Components in Varietal Screening Trial

Plot No.	Variety	Fertilizer application	Field level	Grain yield (gm/m^2)	No. of panicles / m^2	No. of grains / panicle	% of filled grain	1000 grain weight (gm)
1	P105	applied	Upper	135.6	170	145	79.3	25.0
2	P31			199.4	276	74	72.1	29.5
3	P163			111.1	141	101	61.4	30.8
4	WAB365			149.9	266	77	68.8	25.9
5	WAB56-50			134.6	115	78	68.0	25.6
6	P105	non		59.9	120	73	78.1	25.0
7	P31			92.9	126	87	81.6	21.6
8	P163			80.3	80	78	71.8	28.9
9	WAB365			111.3	168	95	81.1	25.7
10	WAB56-50			77.3	138	54	79.6	40.4
11	P105	applied	Moderate	192.5	155	84	71.4	35.4
12	P31			67.6	155	59	55.9	26.4
13	P163			103.3	120	81	77.8	34.8
14	WAB365			215.4	145	76	65.8	29.7
15	WAB56-50			164.1	271	74	82.4	22.7
16	P105	non		58.8	120	81	70.4	28.3
17	P31			52.6	143	81	84.0	24.2
18	P163			88.0	141	98	67.4	27.1
19	WAB365			141.4	205	90	65.6	25.4
20	WAB56-50			76.5	153	70	70.0	31.7
21	P105	applied	Paddy	146.4	140	138	81.2	25.0
22	P31			68.9	160	81	69.1	27.9
23	P163			114.8	215	67	79.1	20.7
24	WAB365			136.2	248	68	72.1	27.9
25	WAB56-50			84.4	186	76	80.3	23.2
26	P105	non		150.8	200	59	72.9	32.2
27	P31			104.6	155	78	65.4	29.8
28	P163			67.2	138	74	77.0	29.8
29	WAB365			154.7	183	80	68.8	25.7
30	WAB56-50			74.9	175	91	76.9	28.7

Table 5.27 Soil Chemical Analysis for Adaptability Trial Farms

Village	Farm	Depth	pH		EC	Total N	Total C	Organic *	Exchangeable Cations				CEC
			H_2O	KCl	µS/cm	%	%	%	Ca Meq	Mg Meq	Na Meq	K Meq	Meq
Naudeh	DEC	0~15	5.5	5.2	42	0.080	1.06	1.32	2.03	0.48	0.13	0.17	2.82
		15~30	5.5	5.0	62	0.039	0.52	0.75	1.32	0.33	0.13	0.12	3.52
	Farmers'	0~15	5. 7	5.3	56	0.048	0.72	1.05	1.25	0.46	0.11	0.10	2.97
		15~30	6.1	5.8	89	0.066	0.96	1.72	1.47	0.65	0.09	0.22	2.79
Mbaye Kunda	South	0~15	6.4	6.2	48	0.030	0.36	0.53	0.75	0.27	0.09	0.16	1.29
		15~30	6.3	5.9	43	0.030	0.38	0.43	0.88	0.31	0.14	0.12	1.20
	North	0~15	5.5	5.1	29	0.016	0.23	0.39	0.26	0.10	0.08	0.05	1.10
		15~30	5.1	4.8	21	0.018	0.24	0.31	0.55	0.11	0.12	0.04	1.61
Jah Kunda	DEC	0~15	6.2	6.0	66	0.058	0.80	1.23	2.14	0.59	0.18	0.27	3.82
		15~30	6.2	5.7	59	0.034	0.50	0.69	1.48	0.39	0.12	0.19	3.55
	Farmers'	0~15	5.3	4.9	34	0.035	0.52	0.76	0.83	0.28	0.09	0.10	2.21
		15~30	5.0	4.5	38	0.031	0.46	0.64	0.71	0.28	0.13	0.10	3.53
Sutukoba	Mawdo	0~15	5.8	5.3	41	0.038	0.61	0.80	1.58	0.60	0.16	0.04	4.55
		15~30	4.9	4.2	43	0.043	0.65	0.80	1.00	0.52	0.10	0.04	4.69
	Arafang	0~15	5.8	5.4	72	0.059	0.87	1.55	1.69	0.54	0.11	0.13	2.09
		15~30	5.2	4.9	45	0.046	0.76	1.16	1.66	0.47	0.18	0.11	4.59

*Organic: Organic matter

Village	Farm	Depth	P Retention Mg/100g	Av. Mn Meq	Av. Fe Meq	Al g/kg	Cu mg/kg	Zn mg/kg
Naudeh	DEC	0~15	3.56	0.09	0.00	11.90	2.00	9.80
		15~30	6.73	0.07	0.01	14.41	2.00	9.59
	Farmers'	0~15	46.53	0.03	0.01	9.26	1.98	8.71
		15~30	5.19	0.05	0.00	8.54	2.00	8.58
Mbaye Kunda	South	0~15	< 3	0.04	0.01	5.03	0.00	5.37
		15~30	2.52	0.04	0.02	5.38	0.00	5.55
	North	0~15	< 3	0.05	0.00	5.91	0.00	5.72
		15~30	< 3	0.05	0.01	6.30	0.00	8.36
Jah Kunda	DEC	0~15	3.96	0.04	0.00	12.80	1.99	18.3
		15~30	9.73	0.03	0.00	16.10	1.99	9.97
	Farmers'	0~15	4.71	0.05	0.00	10.40	0.00	79.5
		15~30	6.27	0.05	0.00	9.96	0.00	1.60
Sutukoba	Mawdo	0~15	4.95	0.04	0.00	15.56	1.98	8.30
		15~30	14.36	0.05	0.00	27.35	11.9	78. 4
	Arafang	0~15	< 3	0.06	0.00	10.03	1.99	15.9
		15~30	1.21	0.05	0.00	11.15	3.98	12.3

*Av.: Available

Table 5.28 Rainfall record at Seven Stations in 2005

Table 5.28.1 Rainfall record at Sare Sofi Meteorology Sub-Station

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May									TR		1.1					
Jun					17.5	0.2					10.5					
Jul			14.9		17.4	12.8		0.8	28.2	13.0	5.3	26.1		27.0	81.5	
Aug	14.0			4.4				2.5	47.5	2.1	24.6	3.9		TR	18.0	7.7
Sep	3.6	3.0	33.7	5.3	5.0		4.8	17.1	27.0	TR			7.6	43.0	9.0	
Oct					19.0			18.6				41.4	TR			

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				8.4			9.0		TR							**18.5**
Jun								TR		TR	66.0		18.1	6.4	--	**118.7**
Jul				65.2		0.6	19.3	5.7								**317.8**
Aug	1.6	0.7	12.8	0.5	39.0					16.0	TR	0.6	47.7	TR	24.3	**267.9**
Sep					3.6		0.6	1.0		25.5	21.0	3.3	TR		--	**214.1**
Oct				3.4			38.5									**120.9**

TR: trace

Table 5.28.2 Rainfall record at Mankamang KundaDEC

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May											TR				3.6	
Jun					16.5						6.0					
Jul			15.2		27.3				24.0	8.6		26.0		28.0	64.6	
Aug	13.4			7.9					97.0	36.2	45.3				10.0	
Sep	15.1		34.3		11.6			21.1	42.0				4.2	28.6	16.0	
Oct					31.4			12.2								

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				8.0			5.1									**16.7**
Jun											43.0			17.7	--	**83.2**
Jul				21.5		2.1	12.1	29.3							10.0	**268.7**
Aug		4.5	30.0		69.0					19.6		6.2	12.1		32.9	**384.1**
Sep					18.1			13.2	14.0	60.0	73.5	8.5			--	**360.2**
Oct							28.4									**72.0**

Table 5.28.3 Rainfall record at Basse Meteorology Station

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May									TR						0.8	
Jun				1.3	5.6	0.8					TR		TR			TR
Jul			34.0		33.0	0.3			6.4	9.2	0.4	82.4		44.6	42.5	
Aug	32.3			1.6	0.2	TR			104.4	3.8	TR	3.8			0.7	2.0
Sep	16.7	1.0	42.6	5.7	4.3	TR	18.1	24.1	24.9	TR			14.3	29.3	23.7	
Oct					15.4			16.4				19.7	1.0			

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May			TR	21.7			2.2	TR	TR							**24.7**
Jun							TR				45.4		TR	13.7	--	**66.8**
Jul			TR	28.9	6.1		0.2	6.6	TR	TR				TR	1.9	**296.5**
Aug	TR	0.6	19.3	2.0	22.8					41.3	0.5	5.7	44.0	0.3	28.3	**313.6**
Sep		TR			16.6	0.6		2.1	26.7	25.6	19.7	26.3			--	**322.3**
Oct							0.6	5.7								**58.8**

TR: trace

Table 5.28.4 Rainfall record at Fatoto Meteorology Sub-Station

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May									TR						4.5	
Jun					31.0	19.3										
Jul			34.0		37.0				0.8			12.0		12.1	10.0	
Aug	22.0	24.0		TR	TR				0.3	11.0	0.3	11.4			0.2	0.1
Sep	5.0	5.3	39.0	1.9			21.0	12.0	16.0				25.0	48.0	18.0	
Oct					28.0	TR		19.0				28.0				

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				25.4			19.1		0.2							**49.2**
Jun									14.2		43.1			12.0	--	**119.6**
Jul					5.4	TR								21.9		**133.2**
Aug	0.1		32.0	30.0	21.2					33.9		TR	43.0		33.4	**262.9**
Sep		1.0			25.0	0.2	5.9		18.0	18.0	4.4	15.0	TR		--	**278.7**
Oct								40.0								**115.0**

TR: trace

Table 5.28.5 Rainfall record at Naudeh DEC

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May											6.7					
Jun					29.6						8.8					
Jul			14.5		36.5				12.0	18.6		26.8		33.3	90.9	
Aug	48.0	10.5		12.3				2.5	83.0		30.0	10.0				12.0
Sep	30.5		32.6				13.4	31.2	36.2				6.4	34.5	25.4	
Oct					22.6			23.4								

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				25.0			4.2									**35.9**
Jun											50.2		9.2	9.1	--	**106.9**
Jul				80.5			12.6	12.3								**338.0**
Aug			18.5		38.2					14.5			57.0			**336.5**
Sep					3.2				28.2		40.0	20.0	20.0		--	**321.6**
Oct																**46.0**

Table 5.28.6 Rainfall record at Jah Kunda DEC

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May															20.5	
Jun				4.3	25.2						12.2					
Jul			39.4		38.8				27.4	8.3		63.4		18.1	55.1	
Aug	23.3			9.6						37.9	4.0	16.8			6.2	
Sep	2.1		43.0				11.3	33.3	27.2					29.3	19.5	
Oct					12.5			15.0				33.0				

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				19.3			4.7									**44.5**
Jun											66.0			11.0		**118.7**
Jul				25.4				9.4							39.4	**324.7**
Aug			8.6		16.2					31.0		20.5			16.1	**190.2**
Sep					16.5			7.5	47.3	40.5		20.0			--	**297.5**
Oct																**60.5**

Table 5.28.7 Rainfall record at Sutukoba Sub-DEC

2005	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
May															25.7	
Jun				2.0	24.5						9.8					
Jul			150.8		41.7				9.9	5.0		30.0		9.0	57.9	
Aug	104.8			1.6					22.9	4.0	22.6	24.4			10.0	
Sep			42.0	15.0			20.5	13.3	7.9				15.2	35.9	34.8	
Oct					31.4			12.2								

2005	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total
May				27.4			11.2									**64.3**
Jun											93.6			10.7		**140.6**
Jul				77.9				12.5							197.9	**592.6**
Aug		8.8	9.0	2.6						17.5			42.7			**270.9**
Sep		6.3			15.6		1.1	2.3		42.3	37.0	10.7	10.5		--	**310.4**
Oct							28.4									**72.0**

Table 5.29 Temperature and Humidity at Basse Meteorology Station in 2005

day	Jun				Jul				Aug				Sep				Oct			
	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %	Temperature C.			Humid %
	av.	min	max	av.	av.	min	max	av.	av.	min	max	av.	av.	min	max	av.	av.	min	max	av.
1	33.0	26.2	39.7	54	26.9	21.3	32.5	81	26.9	22.8	30.9	85	26.7	21.4	32.0	86	29.5	23.5	35.5	82
2	34.3	27.0	41.5	45	29.3	23.3	35.2	72	27.8	22.5	33.0	82	27.8	22.3	33.3	84	28.4	23.0	33.8	83
3	33.5	27.2	39.8	44	26.0	23.4	28.5	86	28.4	23.0	33.8	81	24.9	22.2	27.6	93	29.2	23.3	35.0	82
4	33.5	27.0	41.0	47	26.7	21.1	32.2	80	28.2	23.2	33.2	82	26.0	22.0	30.0	89	29.5	23.5	35.4	81
5	29.5	25.2	33.8	74	28.7	21.3	36.0	74	30.0	25.0	35.0	79	27.8	22.9	32.6	84	28.4	24.2	32.5	90
6	28.9	24.2	31.5	75	26.7	22.3	31.0	84	27.1	24.6	29.6	82	27.5	23.0	32.0	87	27.5	21.9	33.0	86
7	31.5	24.5	38.5	69	28.2	22.9	35.0	74	29.6	24.5	34.7	76	25.6	23.5	28.2	93	27.9	21.8	34.0	82
8	32.0	24.5	39.5	57	28.5	22.9	34.0	75	30.0	24.5	35.5	76	27.0	21.9	32.1	89	28.5	23.0	34.0	83
9	33.8	27.5	40.0	55	28.8	24.4	34.7	73	30.0	25.5	34.5	76	28.0	22.8	33.2	84	25.7	20.0	31.4	85
10	32.9	27.6	38.2	61	28.9	22.0	33.3	77	26.4	22.8	30.0	90	26.7	21.6	31.7	88	28.1	22.0	34.2	83
11	32.9	27.0	38.8	59	27.0	23.0	32.0	80	27.8	23.2	32.4	85	27.8	21.6	34.0	83	26.9	22.0	31.7	86
12	32.1	25.5	38.6	62	28.6	23.0	34.1	78	27.3	23.5	31.0	93	29.0	23.4	34.6	82	29.5	24.0	35.0	83
13	29.8	25.6	34.0	59	26.7	22.4	31.0	81	28.0	23.2	32.8	86	30.4	26.2	34.6	83	26.3	20.0	32.5	84
14	31.5	25.4	37.5	59	27.7	22.3	33.0	78	28.8	23.4	34.1	88	28.0	22.5	33.5	86	27.8	21.4	34.1	82
15	32.4	26.2	38.6	61	26.8	21.5	32.0	82	28.7	25.4	32.0	90	28.3	22.7	33.8	87	28.2	21.5	34.8	83
16	31.7	25.2	38.2	57	27.3	21.9	32.7	78	27.8	23.6	32.0	86	27.0	21.0	32.2	87	29.3	24.0	34.6	85
17	32.6	25.0	40.1	59	28.7	23.3	34.0	75	27.8	23.7	31.6	95	28.6	22.6	34.5	85	30.5	25.0	36.0	80
18	33.7	26.2	41.2	57	28.4	24.1	32.6	77	27.7	23.8	31.4	97	28.4	22.8	34.0	81	30.3	23.3	37.2	79
19	33.5	27.0	40.0	57	30.0	26.0	34.0	74	25.7	22.7	28.6	90	29.5	23.4	35.5	79	30.0	24.5	35.0	81
20	31.5	26.8	36.2	66	27.8	23.5	32.0	81	26.5	22.7	30.2	80	29.5	23.0	36.0	77	28.0	23.0	33.0	81
21	31.9	25.5	38.2	60	28.0	23.9	32.0	82	28.2	22.5	33.9	85	29.9	25.3	34.5	80	29.3	23.0	35.5	79
22	31.8	25.5	38.0	59	30.4	25.5	35.2	77	25.8	21.8	29.7	80	27.2	22.0	32.3	83	29.5	22.5	36.5	78
23	33.8	26.5	41.0	54	30.1	25.3	34.8	76	28.1	22.7	33.5	80	27.9	22.8	33.0	82	29.5	24.0	35.0	81
24	31.8	26.6	37.0	70	29.4	24.2	34.6	78	28.5	23.2	33.8	82	29.5	23.9	35.0	83	27.4	22.2	32.5	77
25	29.8	23.5	36.0	68	27.3	23.2	31.2	84	28.5	23.0	34.0	80	27.3	22.0	32.5	83	27.3	22.2	32.4	84
26	32.0	25.5	38.5	60	28.0	23.4	32.5	81	28.2	22.4	34.0	78	24.1	20.8	27.3	90	28.6	21.5	35.6	79
27	32.1	26.0	38.2	69	29.5	24.9	34.0	78	25.3	20.0	36.0	85	23.4	21.4	25.4	95	28.6	21.8	35.4	81
28	27.6	22.0	33.2	76	29.8	25.0	34.6	75	27.1	21.3	32.8	82	26.5	23.0	30.0	93	29.8	24.0	35.6	78
29	29.0	23.8	34.2	76	30.0	25.6	34.4	74	28.1	22.6	33.5	80	27.6	23.0	32.1	85	27.5	22.4	32.5	82
30	30.3	25.2	35.4	72	30.0	26.1	33.2	77	27.2	21.2	33.1	82	28.5	23.3	33.6	82	29.0	22.5	35.5	80
31			--	--	29.5	24.4	34.5	77	27.0	21.4	32.5	83			--	--	28.2	18.0	38.3	71

Table 5.30 Daily Sunshine Hours at Basse Meteorology Station in 2005

	June	July	August	September	October
1	10.3	2.7	1.7	7.0	11.5
2	11.0	9.5	8.0	9.7	5.6
3	8.1	0.0	10.2	0.2	8.7
4	8.7	4.1	6.9	5.0	9.9
5	1.4	9.1	9.1	8.4	3.6
6	3.7	4.3	0.6	5.6	8.1
7	11.0	11.0	10.1	0.0	10.1
8	8.3	8.0	7.9	8.3	7.9
9	9.3	8.6	7.6	5.7	4.4
10	8.2	9.3	0.9	11.2	9.9
11	9.2	4.6	10.0	10.5	2.0
12	9.6	10.8	2.2	10.4	9.1
13	1.3	3.2	9.4	7.3	6.6
14	6.0	8.1	9.4	8.2	9.8
15	8.9	7.6	2.4	9.1	8.4
16	6.5	9.4	8.1	3.4	6.4
17	10.1	11.4	5.1	10.3	9.7
18	9.3	5.6	4.8	10.1	9.4
19	11.0	6.9	0.0	10.5	8.7
20	2.2	3.2	3.2	10.1	9.1
21	10.3	6.3	10.8	7.6	9.4
22	7.6	10.1	3.2	6.6	9.2
23	10.8	10.5	8.7	8.9	7.8
24	3.4	8.3	5.3	10.2	4.4
25	6.2	3.3	8.2	7.0	5.3
26	5.9	3.6	10.6	1.1	10.2
27	10.6	6.1	2.5	0.0	9.5
28	8.4	7.3	4.7	2.3	9.1
29	7.1	8.9	40.4	8.6	3.9
30	7.1	8.2	6.7	10.3	7.9
31		8.2	7.4		10.4
Total	**231.5**	**218.2**	**226.1**	**213.6**	**246.0**

Table 5.31 Plant Length (cm) Recorded in Adaptability Trial

Village	Farm	Variety			Jul 21	Jul 26	Jul 31	Aug 9	Aug 19	Aug 29	Sep 8		
					21	26	31	40	50	60	70		
Naudeh	DEC	P31			27.6	34.1	40.9	62.1	70.4	74.7	75.7		
		P105			29.7	38.0	47.9	69.0	73.5	79.6	81.0		
		P163			23.2	32.7	41.0	55.3	62.8	68.1	69.0		
		ATM3			26.5	32.6	38.7	53.2	58.1	65.8	66.9		
Date of measure					**Jul 22**	**Jul 26**	**Jul 31**	**Aug 9**	**Aug 19**	**Aug 29**	**Sep 8**		
Days after seeding					**22**	**26**	**31**	**40**	**50**	**60**	**70**		
Naudeh	Farmers'	P31			26.1	32.3	39.4	63.1	69.0	73.5	74.7		
		P105			25.0	31.7	38.8	59.7	67.5	70.5	73.1		
		P163			27.2	33.8	40.6	55.1	65.8	68.7	70.8		
		ATM3			24.1	29.0	33.8	48.8	57.9	62.2	64.0		
Date of measure			**Jul 12**	**Jul 17**	**Jul 22**	**Jul 27**	**Aug 1**	**Aug 10**	**Aug 21**	**Aug 31**	**Sep 10**	**Sep 20**	**Oct 1**
Days after seeding			**10**	**15**	**20**	**25**	**30**	**39**	**50**	**60**	**70**	**80**	**91**
Mbaye Kunda	South	P31	12.8	16.3	19.4	21.9	27.1	42.2	59.6	67.9	76.2	81.3	80.3
		P105	--	18.5	20.7	24.6	29.0	45.3	52.7	66.2	78.1	86.8	86.9
		P163	13.0	18.7	18.9	23.0	27.4	42.6	53.5	60.5	69.4	76.1	76.1
		ATM3	12.0	19.0	20.2	25.5	29.5	40.9	51.7	56.2	65.6	66.1	68.1
	North	P31	10.5	17.0	17.9	20.4	23.9	36.7	43.2	46.6	50.2	54.1	54.1
		P105	10.9	18.2	21.4	24.5	27.1	38.6	47.0	50.5	64.1	68.3	71.8
		P163	12.3	17.8	18.5	21.7	26.1	35.5	41.5	48.9	54.1	57.5	58.3
		ATM3	12.5	19.3	19.7	21.1	23.4	28.1	33.8	36.9	44.1	51.3	51.3
Date of measure				**Jul 18**	**Jul 23**	**Jul 25**	**Jul 30**	**Aug 9**	**Aug 19**	**Sep 3**			
Days after seeding				**16**	**21**	**23**	**28**	**38**	**48**	**63**			
Jah Kunda	DEC	P31		14.5	22.0	25.3	29.3	45.2	59.8	67.5			
		P105		13.1	17.5	20.9	24.8	46.9	61.5	59.5			
		P163		14.7	22.5	21.8	28.5	50.7	73.9	74.7			
		ATM3		13.5	16.0	20.6	25.7	35.5	47.1	44.7			
	Farmers'	P31		14.6	18.3	21.7	25.4	41.0	59.9	63.3			
		P105		16.1	21.4	23.9	32.4	47.3	64.2	66.0			
		P163		15.4	18.4	19.5	29.2	43.9	70.1	71.5			
		ATM3		16.0	18.9	24.0	30.9	39.4	47.8	49.2			
Date of measure			**Jul 16**	**Jul 21**	**Jul 26**	**Jul 31**	**Aug 5**	**Aug 15**	**Aug 25**	**Sep 5**	**Sep 15**	**Sep 25**	
Days after seeding			**10**	**15**	**20**	**25**	**30**	**40**	**50**	**61**	**71**	**81**	
Sutukoba	Mawdo	P31	12.4	18.6	21.7	31.2	41.0	46.4	70.1	81.5	88.5	88.6	
		P105	10.7	17.1	20.1	28.5	37.9	45.5	68.4	75.8	89.4	85.6	
		P163	12.1	19.1	22.1	30.4	41.9	49.1	76.4	86.0	108.7	105.5	
		ATM3	12.5	19.1	22.1	29.5	33.2	37.9	52.0	63.5	74.1	73.5	
Date of measure			**Jul 16**	**Jul 21**	**Jul 26**	**Jul 31**	**Aug 5**	**Aug 15**	**Aug 25**	**Sep 5**	**Sep 15**	**Sep 25**	
Days after seeding			**9**	**14**	**19**	**24**	**29**	**39**	**49**	**60**	**70**	**80**	
Sutukoba	Arafang	P31	10.4	20.1	23.1	33.0	42.7	61.0	66.4	85.9	92.2	93.4	
		P105	8.45	18.1	21.1	31.6	42.9	52.9	68.5	84.0	94.8	96.3	
		P163	9.2	17.5	20.5	29.2	36.6	42.3	64.3	86.6	97.1	97.4	
		ATM3	9.9	18.2	21.2	28.1	36.6	41.3	53.8	67.1	73.8	73.2	

VI Coordination Skill Development Programme

6.1 Objective

Several agricultural related projects have been implemented in URD with little coordination among them. It needs to be improved upon with the offices of DAS and DLS which are expected to take the lead role and responsibility for the coordination. Under the Divisional Coordinating Committee (DCC), chaired by the Commissioner, each technical department is supposed to work on maximizing the impact of the projects implemented. DAS and DLS have been playing important roles in the agricultural sectors in the division. This program aimed at enhancing capacity of the department staff for coordinating agriculture related projects effectively.

Table 6.1 Summary of the Inputs

Site	Village	Target
	All URD	DAS Office, DLS Office, Project site in URD
Schedule	**First Cycle** 1) preparation：Nov. 2003～Mar. 2004 2) implementation：Feb. 2004～Nov. 2004 **Second Cycle** 1) preparation：Nov. 2004～Mar. 2005 2) implementation：Feb. 2005～Nov. 2005	
Personnel	**The Gambian side** DAS - DAC, ADAC, SMSs DAS extension workers DLS - DLO, ADLO	**JICA side** The Study Team
Input	**The Gambian side** Office for computer etc.	**JICA side** Computer Monitor Printer Scanner Digital Camera Projector Generator

6.2 Involved Personnel

6.2.1 DCC sub-Committee presentation

The role of DAS and DLS is to prepare ANRE sub-Committee reports before DCC and this role has been performed by these two offices sufficiently. ANRE sub-committee report for the period from June to September and also from October to December were presented in well laid-out and computer printed format which was not the case for the other sub committees.

6.2.2 Community Involvement

Radio communication was implemented for the purposes of ensuring greater public awareness and fostering good public relations. The first content aired was related to the information about monitoring of the project for groundnuts and vegetables. The second one was on air at the end of March 2004, and its contents concern with farmers' recognition and perception towards the Verification Project and the trainings including compost making, food processing and preservation and Integrated Pest Management (IPM). In this regard, arrangement was made with the SMS Communication. A 30-minutes slot of radio air time was also secured. The third on air covered farmers' voice from Touba where the best performance was shown among the four vegetable verification sites in July 2004. This centred on the prize giving ceremony organized in commendation of the vegetable group in Touba held on 20th June. Afterward, the radio programmes were prepared and aired according to the events taking place by the DAS office's initiative, and were also recorded and aired in the following weeks. The contents were the farmers' voice on the Field Day of the Groundnut Project in Jaka Madina, and also threat of locust outbreak in URD.

6.3 Inputs

Computers were provided by the Study Team, since it is essential for making reports, producing newsletters, building database and conducting other activities.

6.4 Schedule

It was conducted all through the verification period.

Table 6.2 Work Schedule of Coordination Skill Development Programme

		2003			2004								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Preparation of schedule	DAS and The Team												
Purchasing items	The Team												
Modification of schedule	DAS												
Computer skill intro.	The Team												
Newsletter making	DAS, DLS												
Database preparation	DAS, DLS												
Database updating	DAS, DLS												
PMU meeting	DAS, DLS												
TAC/DCC presentation	DAS, DLS												
Community involvement	DAS, DLS												
Evaluation workshop	DAS, DLS												

		2004			2005								
Activity	person in charge	10	11	12	1	2	3	4	5	6	7	8	9
Newsletter making	DAS, DLS												
Database updating	DAS, DLS												
PMU meeting	DAS, DLS												
TAC/DCC presentation	DAS, DLS												
Community involvement	DAS, DLS												
Evaluation workshop	DAS, DLS												

6.5 Activities and Outputs

The project aims at coordination skill improvement so that the development projects will be implemented and continued smoothly. The following presents the work schedule involved in the programme. The activities carried out under the Coordination Skills Development Programme comprise of the following:

1. Computer training for officers in both the DAS and DLS and comprised Subject Matter Specialists (SMS), Crop Extension staff and Livestock Assistants;
2. Preparation and dissemination of agricultural Newsletters with two publications;
3. Establishment of a database involving the collection and collation of relevant data;
4. Conducting the PMU meeting for four times and the PMU field visit twice
5. Presentation of the ANRE sub-Committee report to the Divisional Coordination Committee
6. Community involvement (Radio communication)
7. Vegetable price data survey

6.5.1 Computer Skill Training

Before implementation, the present conditions of office equipment and trainings on the related subjects were assessed. Both the offices of DAS and DLS were equipped with few computers and other necessary appliances. Therefore, only few staff had computer skills. In the middle of February 2004, almost all arrangements for computers were made and the training on computer skills and other necessary preparation started. The second phase of the training started in June 2004, following the first phase conducted since February, 2004.

The participants comprised of staff from both DAS and DLS in URD. The main rationale was to introduce staff to basic computer skills in order to boost up their management capacities especially in the area of report writing and data management. A new component was also introduced during the second phase to expose the staff on how to use the Internet. Arrangements were made with a local Internet provider for staff to visit the café twice a month, for 4 months starting July 2004 with visits facilitated by the trainer.

All the trainings were on Microsoft Word and Excel and planned for one month in March and July, and to be conducted for twice a week. The training actually provided most of them with the opportunity to acquire basic computer skills. Some of them excelled very well and have even started applying the skills to enhance their work.

In view of the above, it could also be observed that the DLS staffs have acquired basic computer

skills and an enhanced ability in report writing. During the next stage they are expected to tackle data management. On the other hand, DAS staff may not have acquired sufficient computer skills for enhanced report writing. In this regard, they will need more familiarity with computers to acquire the skills needed to prepare their reports by themselves using computers.

6.5.2 Newsletter Production

As for the newsletter preparation, the format was made with some staff in DAS. The contents were filled through the computer training session. This was conducted as an on-the-job training which gave target staff the opportunity to get accustomed to the keyboard and word processing. At the same time, the visible output could be expected. Although, the frequency of issuing the newsletter is suggested to be every two months in order to coincide with DCC meeting, it had to be slowed down to every three months, due to some other routine works such as tractor management and necessary actions required to tackle the locust invasion to the country.

Newsletters have been published quarterly, with five publications in March, June, September, December of 2004 and March on 2005. The Newsletter highlights the activities of DAS, reports on the progress of the Study as well as current agricultural topics of URD, etc. It is edited by Mr. Jerreh Sanneh, the DAC. The readership should comprise of DCC and PMU member; Verification/Project groups and to the Central offices including the DAS, DOP and to DOSA and other relative organizations. However, the actual distribution has been restricted to a very few organizations in URD. The distribution should therefore be enlarged to cover all the above mentioned. In this initial phase, a JICA expert assisted in computerizing the Newsletters, eventually, all the publishing jobs have been carried out by counterpart staff.

Some of Newsletters are shown in Appendix 6.1.

6.5.3 Database Preparation

With regard to the database, the project entry sheet was developed. Since the purpose of the database is to give a picture of all the agricultural related projects in URD to the user, the database preparation was planned and actually conducted. However, the format prepared was revised to relate more on the routine tasks of staff. For example, SMS Production is to prepare and update the data on rice production in the division, while the SMS Horticulture is to keep the record of the existing garden schemes in the division. The prospective users of the database are staff of DAS and DLS as well as other interested parties. With the picture provided from the data, the staff can start coordinating agricultural related activities, such as deciding what the departments has to do and advising what other development partners are expected to do, and also where, when and how to complement all the stakeholders activities, resulting in the maximization of their positive impact on farmers' living standard. The process of database

preparation is on the way and each DES is filling the data sheets. The exercise is expected to last for three months. Upon the establishment of the database, the DAS will be able to analyze all the existing and past projects in URD, identifying constraints and will subsequently facilitate better development planning. It is expected that the DLS office will undertake a similar process following that of the DAS.

Parallel to the establishment of the database of projects; updates on "LADEP intervention areas-2003" and "Village seed-stores including those requiring complete reconstruction" have been summarized in Tables. Analysis of the data presented in the Table highlights the condition of seed-stores in URD, indicating that they are in very poor state and therefore need urgent repairs. The establishment of the database involved SMS of various expertise/ specializations. Consequently, the SMS for rice production is also going to prepare that of the NERICA. Subsequently when DAS staff have to formulate and implement the M/P by themselves, the experience from the database preparation and updating will prove quite useful and relevant in a sense of prioritizing necessary projects.

Computer Skill Training

6.5.4 PMU Meetings

Occasionally several PMU meetings were held with various objectives, collecting ideas from the beneficiaries and the implementers, explaining the objectives of the projects, brainstorming the ideas for projects, and collaborate for future smooth implementation of projects elucidated in the master plan.

6.5.4.1 PMU meeting at the Middle of November 2003

The first PMU Meeting was held as coordination meeting, which was held before the implementation of the verification projects. For the details, refer to the chapter 2.

6.5.4.2 PMU meeting on 9th and 10th June 2004

During the period under review, the second official PMU meeting was held on 9th and 10th June 2004. Whilst the first day was devoted to the field trip, the second day was utilized for discussions. The meeting was attended by 11 members comprising of the Assistant Commissioner, DAC, CDO of DCD, 2 SMSs, JICA-Monitoring Officer, Director of Planning of the Council and representatives of AFET, DLS and DOP.

The field trips were conducted on the first day at the vegetable sites in Touba Tafsir and Kossemar and for the NERICA site in Giroba Kunda. The regular PMU meeting was held on the next day in the DAS office. At the commencement of the meeting, the DAC made a presentation on the Study detailing especially on the verification projects. After this, members of PMU deliberated on the presentation of the DAC and field trip of the previous day. The discussion focused mainly on the confirmation of the Study. Finally, the Minutes of the Meeting were agreed upon. The conclusion arrived at this PMU Meeting was that the members of PMU were aware and understood the Study.

6.5.4.3 PMU meeting on 31st December 2004

The third PMU meeting was held on 31st December 2004, when the Study Team was absent. The postponed field trip by the PMU members which was supposed to be held before the December meeting was conducted in February. This was because they judged that it is suitable to conduct the trip in February when the activities in the vegetable gardens are more visible. This was attended by the Commissioner of URD together with the members attending the second meeting.

6.5.4.4 PMU meeting at 19th July 2005

The fourth PMU meeting was held on 19th July 2005 after the members visiting to the project sites of NERICA and groundnut on 18th July 2005. This meeting was jointly organized with the seminar of the Study to the Area Council.

(1) Seminar for the use of the Master Plan to the Area Council

The Study, including the implementation of the verification projects has been conducted since February 2003, and it will be completed in end of December 2005. During the study period, regular meetings of the Coordinating Committee at central level were held. However, before finalizing the Study, it has been deemed necessary to explain the Study and the expected output to the divisional staff, especially those of the Area Council as well as all Councillors who are, under the decentralization process, expected to play key roles in development ward and divisional levels. The Master Plan has to be implemented in order to achieve the objectives stated. While DOSA may have overall technical responsibility for its implementation the divisional authorities have an equally important task in ensuring the implementation of projects in the plan as it was formulated with consideration of staffs' availability and financial capability of the division. In this regard, elected councillors from each ward are expected to become more involved and play key mobilization roles in project implementation. As they chair the ward development committees where each village development committee sends two representatives

to discuss the development of the ward. Ward Development Plan is to be developed through discussions at the committee. Implementation of the Master Plan can be done through DOSA's initiative but also through community initiative. Since the ward is the stage where community initiative can be realized under the decentralization, the seminar for elected councillors and other related personnel was organized and actually held on 19th July 2005 at the Area Council Chambers with about 50 participants.

The agenda below were prepared and circulated a week before the seminar and participants were informed through several radio announcements.

Table 6.3 Time Schedule of the PMU at 19th July 2005

1. Opening Remarks	11:30 – 11:35
2. Outline of the Study ➢ Master Plan Study and Verification Project	11:35 – 12:00
3. Result of the Verification Project ➢ Groundnut Production Improvement ➢ Vegetable Production, Processing and Preservation ➢ NERICA Trial and Planning ➢ Coordination Skill Development	12:00 – 12:40
4. Finalization of the Master Plan	12:40 – 13:00
5. How to Use the Master Plan	13:00 – 13:30

(2) Proceedings of the Meeting and some Discussions

The chairman of the Area Council opened the seminar. In delivering the opening remarks, he urged the participants to make good use of the information to be presented in the Master Plan. He called on all especially the Councillors to ensure that the Master Plan is well understood to enhance its implementation at all levels. The Divisional Agricultural Coordinator explained the outline of the Study and introduced the components of the verification project. PRAs were conducted in 60 villages and their Community Action Plans (CAPs) were also reviewed to actually take a general view on the community needs relating to agriculture and rural development. The Study also included verification projects on Groundnut Production Improvement conducted in 2 villages; Vegetable Production & Processing in 4 villages; and the NERICA Trials & Extension Planning in 6 villages. The results of the projects were reported by subject matter specialists in charge of each of the projects. They used slides with several pictures projected onto the wall for their presentation. Subsequently, explanations on how to use the Master Plan were done by the Study Team. It highlighted that the Master Plan entailed resource mapping for each ward to enable ward committees tap potentials existing within the ward. These range from technical to physical resources existing within a ward. What was stressed is that the Master Plan is a plan with which communities can start some actions. At

each of the three levels village, ward and division, the plan can be implemented. Even when it is difficult to implements some projects, data and maps provided in the plan can be utilized for their future planning. At the end of the seminar, the DAC in giving the concluding remarks highlighted that the Master Plan can be regarded as a kind of dictionary of agriculture development in the division which people can refer to anytime when necessary.

The Chairman of the council enquired if the study can look into possibility of revitalizing the use of river irrigation in the division as URD does not have much potential for swamp rice production. The team in response informed the seminar that river irrigation is very expensive and what the study looked at was the existence of Dikes & spillways constructed under the LADEP to encourage lowland rice production within the division. River irrigation using pumps with generators has a high recurrent cost and not sustainable after projects.

The representative of WASDA, one of the active CBOs in URD, stressed the need to intensify advocacy and training on the use of implements by women farmers. In response, the DAC informed him that during the presentations the ADAC made mention of advocacy and not only providing farm implements to farmers but also trained them on their usage and this was featured in the slides showing women farmers demonstrating on how to assemble sine hoes and seeders and using them actually in the field.

The representative from Fandema, also a CBO, highlighted the need to address the marketing constraint. He informed the seminar that many projects in URD have given support to vegetable production, but unless projects start addressing the marketing issue, vegetable growers can gain little with increased production. In respond, the Team pointed that the first step to address marketing constraints is to provide data on production, quantity, existing marketing channels and prices. The Study has looked at these areas in 9 markets and result is to be incorporated in the Master Plan.

The Team indicated that the livestock program has been included in the plan since the commencement of the study and that there has been close contact with the Divisional Livestock Officer and have even enhanced capacity at his office with a computer, a generator as well as conducting an introductory training for DLS staff in the division on computers.

The representative of GAMSEM, a local NGO, also enquired whether the master plan would not contradict the already existing CAPs. In responding to that, the seminar was informed that almost all the 17 areas included in the plan were derived from a close review of CAPs but that

there are some areas which are not directly related to CAPs such as those related to the agricultural policy in the country. List of Participants of the PMU at 19th July 2005 are shown in Appendix 6.2.

6.5.5 Vegetable Price Data Survey

This has commenced the collection of market price data from nine (9) markets in the division. The collection was carried out for a period of one year, starting in July 2004 and ended in June 2005. The Department of Planning (DOP) field enumerators are responsible for the collection under the supervision of the Study Team. The rationale behind the market price data collection in URD is primarily to establish the price trends for vegetable throughout the year in URD. The data will enable the DAS office in URD to advise farmers on the various types of vegetable to grow for better marketing. It will also form the basis for a feature Vegetable Price Database.

The provision of timely and reliable market data will also go a long way to help the DAS office to better plan the vegetable production calendar. Enhanced flow of market price information will help both farmers, extension workers and policy-makers to improve vegetable production and to maximize income. It will also indicate stock-gaps that affect both income and nutritional level of farmers. This exercise has been carried out with 5 enumerators of DOP.

Appendix 6.3 shows the details of procedure of vegetable market price collection and Appendix 6.4 shows Vegetable Production Data.

6.6 Lessons and Recommendations

6.6.1 Output

6.6.1.1 Benefit of the Verification Project

The direct beneficiaries of these projects comprises of 6 office staff and 16 field extension staff for DAS, and 2 office staff and 11 livestock assistants for DLS, together with 5 enumerators from DOP. Through strengthening of the capacity of the agricultural offices, farmers and the general population in URD also will benefit directly and indirectly. Almost all the activities of the project have been conducted within the division, except for several staff dispatched by the Study to Guinea and Senegal as a part of the supplementary survey.

The Coordination Skills Development Programme was carried out according to the original plan and the progress achieved has been comparatively satisfactory. DCC report preparation has been achieved as targeted. Each of the activities should be continued for future success in project management and complimentary activities in food security. With the decentralization in progress working with the local government structures i.e. the Area Council, is one of the necessary tasks

to that plans prepared by the department are implemented at the divisional level. The Study has been preparing the grounds and opportunities for discussions and dialogue between the department of DAS, DLS and the Area Council. The Director of Planning of the Council has been quite familiar and welcomes what the Study is trying to achieve. Unfortunately, in the last year of the Study, the Director of Planning left office, leading concerns that the cordial relationship between the departments and the Council established could suffer some setbacks. However, frequent contacts with commissioners' office by the departments have been successful in creating another bond strengthening ties with the administrative authorities in the division.

6.6.1.2 Contribution to Capacity Building of Counterpart personnel

In order to strengthen the routine work of extension offices, a visit to an advance area in the field of agricultural extension was planned. It was about new extension system, called ANCAR, recently introduced by World Bank in Senegal. The Study Team together with the Assistant DAC visited Tamba kunda, in December 2003. After the visit, the ADAC prepared the report in order to disseminate the idea of ANCAR to the other staff, especially the SMSs.

In addition to the attainment of the objectives set for the verification projects, the project contributed to the improvement of the work of counterpart agencies. These included the preparation of monthly reports by the DAS and quarterly report by DLS which were regularly prepared using the newly acquired computer skills. Printed reports are now regularly presented to the ANRE sub-committee. Furthermore, regular Monday meetings have been conducted by the DAS to update on progress of work and ensure interchange of opinions between the DAC, ADAC, SMS and Extension Officers.

6.6.2 Feedback to the Master Plan

Three assumptions were set for this groundnut verification project in order to draw important information from the project before finalising the formulation of the Master Plan. The followings are findings for each assumption and lessons learnt, which should be fed back to the Plan.

Table 6.4 Feedback to the Master Plan from Coordination Skill Verification Project

Feedback Points	Lesson learnt from the project	Ways to feedback to the M/P ( ) refers to the projects in the M/P
Implementation structure	• As the rain season starts, staff of the DAS office becomes very busy fulfilling their assigned duties.	⇒ Schedule of the Plan is to be carefully prepared to avoid too much workload on staff in the rainy season. **(All)**
	• The office staff should update the data periodically. With the data, they are expected to present more concrete and persuasive information to other organisations at any committee where their expertise is needed.	⇒ Support for regular presentations to DDC or PMU should be incorporated in the plan so that the DAS office and the DLS office can make their roles clear and maintain frequent information flow to the outside. **(C-15)**
	• The local government may be able to fund an agricultural project in near future, including following up on the verification projects under the Study and initiating the components of the M/P.	⇒ In order to draw the attention of the local government, publication of newsletter is to be continued. The contents will be carefully selected to enable readers to obtain clear ideas of agricultural development in URD. **(C-15)**
	• Through the implementation of the verification projects, it can be said that the counterpart has acquired the capacity of project planning, implementation and supervision.	⇒ Project management on technical field can be covered by the current staff of DAS and DLS but financial management of the project should be strengthened by installing a monitoring system from outside. **(C-15)**

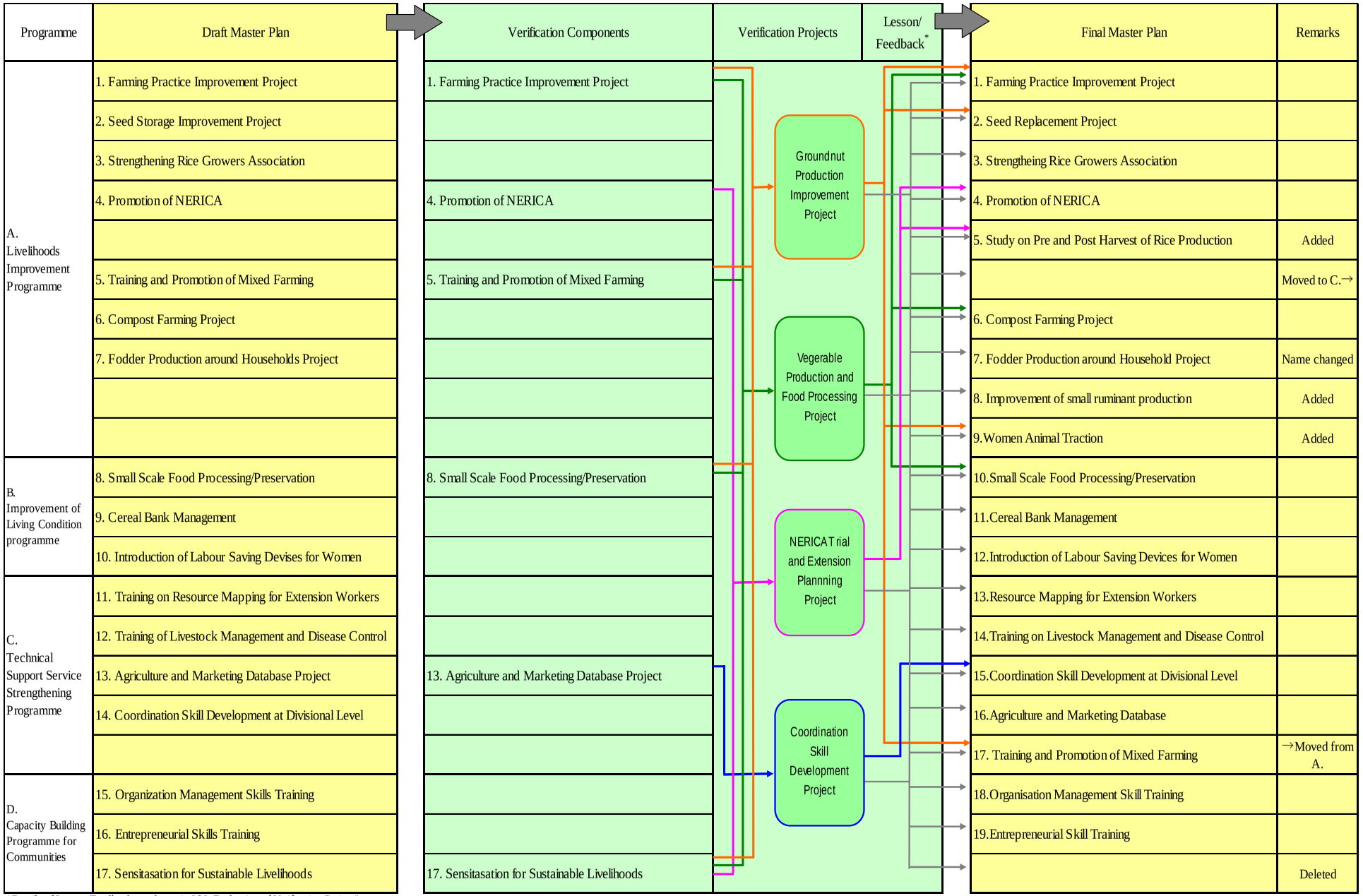
VII Conclusion

7.1 Feedback from the Verification Projects to the Master Plan

Through the implementation, monitoring and evaluation of the four verification projects, together with discussion at the Coordinating Committee and the result of supplementary surveys, the formulation of the Master Plan was finalised. The final Master Plan accommodated three more project components while deleting one component. The newly included components are "Study on Pre and Post Harvest of Rice Production", "Improvement of Small Ruminant Production" and "Animal Traction for Women". The removed component is "Sensitization for Sustainable Development". "Study on Pre and Post Harvest of Rice Production" was added since in the Verification Study on NERICA, the review of the rice sector as a whole including a flow of activities from rice cultivation, harvest until post-harvest had been recognised as an urgent task. This study could be complementary to the current endeavour of the Government concentrating on seed multiplication of NERICA. Despite the high demand on efficient and effective small ruminant production in URD, the Draft Master Plan did not address the issue directly; and therefore, "Improvement of Small Ruminant Production" was identified and strongly suggested from the members of the Coordinating Committee to be included in the Final Master Plan. "Animal Traction for Women" was included through the fact that the effect of training on animal traction to women clearly appeared positive, even if it stands alone. Another change was made on "Promotion of Mixed Farming". It was formerly categorised into Programme A "Improvement of Household Income" but finally converted into Programme C "Technical Support Service Strengthening" by realising that training be given more to extension staff before extending to farmers. In general, extension staff is equipped with the knowledge of general agriculture, especially cereal and vegetable production. However, as an extension agent at the front line, they are recommended to obtain a broader knowledge such as fruit tree production and livestock, even though it is basic to reply to farmers' wide range of needs. The deleted component "Sensitization for Sustainable Development" was not actually removed from the Master Plan, but this component is actually incorporated into all the other components, because it has to be conducted while implementing all the projects.

The flow of the formulation of the Master Plan, from Draft to Final, is presented in Figure7.1

Details of benefits and costs of each project are shown in Appendix 7.1.



*Details of Lesson/Feedback are shown in "6.2. Evaluation of Verification Project"

Figure 7.1 Flow from formulation of Draft, Verification Projects to Final Master Plan

APPENDICES

Appendix 2.1-1 ID of 60 villages (1/21)

(GARDA/ June 2003)

	Item			1	2	3
1	Village Name			Sakoli Kunda	Sandu Misira	Dampha Kunda
	Ward			Foday Kunda	Misira	Dampha Kunda
	District			Wuli East	Sandu	Fulladu East
2	Name of Village Head			Musa Sakoli	Kebba Ceesay	Alhagi Ndai Ceesay
3	Estimated Population	Male		57	250	1,322
		Female		25	204	1,663
	Number of Households	Male		8	120	602
		Female		0	0	10
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2000	2001	1994
	Community Action Plan (CAP)			No	Yes	Yes
5	Content of CAP			Nil	Farming machines, proper sub – hospital, fertilizer, lack of seeds proper fields, lack of proper roads, lack of seeds and seed store	Access road, gullies on the roads, upgrade waiting shed, rice irrigation (dug a dike from the river)
	Present Status of CAP			Nil	Active	The erosion problem has been solved by SDRD and now they are left with three projects only
6	Staple Food		1	Millet	Sorghum	Rice
			2		Rice	Coos
			3		Millet	
7	Accessibility			To Main Road 0km 0 hours	To Main Road Runs through Village	To Main Road 3km 1 hours by foot
				To Extension Centre 15km 1.5 hours	To Extension Centre 5 Km 0 hours	To Extension Centre 3km 1 hour by foot
				To District Capital Market 56km	To District Capital Market 50 Km 0 hours	To District Capital Market 3km 1 min by car
	Frequency of Extension Officers'			Monthly	Monthly	Every six Months
8	Major Ethnic			Sarahule	Mandinka	Mandinka
9	Agricultural related Activities			G/nuts, maize, early millet, late millet, sorghum, fencing, building construction, fetching fuelwood	G/nuts, Sorghum., beans, early & late millet, maize , rice, findo	Cultivation of food and cash crops, orchards, horticulture, food processing, tailoring, masonry, fishing, sewing, cobbler, carpentry, welding
	Non – agricultural Activities				Tie & dye, embroidery	Block making, carpentry, masonry, blacksmithing, soap making, tie & dye, mechanization
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Lack of farm implements, lack of g/nut seeds, low soil fertility, pests, malaria, water shortage, bush fires	Hunger, lack of farm implements, & draught animals, lack of fertilizer, inability to cultivate swamp rice fields, lack of seeds, lack of skill training, long distance to travel for groundnut produce marketing	Inadequate water supply, lack of farm implements and inputs food shortage
			Dry season			
		Female	Rainy season	Lack of farm implements, pests & diseases, malaria, pounding, water shortage, lack of vegetables	Lack of village garden, difficulty in marketing vegetable produce, lack of transportation facilities of produce, long distance to the nearest health centre, heavy worked load, lack of farm implements, and farm inputs lack of child care centre hunger and malaria	Inadequate water supply, heavy workload, lack of income generating skills, lack of adequate farm implements and inputs, food insecurity
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Farming , petty trading, marketing of millet at lumos	Groundnut, cereals, cotton, fruit tree production	Welding, tailoring, masonry, carpentry, business, farming fishing, driving
			None income	Fertility, pests, malaria, water shortage, bush fires	Farm clearings, home maintenance, preparing of fire belts against bush fires.	Compound repair
		Female	Income	Embroidery, pottery. Farming	Vegetable, groundnuts, tie and dye soap making	Garden, groundnut cultivation, petty trading, hire labour
			None income	Domestic activities	Small ruminant rearing, village cleaning extinguishing bushfire	House hole care
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Farm implements	Lack of fertilizer	Access road to Basse
			2	Low soil fertility	Long distance to travel to market groundnut produce	Water intrusion to rice fields
			3	Lack of drugs for animals	Lack of seeds	Health post to be upgraded
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of Seeds	Lack of seeds and fertilizer	Access road to Basse
			2	Low soil fertility	Lack of farm implements	Water intrusion to rice fields
			3	Lack of skills	Poor soils	Health post to be upgraded
14	Major problems expressed by village Women (Prioritisation of problems)		1	Lack of Seeds	Lack of Seeds	Dehauling machine
			2	Low soil fertility	Lack of farm implements	Farm inputs
			3	Water shortage	Lack of vegetable garden	Inadequate garden wells
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D Little prospects of being among 16 villages for RRA survey because there is a VDC but no CAP formulated.	Rank A There is cooperation between kafos, VDC and the Villagers and are developmentally oriented. There is good prospect to choose this village to be part of the RRA survey.	Rank A A very well organised community with active Kafos and VDC in place and are engaged in many self help activities. Therefore, this village is recommended to RRA survey.

Appendix 2.1-2 ID of 60 villages (2/21)

(GARDA/ June 2003)

	Item			4	5	6
1	Village Name			Bagadagi	Taibatou	Fantumbung
	Ward			Julangel	Sutukonding	
	District			Fulladu East	Wulli West	Kantora
2	Name of Village Head			Alhagi Banding Drammeh	Alhagi Yusupha Jabbi	Alhagi Pateh Sanyang
3	Estimated Population	Male		1,250	930	184
		Female		3,000	1,570	211
	Number of Households	Male		400	415	20
		Female		0	150	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			1982	1999	2001
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Access road, gullies on the roads, upgrade waiting shed, rice irrigation (dug a dike from the river)	Farming, fertilizer, seeds & storage, inadequate clean water	Sheep/Goat keeping, digging of wells, farm implements and inputs, credits scheme
	Present Status of CAP			The erosion problem has been solved by SDRD and now they are left with three projects only	Formulated and active	Active
6	Staple Food		1	Rice	Cereals	Cereals
			2	Coos		
			3			
7	Accessibility			To Main Road 0km 0hours	To Main Road Runs through the village	To Main Road 0.5 Km 1hours
				To Extension Centre 4km 1.5hours by foot	To Extension Centre 10 km, 2. 45 hours by foot	To Extension Centre 0.5km 1hours
				To District Capital Market 36km 30mins by car	To District Capital Market 7 km 2.5 Hours	To District Capital Market 3km 0.5 hours
	Frequency of Extension Officers'			Twice Monthly	Resident in village	Twice Monthly
8	Major Ethnic			Fula	Jahanka	Mandinka
				Mandinka		
9	Agricultural related Activities			Animal husbandry and farming of both cash and food crops.	Cultivation of cash crops of beans, g/nuts, sorghum, millet, rice, findo, sesame, sheep fattening, tie and dye, embroidery, village cleaning, backyard garden, soap making	Cultivation of food and cash crops of cereals, sesame, vegetable, petty trading and soap making
	Non – agricultural Activities			Block making, carpentry, masonry, blacksmithing, soap making, tie & dye, mechanization	Block making, carpentry, masonry, blacksmithing, soap making, tie & dye, mechanization	Soap making, tie & dye, mechanization
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Food security, inputs availability, erosion, stray animals, pests and diseases, water shortage, lack of stores, bushfires, transportation and marketing of farm products	Hunger, lack of farm implements and inputs, poor soils, malaria, inadequate potable water, long distance travel to nearest health facilities	Farm implements and Inputs, Malaria and Diarrhoea, inadequate save drinking water.
			Dry season			
		Female	Rainy season	Milling machine, stray animals, marketing, transport, lack of proper fence for vegetable garden, clean drinking water, stores, credit, farm inputs and malaria	Lack of adequate farm implements and inputs, poor soils, malaria, lack of a market for vegetable produce, lack skill training centre for tie and dye, soap making	Inadequate wells and tools for the garden, marketing of produce, lack of adequate farm implements and inputs, inadequate resources for petty trading, malaria, lack of skills training and long distance travel to fields
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading, blacksmithing, contractor, fishing mechanization	Cultivation of food and cash crops of sorghum, maize, early millet	Petty trading, blacksmithing, contractor, fishing mechanization
			None income	Tree planting, thatching, fencing, firewood, beekeeping	Tailoring, carpentry, masonry and painting, self – help activities	Compound repairs
		Female	Income	Petty trading, soap making, cream making butter making	Seasonal, hired labour, horticulture, tie and dye soap and omo making embroidery	Petty trading, Horticulture, hired labour, poultry, House hold chores
			None income	Domestic activities, farming, birth attendance	Self – help activities, house hole chores, and weekly village cleaning	
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Inadequate water supply	Hunger	Inadequate farm implements
			2	Food insecurity	Poor soil	Lack of health centres
			3	Lack of Health Facilities	Lack of farm implements	Lack of transportation
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of skill centres	Inadequate clean drinking water	Lack of skill centres
			2	Lack of implements	Poor soils	Lack of farm implements
			3	Lack of Health facilities	Inadequate wind brakes	Lack of Health facilities
14	Major problems expressed by village Women (Prioritisation of problems)		1	Food insecurity	Lack of farm implements	Food insecurity
			2	Malaria	Poor Soils	Lack of gardens wells
			3	Good vegetable garden fences	Malaria	Good vegetable garden fences
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D Although they have a lot of projects interventions compared to others, their sustainability has been affected due to conflicts among them in terms of choosing a VDC chairperson.	Rank C Although the kafoos and VDC are in place, their level of participation and cooperation is very low due to political infiltration in the kafoos.	Rank B Because of women's ability to sustain the sesame project and the villager's participation in the village cleaning exercise this is a clear testimony of their willingness to participate in any project activities.

Appendix 2.1-3 ID of 60 villages (3/21)

(GARDA/ June 2003)

	Item			7	8	9
1	Village Name			Sami Koto	Jagajari	Naudeh
	Ward			Garawol	Diabugu	Diabugu
	District			Kantora	Sandu	Sandu
2	Name of Village Head			Lamin Touray	Alhagi Karamo Sillah	Haruna Bah
3	Estimated Population	Male		300	350	400
		Female		260	350	500
	Number of Households	Male		30	21	28
		Female		4	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			1995	2001	2000
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Setting of VISAGA bank, food insecurity, milling machine, health centre, wells, farm implements, extension of vegetable garden	Farming implements, hospital, hand pump water well, fertilizer, seeds and seed store	Seed store, Bore – hole/hand pump well, farming implements, health centre, garden fencing, seeds and fertilizers
	Present Status of CAP			Formulated and Active	Formulated and Active	Formulated and Active
6	Staple Food		1	Rice	Sorghum, groundnut, late millet, rice, water Mellon, findo, cassava	Sorghum, millet, millet, rice, beans
			2	Maize	Coos	
			3	Millet		
7	Accessibility			To Main Road 7 km 2 hours	To Main Road 12 Km 0 hours	To Main Road 1 Km 0 hours
				To Extension Centre 7 Km 2 hours	To Extension Centre 7 Km 0 hours	To Extension Centre 1.5km 0 hours
				To District Capital Market 3 km 1 hours	To District Capital Market 27 Km 0Hours	To District Capital Market 15 km 1hours
	Frequency of Extension Officers'			Monthly	Monthly	Monthly
8	Major Ethnic			Mandinka	Sarahulleh	Fula
9	Agricultural related Activities			Cultivation of food and cash crops of cereals, G/nuts, upland and low rice, tie & dye, carpentry, petty trading and masonry	Groundnut, millet, maize, rice, cassava, water melon, beans.	G/nuts, sorghum, beans, early and late millet, maize, rice sesame, cotton, water melon, cassava
	Non – agricultural Activities				Tie & dye, cleaning servicing, embroidery, tailoring.	Re – digging of wells, village cleaning, road maintenance & general house maintenance
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Food security, Farm implements and inputs, Malaria, Shortage of garden wells, lack of childcare centre, water shortage due to lack of hand pumps wells.	Lack of feeder road to the main highway, lack of farm implements, poor soils, lack of a village seed store, lack of animal drinking point.	Inadequate drinking water as the only pump serves both human and animals, lack village cleaning tools like wheel barrows, lack of seeds, lack of farm implements, draft animals, poor soils
			Dry season			
		Female	Rainy season	Food insecurity, drought, heavy workload, inadequate garden wells, lack of childcare centre, pest infestation, inadequate income generating skills, malaria and diarrhoea.	Heavy workload, lack of groundnuts milling machine, lack of farm implements, lack of groundnuts seeds, malaria, long distance to travel to the nearest health centre.	Heavy workload, lack of clean drinking water, lack vegetable garden, lack of skills training, lack of farm implements & draft animals, lack of seeds, malaria, long distance travel to nearest health facility.
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading, Hired labour, Carpentry, Masonry, Fishing, Tailoring, Horticulture	Groundnuts, late millet, cassava, masonry, carpentry, sewing,	Buying and sales of small ruminants, production of cash crops,
			None income		Fire belting, repairing of village roads, self – help projects	Village cleaning, re – digging of wells, sensitisation of villagers on Aids and family planning, self – help activities
		Female	Income	Domestic activities	Groundnut, sesame, vegetable	Petty trading, buying and sales of ruminants, cash crop production, soap and Omo making, sewing, poultry production
			None income		Domestic work, cleansing exercise	Village cleaning and self – help activities
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Inadequate water supply		Lack of seeds
			2	Food insecurity	Lack of farm implements	Hunger
			3	Lack of Health Facilities	Lack of seeds	Poor Soils
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of skill centres	Long distance travel to the nearest health centre	Long distance travel to nearest health centre
			2	Lack of implements	Lack of groundnuts seeds	Lack of good seed store
			3	Lack of Health facilities	Lack of skills	Lack of vegetable gardens
14	Major problems expressed by village Women (Prioritisation of problems)		1	Heavy work load	Long distance travel to the nearest health centre	Lack of seeds
			2	Food insecurity	Lack of groundnuts seeds	Lack of farm implements
			3	Inadequate Wells	Lack of Farm implements	Lack of clean drinking water
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank A The VDC is active with a well formulated CAP, which was being implemented. Also, the people are very cooperative and performed a series of self-help activities and there are no projects in the village.	Rank C Although the VDC and Kafoos exist in the village the cooperation and participation issues in community development is considerably lacked in the community.	Rank A There is functional VDC, kafos cooperative and participation in development programmes. The community has not only a potential landscape suitable for agricultural production but also engaged in animal husbandry.

Appendix 2.1-4 ID of 60 villages (4/21)

(GARDA/ June 2003)

	Item			10	11	12
1	Village Name			Sare Yero Bah	Nyankui	Talto Luntang
	Ward			Dampha Kunda	Diabugu	Gambisarra
	District			Fulladu East	Sandu	Jimara
2	Name of Village Head			Burreh Baldeh	Fa Foday Jawla	Alhagi Sanna Sanneh
3	Estimated Population	Male		64	250	100
		Female		38	300	100
	Number of Households	Male		13	47	12
		Female		0	0	0
4	VDC Established			No	Yes	Yes
	Date of Establishment				2001	2001
	Community Action Plan (CAP)			No	Yes	Yes
5	Content of CAP				Provision of storage facility, provision of PHC, drugs&VHN, provision of hand pump wells, provision of horse-cart ambulance, road rehabilitation	
	Present Status of CAP				Provision of CAP is forwarded as the present felt need of the community.	Nil
6	Staple Food		1	Maze and late Millet	Rice	Rice, millet
			2		Millet	
			3		Maize	
7	Accessibility			To Main Road 8 Km hours	To Main Road 4km 1.5hours	To Main Road 1.5km 3mins
				To Extension Centre 8 Km 2 hours	To Extension Centre 7km 2.5hours	To Extension Center 6km 1hour
				To District Capital Market 22 Km 4 hors	To District Capital Market 10km 3.5hours	To District Capital Market 6km 1hour
	Frequency of Extension Officers'			Monthly	Often	Often
8	Major Ethnic			Fula	Mandinka	Mandinka
9	Agricultural related Activities			Cultivation of food and cash crops of cotton, G/nuts, maize, sorghum, and petty trading.	Both food and cash crop production	Groundnut, millet, rice
	Non – agricultural Activities				Petty trading, fishing, masonry	Maintenance of fence, soap making
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate water, food insecurity, lack of farm implements and inputs	Bush fires disaster, inadequate water supply, drinking point for cattle, low crop yields, inadequate farm implements and inputs, pests, poor road conditions, malaria, pneumonia, hunger	Food security, store for seeds, lack of proper fence, vegetable gardening, transportation, pest disease, seeds, farm machines, animal for labor
			Dry season			
		Female	Rainy season	Inadequate water supply, lack of income generation skill, No vegetable production, low income.	Lack of skill in Tie&dye and sewing, inadequate water supply, lack of farm implements and inputs, low crop yields, lack of good fences for vegetable gardens, poor rice production due to drought	Milling machine, tractor, store for seeds, stray animals, inadequate water suppy, farm machine, credit, food shortage, fertilizer
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading,	Farming, fishing, masonry, motor mechanic, petty trading	Farming, monthly contributions, petty trading
			None income	Farm work and compound	Compound and house maintenance, refuse collection for compost making, fencing	Firewood collection, fencing, fire belt, bush clearing, cleaning exercise
		Female	Income	Only none income activities like, Farm work, household duties and village cleansing exercise	Soap making, vegetable gardening, petty trading	Farming, vegetable gardening, petty trading
			None income		Domestic works, village cleaning exercise, childcare	Cleansing exercise, cooking, childcare
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Petty Trading	Lack of improved rice cultivation	Lack of seed store
			2	Farm work and compound	Lack of PHC, drugs and VHN	Food shortage
			3		Lack of seed store	Vegetable gardening
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Inadequate farm implements and inputs	Lack of farm implements/inputs	Lack of farm implements
			2	Food Insecurity	Lack of skills	Lack of skill center
			3	Inadequate water supply		Lack of sporting facilities
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate farm implements and inputs	Lack of improved vegetable production	Lack of vegetable garden
			2	Low income	Lack of improved rice production	Lack of credit facilities for petty trading
			3	Lack of income generating	Lack of skill training center	Lack of skills
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D No VDC or CAP formulated.	Rank B The village has a functional VDC and cooperation among villagers. Active Kafos has engaged in productive activities. There are NGOs intervention in village development.	Rank A This village does not seem to have benefited from any development project in the recent past. The existing of a VDC is a positive indication of their readiness for project implementation.

Appendix 2.1-5 ID of 60 villages (5/21)

(GARDA/ June 2003)

	Item			13	14	15
1	Village Name			Dasilame Bulembu	Sare Demba Bubu	Sare Danfo
	Ward			Misira	Misira	Sukutonding
	District			Sandu	Sandu	Wuli West
2	Name of Village Head			Alhaghi Bano Kagku	Alhaghi Malick Bah	Alhaghi Demba Bah
3	Estimated Population	Male		800	250	90
		Female		1,200	300	120
	Number of Households	Male		48	30	16
		Female		0	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2001	1995	2000
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Provision of wells for vegetable production, provision of seed store, provision of farm inputs, provision of miling machine	Farming implements, health center, fertilizer, seeds and storage, gardening, skills center	Provision of wells for vegetable production, provision of seed store, provision of farm inputs, provision of milling machine
	Present Status of CAP			The previous CAP forwarded as the present felt need of the community	Well formulated and active	Not active
6	Staple Food		1	Rice, maize, early and late millet, sorghum	Rice	Millet
			2		Millet	
			3		Sorghum	
7	Accessibility			To Main Road 1km 30mins	To Main Road 9km 0mins	To Main Road 0km 0hours
				To Extension Center 24km 4hours	To Extension Center 14km 0hour	To Extension Center 40minz by horse cart
				To District Capital Market 10km 2.5hours	To District Capital Market 72km hours	To District Capital Market 1.2km 30mins by foot
	Frequency of Extension Officers'			Often	Monthly	Often
8	Major Ethnic			Sarahule	Fula	Fula
9	Agricultural related Activities			Both food and cash crops production, petty trading, embroidery, sewing, tie&dye, masonry, carpentry	Animal husbandry and farming of both cash and food crops, tie&dye, soap making, embroidery, masonry	Animal husbandry, farming, thatching of roofs, digging of pit latrines and cleansing exercise
	Non – agricultural Activities			Block making, carpentry, masonry, soap making, tie&dye, mechanization		
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate farm implements and inputs, erosion, pests, malaria, hunger, lack of transportation, lack of ready market for production, animal intrusion in the fields, dried wells, bushfire	Hunger, poor soils, lack of groundnuts seeds, long distance to travel to the nearest health facility, lack of farm implements, lack of a village seed store	Water shortage, lack of sanitary tools for clinical purpose, lack of farm implements, low soil fertility, seeds, malaria
			Dry season			
		Female	Rainy season	Dried wells in vegetable garden, high labor intensity, lack of milling machine, lack of market for vegetable produce, lack of farm implements and inputs, inadequate vegetable fencing wires, lack of transport to farm land	Lack of farm implements and draft animals, lack of groundnuts seeds, poor soils, lack of vegetable garden, hunger, malaria, long distance travel to the nearest health facility, animal disease, lack of skill training centre	Inadequate water supply, lack of drinking points and drugs for animals
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading, sheep fattening, farming, masonry, carpentry, tailoring	Groundnut, maize, cotton, early millet, sheep fattening, cattle husbandry, masonry, carpentry	Farming of cash crops, weaving sale of fuel woods
			None income	Compound fencing, house maintenance, village clearing, re-digging of village wells, fire wood collection, domestic work	Self-help activity	Compound fencing, house maintenance, village clearing re-digging of village wells, fire wood collection, domestic work
		Female	Income	Farming, vegetable gardening, petty trading	Groundnuts, maize, sesame, cotton, upland rice, petty trading	Farming, vegetable gardening, petty trading
			None income	Clearing exercise, cooking, childcare	Domestic activities, village cleansing	Cleaning exercise, g/nuts cleansing domestic use
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of milling machine	Long distance travel to the nearest health	Lack of water supply
			2	lack of farm implements/inputs	Hunger	Inadequate farm inputs
			3	Lack of wells and fencing materials for vegetable garden	Lack of farm implements	
13	Major problems expressed by village Youths (Prioritisation of problems)		1	lack of farm implements/inputs	Long distance travel to the nearest health center	Lack of skill centers
			2	Lack of wires to prevent erosion	Lack of farm implements/inputs	Lack of credit facilities
			3	Lack of transportation	Poor soils	Inadequate farm inputs
14	Major problems expressed by village Women (Prioritisation of problems)		1	lack of farm implements/inputs	Long distance travel to the nearest health center	Water supply
			2	Lack of milling machine	Lack of farm implements/inputs	Vegetable garden
			3	Lack of skills in petty trading	Lack of groundnut seeds	Heavy workload
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank B There is a well established VDC and an active CAP formulated. Cooperation between Kafoos and villagers is also established.	Rank C Despite VDC and CAP formulated there still need some improvements in kafos organization.	Rank C No well defined CAP and VDC members lack understanding of their roles. Therefore, the village is not recommended to RRA study.

Appendix 2.1-6 ID of 60 villages (6/21)

(GARDA/ June 2003)

	Item			16	17	18
1	Village Name			Jaka Medina	Borro Kandeh Kasse	Kulari
	Ward			Sandu	Baja Kunda	Kulari
	District			Sandu	Wuli East	Kontora
2	Name of Village Head			Kutubo Dibbasey	Nduguneh Hulaymata Juwara	Alaghi Sillah Suwareh
3	Estimated Population	Male		50	544	58
		Female		150	1,456	67
	Number of Households	Male		10	50	310
		Female		0	0	13
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2001	2001	1995
	Community Action Plan (CAP)			Yes	Yes	No
5	Content of CAP			Provision of farming implement, vegetable garden, milling machine for coos	Construction of feeder roads, basic cycle schools, telephone, vegetable garden, drinking points for animals	None
	Present Status of CAP			Not implemented	Constructed school, milling machine provided, telephone aerial established	None
6	Staple Food		1	Rice	Rice	Rice
			2	Maize		Maize
			3	Early and late millet, sorghum		Millet
7	Accessibility			To Main Road 4km 1hour	To Main Road 7km 2hours	To Main Road 7km 2.5hours
				To Extension Center 20km 1.5hours by cart	To Extension Center 9km 2.5hours	To Extension Center 22km 3hours
				To District Capital Market 15km 1hour by cart	To District Capital Market 35km 15hours by motorbike	To District Capital Market 24km 3.5hours
	Frequency of Extension Officers'			Monthly	Not often	Quarterly
8	Major Ethnic			Jahanka	Sarahule	Sarahule
				Mandinka	Fula	
					Mandinka	
9	Agricultural related Activities			Sorghum, millet, rice, beans, watermelon, animal husbandry	Maize, sorghum, g/nuts, early millet	Cultivation of food and cash crops, orchard, vegetables
	Non – agricultural Activities			Carpentry, hired labor, tie&dye, embroidery	Petty trading, soap making, tie&dye	Animal husbandry, petty trading, sewing, tie&dye, masonry, carpentry
10	Major problems in Different months (Jan – Dec)	Male	Rainy season Dry season	Long distance travel to the nearest market, lack of transportation facility, lack of skills of men's, lack of farm implements, affordability of fertilizer due to high cost, hunger, malaria, erosion	Lack of drugs for both humans and animals, lack of adequate drinking ponds, bush fires, erosion, soil fertility, pests, seeds, farm implements, malaria	Inadequate farm implements and inputs, poor road neworks, erosion, pests, malaria, hunger, lack of transportation, lack of ready market for production, animal intrusion in the field, dried wells, bushfire.
		Female	Rainy season Dry season	Heavy workload, malaria, lack of skill training, lack of vegetable garden, lack of farm implements and draft animals, poor soil (lack of fertilizer), lack of threshing machine, continued milling of coarse grains	Malaria, diarrhoea, lack of vegetable, lack of credit facilities, lack of storage facilities, lack of farming implements, low soil fertility, lack of seeds	Dried wells in vegetable garden, high labor intensity, lack of milling machine, lack of market for vegetable products, lack of farm implements/inputs, inadequate vegetable fencing wires, lack of transport to farm land
11	Income and Non – income Generating Activities	Male	Income	Production of both cereals&cash crops, sesame, cotton, pumpkin, sweet potatoes, cassava, water melon	Farming hired labor, sale of fuel wood and blacksmith	Petty trading, sheep fattening, farming, masonry, carpentry, tailoring
			None income	Self-help activity	Compound fencing, house maintenance, village clearing, re-digging of village wells, fire wood collection, domestic work	Compound fencing, house maintenance, village clearing, re-digging of village wells, fire wood collection, domestic work
		Female	Income	Vegetable production (bananas etc)	Farming, vegetable gardening, petty trading	Farming, vegetable gardening, petty trading
			None income	Domestic work and self-help activities	Cleaning exercise, cooking, childcare	Cleaning exercise, cooking, childcare
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Malaria	Low soil fertility	Food insecurity
			2	Lack of transportation facility	Lack of farm implements	Diseases (malaria and pneumonia)
			3	Long distance travel for marketing of farm products	Lack of seeds	Potable water
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of skill	Low soil fertility	Food insecurity
			2	Adult illiteracy	Lack of skill training	Diseases (malaria and pneumonia)
			3	Lack of farm implements and draft animals	Adult literacy	Potable water
14	Major problems expressed by village Women (Prioritisation of problems)		1	Heavy workload	Lack of vegetable garden	Food insecurity
			2	Malaria	Lack of storage facility	Inadequate income ggenerating skills
			3	Lack of farm implements	Lack of credit facility	Heavy load
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank C Although there is VDC and CAP formulated they do not function successfully.	Rank A The village has good prospect of RRA survey because of well established VDC and well formulated CAP. However, lack of intervention from outside delays development in this community.	Rank D Development activities have been hindered because of no existence of CAP or politically divided villagers although the community has an active VDC.

Appendix 2.1-7 ID of 60 villages (7/21)

(GARDA/ June 2003)

	Item			19	20	21
1	Village Name			Garawol	Dasilame Bulembu	Kanjambu
	Ward			Garawol	Misira	Garawol
	District			Kontora	Sandu	Kantora
2	Name of Village Head			Alhaghi Kissima Ceesay	Alhaghi Bano Kagku	Alaghi Samba Jawo
3	Estimated Population	Male		4,121	800	89
		Female		3,415	1,200	96
	Number of Households	Male		N/A	48	33
		Female		N/A	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			1999	2001	
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Sinking of well, request for vegetable garden, market, tractor, farm inputs, sanitation materials	Provision of wells for vegetable production, provision of seed storage, provision of farm inputs, provision of milling machine	Nil
	Present Status of CAP			Active	The previous CAP forwarded as the present felt need of the community.	Nil
6	Staple Food		1	Rice, maize, early and late millet, sorghum	Rice, maize, early and late millet, sorghum	Coos
			2			Rice
			3			G/nuts
7	Accessibility			To Main Road 1km 30mins	To Main Road 1km 30mins	To Main Road 10km 2hours
				To Extension Center 24km 4hours	To Extension Center 24km 4hours	To Extension Center 15km 3hours
				To District Capital Market 10km 2.5hours	To District Capital Market 10km 2.5hours	To District Capital Market 15km 3hours
	Frequency of Extension Officers'			Once every two weeks	Often	Monthly
8	Major Ethnic			Sarahule	Sarahule	Fula
9	Agricultural related Activities			Both food and cash crops production, petty trading, embroidery, sewing, tie&dye, masonry, carpentry	Both food and cash crops production, petty trading, embroidery, sewing, tie&dye, masonry, carpentry	Cultivation of food and cash crops and animal fattening
	Non – agricultural Activities			Block making, carpentry, masonry, soap making, tie&dye, mechanization	Block making, carpentry, masonry, soap making, tie&dye, mechanization	
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate farm implements/inputs, erosion, pests, malaria, hunger, lack of transportation, lack of ready market for production, animal intrusion in the field, dried wells, bushfire	Inadequate farm implements/inputs, erosion, pests, malaria, hunger, lack of transportation, lack of ready market for production, animal intrusion in the field, dried wells, bushfire	Inadequate water supply, lack of farm implements/inputs, village food store, school children
			Dry season			
		Female	Rainy season	Dried wells in vegetable garden, high labor intensity, lack of milling machine, lack of market for vegetable products, lack of farm implement/inputs, inadequate vegetable fencing wires, lack of transport to farm land	Dried wells in vegetable garden, high labor intensity, lack of milling machine, lack of market for vegetable products, lack of farm implement/inputs, inadequate vegetable fencing wires, lack of transport to farm land	Grain milling machine, skill training, potable water, inadequate farm implements/inputs, hired labor
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading, sheep fattening, farming, masonry, carpentry, tailoring	Petty trading, sheep fattening, farming, masonry, carpentry, tailoring	Hired labor and communal farm
			None income	Compound fencing, house maintenance, village clearing, re-digging of village wells, fire wood collection, domestic work	Compound fencing, house maintenance, village clearing, re-digging of village wells, fire wood collection, domestic work	Fencing of compounds, village cleansing, tending of animals, fetching firewoods
		Female	Income	Farming, vegetable gardening, petty trading	Farming, vegetable gardening, petty trading	Communal firm and loan for kafos mebers
			None income	Cleaning exercise, cooking, childcare	Cleaning exercise, cooking, childcare	Household chores and village cleaning
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of milling machine	Lack of milling machine	Poor rain fall
			2	Lack of farm implements/inputs	Lack of farm implements/inputs	Drug for livestocks
			3	Lack of wells and fencing materials for vegetable garden	Lack of wells and fencing materials for vegetable garden	Potable water
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of farm implements/inputs	Lack of farm implements/inputs	Inadequate water supply
			2	Lack of wires to prevent erosion	Lack of wires to prevent erosion	Lack of farm implements/inputs
			3	Lack of transportatioin	Lack of transportatioin	Food insecurity
14	Major problems expressed by village Women (Prioritisation of problems)		1	Lack of farm implements/inputs	Lack of farm implements/inputs	Milling machine
			2	Lack of milling machine	Lack of milling machine	Lack of farm implements/inputs
			3	Lack of skills in petty trading	Lack of skills in petty trading	Potable water supply
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank B The community has a well established VDC and an active CAP. Since cooperation between kafos and villagers is established many things can be achieved with support from donors.	Rank B The community has a well established VDC and an active CAP. Since cooperation between kafos and villagers is established the prospect for development is high with support from donor agencies.	Rank C The community does not have active VDC or CAP. Since most of the youth migrate to other area to look for greener pastures during dry season their participation in project implementation may be minimal.

Appendix 2.1-8 ID of 60 villages (8/21)

(GARDA/ June 2003)

	Item			22	23	24
1	Village Name			Dingiri	Badari	Diabugu Basillah
	Ward			Dampha Kunda	Kulari	Kulari
	District			Fulladu East	Kontora	Kantor
2	Name of Village Head			Ahagi Jayeh Sumareh	Mlbemba Manneh	Jarika Sillah
3	Estimated Population	Male			218	400
		Female			354	620
	Number of Households	Male		53	53	198
		Female		0	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2001	1995	1999
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Groundnut past making machine, seed infestation during storage and no cattle drinking points	Monthly subscriptions, communal farm, settling disputes among people, hired labor, village clearing	Heavy workload on women, inadequate clean water, inadequate income generating skills, vegetable garden
	Present Status of CAP			Active	Active	Formulated and actve
6	Staple Food		1	Cereals	Cereals	Rice, maize, early and late millet, sorghum
			2			
			3			
7	Accessibility			To Main Road 6km 1hour	To Main Road 0.5km 10mins	To Main Road 4km 45mins
				To Extension Center 3km 30mins	To Extension Center 9km 1hour	To Extension Center 15km 2.5hours
				To District Capital Market 22km 4hours	To District Capital Market 11km 45mins	To District Capital Market 34km 3hours
	Frequency of Extension Officers'			Monthly	Staying at the village	Once every two weeks
8	Major Ethnic			Sarahule	Mandinka	Sarahule
9	Agricultural related Activities			Cultivation of food and cash crops	Both food and cash crops production, g/nuts, orchards, vegetable gardens	Cultivation of food and cash crops, backyard garden cultivation, orchards
	Non – agricultural Activities			Blacksmith, soap making	Petty trading, embroidery, sewing, carpentry, masonry, carpentry	Blacksmith, cobbling
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	No sanitation materials, seed infestation during storage, inadequate stand pipes, inadequate farm implements/inputs	Inadequate water supply, malaria, no ambulance, farm implements/inputs, food security, pests	Inadequate potable water, lack of farm implements/inputs, food insecurity
			Dry season			
		Female	Rainy season	Inadequate water supply, no sanitation materials, inadequate income generating skills, inadequate farm implements/inputs	Lack of market for vegetable products, heavy workload, garden seeds, lack of credit source, farm implements in inputs, food and water shortage, pests and diseases, lack of school fees	Inadequate portable water, poor health, no vegetable garden, inadequate income generating skills, lack of adequate farm implements/inputs
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Petty trading, blacksmith	Welding, orchard, tailoring, masonry, carpentry, blacksmith, fishing	Petty trading, masonry, cobbling
			None income	Farm work	Compound fencing house maintenance, village clearing, re-digging village wells, fire wood collection, domestic work	Farm work
		Female	Income	Sesame production	Horticulture, pottery, tie&dye, soap making, baking	Pottery, soap making, pomade making, fruit processing, bread baking
			None income	Farm work, household chores	Household chores	Farm work, household chores
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Inadequate water supply	Food insecurity	Lack of farm implements/inputs
			2	Seed infestation during storage	Malaria and sores	Food shortage
			3	Inadequate farm implements	Inadequate water supply	
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Inadequate water supply	Food insecurity	Lack of drinking water
			2	Seed infestation during storage	Inadequate football games	Lack of vegetable garden
			3	Inadequate farm implements	Malaria chest pain	Inadequate farm implements
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate water supply	heavy workload	Lack of drinking water
			2	Farm inputs	Food insecurity	Lack of vegetable garden
			3	Inadequate income generating skills	No source of credit for petty trading	Low income
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank C Most of women in the village are engaged in petty trading since the village has a market (LUMO). Therefore they do not have time for any project.	Rank C Although the village has active VDC and Cap kafo's affiliation to outsiders is poor.	Rank B The community has a well established VDC and an active CAP. Since cooperation between kafos and villagers is established their activeness in project implementation is encouraging.

Appendix 2.1-9 ID of 60 villages (9/21)

(GARDA/ June 2003)

	Item			25	26	27
1	Village Name			Sutukonding	Sami Kuta	Sanka Barrie
	Ward			Sutukonding	Garawol	Sarre Ngai
	District			Wuli West	Kantora	Wuli West
2	Name of Village Head			Sutay Jatta	Dembo Dampha	Sarjo Sowe
3	Estimated Population	Male		2,000		82
		Female		3,000		38
	Number of Households	Male		190	22	11
		Female		10	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2001	1999	2000
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Provision of wells, construction of PHC post for TBA, provision of pumping machine for vegetable irrigation, fencing of childcare center, provision of feeding, toilets and wells	School, vegetable garden, sinking of wells.	Tye&Die, soap making
	Present Status of CAP			Active	Active	Loss
6	Staple Food		1	Rice, maize, early and late millet, sorghum	Millet	Early millet
			2		Maize	
			3		Rice	
7	Accessibility			To Main Road 0.25km 5mins	To Main Road 6km 1hour	To Main Road 2km 1hour 15mins
				To Extension Center 8km 2hours	To Extension Center 10km 1.5hours	To Extension Center 1.5km 45mins
				To District Capital Market 8km 2hours	To District Capital Market 4km 45mins	To District Capital Market 30km 1hour 20mins
	Frequency of Extension Officers'			Often	Weekly	At least once in every 2wks
8	Major Ethnic			Fulla	Mandinka	Fulla
				Mandinka		
9	Agricultural related Activities			Early Millet, late millet, sorghum, maize, groundnuts, rice, findo, sesame, vegetable, beans	Cultivation of food and cash crops such as g/nuts, beans, v/garden	Farming / pastoral farming -backyard vegetable gardening
	Non – agricultural Activities			Petty Trading, embroidery, soap making, bread making, tailoring, embroidery	fetching wild fruits, petty trading.	petty trading, petty trading, cutting of grasses for thatching
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate Water for animals, inadequate safe drinking water for people, bushfires, lack of fertilizer, inadequate farm implements, hunger, draught, malaria, dysentery, lack of drugs for animals	Inadequate farm implements/inputs, high prices of goods, pests, inadequate wells and malaria, water shortage, lack of skills trainings.	Low soil fertility, inadequate farm implement, malaria, lack of vetiny services
			Dry season			Water shortage, bush fires
		Female	Rainy season	Inadequate water at vegetable gardens, lack of seeds, inadequate vegetable production materials, high labour intensity, hunger, lack of farm implements	Drudgery work, inadequate farm implements/inputs, food insecurity, lack of milling machines. Lack of income generating skills.	Farming implements, g/nut seeds, malaria
			Dry season			Water shortage, manual pounding, inadequate vegetable production
11	Income and Non – income Generating Activities	Male	Income	Farming, business, carpentry, masonry, tailoring, drivers, bread making	Fishing, carpentry, communal farming, sale of cereals and petty trading.	Cultivation of cash crops, Hired labour
			None income	House and compound maintenance, fuel wood collection, fencing. Village clearing, fire belt	thatching of roofs, fencing of compounds, farm clearing of farms.	making of fire belts, thatching of roofs
		Female	Income	Farming, vegetable gardening, petty trading, tie & dye, sewing, jam making	horticultural production, sale of forest products, soap making, and tie & dye.	Communal farming, Hired labour
			None income	Domestic works	cooking, sweeping, fetching fuel wood.	Village cleaning exercise, cleaning of well environment
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Provision of 2 well hand pumps	Food insecurity	Water shortage
			2	Construction of PHC post for TBA/VHW	Inadequate water supply	Inadequate farm implements/ inputs
			3	Provision of pumping machine of irrigation of vegetable garden	Lack of resources to build school/madarasa	Low soil fertility
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of skill centre	Food insecurity	Lack of skill trainings
			2	Lack of fences for the youth's fruit tree	Inadequate water supply	Inadequate farm implements/ inputs
			3	Lack of implements for sanitation	Lack of farm implements/inputs	Lack of sanitary
14	Major problems expressed by village Women (Prioritisation of problems)		1	Lack of Farm Implements and Inputs	Inadequate garden fence and wells	Heavy work loads (pounding)
			2	Lack of Milling Machine	Food insecurity	Inadequate farm implements/ inputs
			3	Lack of cold store facility for vegetable	Malaria diseases	Lack of credit facilities
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank A This Village has a well organise and cooperative kafos who work cooperatively with the VDC and have a good Prospect of development with support.	Rank B There are cooperation, active participation in self-help projects, and a good relationship between the kafos and the VDC. The villagers, however, need support as there is no outside intervention in the village.	Rank D There is a VDC and a formulated CAP but this could not be justified as their CAP was not formulated when it was requested for.

Appendix 2.1-10 ID of 60 villages (10/21)

(GARDA/ June 2003)

	Item			28	29	30
1	Village Name			Allunhara	Numuyel	Kossemar Tenda
	Ward			Basse	Gambisara	Julangel
	District			Fulladu East	Jimara	Fulladu East
2	Name of Village Head			Alh. Saikou Tunkara	Alh. Kesima Kamara	Ebou Jallow
3	Estimated Population	Male		5,000	1,500	220
		Female		7,000	2,000	250
	Number of Households	Male		1,000	N/A	45
		Female			N/A	12
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2003	1980	1997
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Standpipes, electricity, poultry project, animal husbandry, pottery making, revolving fun credit scheme, irrigation scheme at rice fields, health infrastructure.	Road rehabilitation, provisions of farm implements, health facilities, labour saving devices for women	Provisions of farm implements/inputs, wells, rice land rehabilitation, provisions of labour saving devices, health facilities for humans & animals.
	Present Status of CAP			Active	Not active	active
6	Staple Food		1	Rice	Late millet	Coos, rice, maize
			2	Late millet	Rice	
			3		Maize	
7	Accessibility			To Main Road Located on the high way	To Main Road 3km 1hour	To Main Road 3km 1hour
				To Extension Center 5km 45mins	To Extension Center 10km 3hours on foot	To Extension Center
				To District Capital Extension 7km 1hour on foot	To District Capital Market 3km 1hour on foot	To District Capital Market 20km 2hours
	Frequency of Extension Officers'			Frequent	Frequent	Regular
8	Major Ethnic			One tribe	Sarahule	Mandinka
						Fula
9	Agricultural related Activities			Maize, groundnut and millet, gardening Livestock production Cattle, Small ruminant production	Maize, groundnut, late millet, Cassava, pumpkin, beans, sesame	Gardening, rice cultivation
	Non – agricultural Activities			Tie &dye, soap making, sewing	Smiths, tailors, weaving, soap making, Tie and dye	Blacksmith, domestic, soap making
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Fertilizer, bridge	Farm implements, water running point/erosion	Food insecurity, lack of farm implements, animal diseases
			Dry season	Drinking point for animal, water for domestic use, poor flowing of water	Bush fire, land tenure	No skill center, bush fires, water shortage
		Female	Rainy season	Stray animals, fencing problem at gardens, fertilizer	Health (malaria), seed, fertilizer	Day care of children, heavy workload
			Dry season		Marketing of products, v. gardening, water	Milling machine, water shortage
11	Income and Non – income Generating Activities	Male	Income	Farming crops, trading	Contractors, petty trading, hired labor	Cash crop farming, petty trading, hired labor
			None income	Rice, groundnut, late millet (food)	Community building, voluntary work on farms, cleaning exercise	Clearing farms, fetching of fuel wood, home maintenance
		Female	Income	Gardening, soap making, tie&dye	Petty trading, tie&dye, soap making	Firewood, masonry, blacksmith
			None income	Domestic work	Cooking, pounding, birth control	Cutting grass, thatching, domestic work
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Drinking points for animals	Seeds, fertilizer	Food insecurity
			2	Fertilizer	Road	Farm inputs e.g. fertilizer, seeds
			3	Market	Food	Water for drinking
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Fertilizer	Health facilities	Farm implements
			2	Pumping machines to rice fields	Electricity	Health malaria disease
			3	Market	Sport equipment	Food insecurity
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inavailability of health facilities	Milling machines	Farm implements
			2	Marketing of gardening produce	Malaria	Health malaria disease
			3		Seeds, fertilizer	Food insecurity
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank A This village has a big area for rice cultivation and is a very active community in project implementation. The VDC and the existing kofos are very well organised and cooperative.	Rank C Despite there is a VDC and a CAP formulated there activities are inactive.	Rank A There is a active VDC and a CAP formulated. Its proximity to swamp fields is an added advantage for an RRA survey to be conducted in this village.

Appendix 2.1-11 ID of 60 villages (11/21)

(GARDA/ June 2003)

	Item			31	32	33
1	Village Name			Julangel	Njum Bakary	Sabi
	Ward			Julangel	Julangel	Sabi
	District			Jimara		Fulladu East
2	Name of Village Head			Alh. Balamba Sanneh	Alhagie Momodou Singhateh	Sarja Sillah
3	Estimated Population	Male		1,000	200	3,000
		Female		1510	400	4,000
	Number of Households	Male		201	17	59
		Female		0	0	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			1999	1999	1994
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Agricultural Implements/inputs, communication facilities, electricity poles and water supply	Labor saving devices, adult literacy, provisions of farm implements/inputs, health facilities and markets for vegetables.	Provision of fertilizers, farm implements, seeds, water for both humans and livestock
	Present Status of CAP			Developed just 3 days before the survey	Adult literacy classes started.	Active
6	Staple Food		1	Late millet	Millet	Late millet
			2	Rice	Rice	Rice
			3			
7	Accessibility			To Main Road 1/2km 30 mins	To Main Road 1km 15mins	To Main Road 0km 0 hours
				To Extension Centre 1km 20 mins	To Extension Centre 1 Km 15mins	To Extension Centre km hours
				To District Capital Market 1km 20mins	To District Capital Market 36 Km	To District Capital Market km mins
	Frequency of Extension Officers'			Monthly		Yearly
8	Major Ethnic			Sarahule	Mandinka	Sarahule
				Fulla	Sarahule	Mandinkas
				Mandinka		Fulas
9	Agricultural related Activities			Maize, millet, groundnut, sesame, productions	Millet cultivation, gardening, livestock production, poultry	Groundnut, late millet, maize, cotton, gardening, cattle rearing
	Non – agricultural Activities			Home economic, tailoring, tie&dye, skill training center	Petty trading, smith craft, weaving (cloth), soap making, pottery, tie&dye	Smiths, tailors, weavers, leather makers, masonry
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Fertilizer, seeds, farm machines	Fertilizer, health problems, draft animal, fertilizer produce	Horse&donkey cart, seeds, gully erosion
			Dry season	Gardening, farming, bush fire, drinking point	Animal deseases, bush fire, marketing of garden	Lack of proper road, water
		Female	Rainy season	Milling machine, fertilizer seeds	Milling machine, farm implements, seeds	Farm machines, fertilizer, seeds
			Dry season	Seeds, soap making, marketing, garderning, lack of proper fencing	Lack of water, marketing of garden pro.	Seeds for gardening, lack of proper fencing from VG
11	Income and Non – income Generating Activities	Male	Income	Petty trading, hired labor	Crop farming, sale of livestock	Rearing of farm animals, petty trading, carpentry
			None income	Cleaning exercise, building voluntaries, community	Crop farming (food), fetching fire wood, domestic activities	Building construction, painting, fencing
		Female	Income	Soap making, Tie&dye, sewing	Crop farming, sale of livestock	Soap making, gardening, sewing
			None income	Birth control, cooking cleaning exercise, pounding	Crop farming (food), domestic activities (cooking, processing)	Cleaning, cooking, laundering
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of farming tools	Animal diseases	Drinking of points for animals
			2	Health problem	Fertilizer	Poor control of water
			3	Fertilizer	Seed	Farm machines
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of transportations	Health and accessibility to health centers	Lack of skills centers
			2	Lack of skill centers	Fertilizer	Lack of inadequate farming implements
			3	Communication	Lack of farm implements/inputs	Seeds for inputs
14	Major problems expressed by village Women (Prioritisation of problems)		1	Foot shortage, water	Milling macines	Fertilizer
			2	Marketing, lack of store, malaria	Fertilizer	Threshing machine
			3	Milling machines, fertilizer, seeds	Seed	Farm implements
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D There are many projects (interventions) from outside and any further intervention may lead to duplication.	Rank A This community has an active VDC and a CAP formulated but has benefited less from outside interventions. Therefore, it needs to be considered.	Rank B There is less affiliation with CBOs and NGOs and would therefore need some assistants from outside intervention.

Appendix 2.1-12 ID of 60 villages (12/21)

(GARDA/ June 2003)

	Item			34	35	36
1	Village Name			Basse Santosu	Kabakama	Fass Bajong
	Ward			Basse	Basse Ward	Sabi
	District			Fulladu East	Fulladu East	Fulladu East
2	Name of Village Head			Alh. Nasiru Barry	Fatou Danso	Alh Muhanmmadu Tunkara
3	Estimated Population	Male		7,000	630	937
		Female		10,000	750	1,543
	Number of Households	Male		N/A	286	79
		Female		N/A	20	0
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2002	2000	2000
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Skills trainings for groups members, communal farming, poultry production and animals husbandry	Construction of orchard, provisions of food processing machines, road maintenance and irrigation infrastructure for rice fields	No copy available
	Present Status of CAP			Active	Active and functional	Inactive
6	Staple Food		1	Rice	Rice	Maize
			2		Millet	Rice
			3			Millet
7	Accessibility			To Main Road Located on the high way	To Main Road 0 km Hours	To Main Road 10km 1.5 Hour
				To Extension Centre 4km 45mins	To Extension Centre 1km 15mins	To Extension Center 10km 1.5 hour
				To District Capital Market 0km	To District Capital Market 0.5 km 15mins	To District Capital Market 10km 1.5 hour
	Frequency of Extension Officers'			Irregular	Frequent	Rare
8	Major Ethnic			Fula, Mandinka	Mandinka	Sarahule
				Sarahule	Fula	Mandinka
				Manjago		Fula
9	Agricultural related Activities			Groundnuts, findo, maize, millet, rain fed rice, vegetable gardens Livestock- pig husbandry, poultry, small ruminants	Millet, sesame, maize, groundnut, rain fed rice cultivated	Millet, maize, sorghum, cotton, groundnut cultivation Livestock-small ruminant production, cattle, poultry, rearing
	Non – agricultural Activities			Welding, carpentry, sewing, electricians, painting, mechanics	Carpentry, welding, masonry, tie&dye, soap making	Soap making, petty trading, butchery
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Food, poor roads, land for cultivation, rice fields are dried.	Poor road, food, stray animals, pest, farm implement	Fertilizer, insects (crops), seeds, poor road
			Dry season	Land, water&electricity	Unemployment (youths), bush fire	Water for domestic, insects (Groundnut seed)
		Female	Rainy season	Lack of food for widows, fire wood, malaria	Poor water run of to rice field, stray cattle to rice field, poor roads	Farm implements food, fertilizer
			Dry season	Water for domestic use	Stray animals, water level of well at gardens	Milling machines, water for domestic use
11	Income and Non – income Generating Activities	Male	Income	Petty trading-welding, gardening-carpentry, maize cultivation, fishing (food)	Cash crop farming, fire wood, orchards, welding, carpentry	Sale of livestock, butchery, petty trading
			None income	Farm clearing, home maintenance, drowning water cattle	Fencing of compound, farm clearing, fetching fire woods	Bee keeping, fetching wood, fencing
		Female	Income	Soap making, gardening, petty trading, hired labor	Petty trading, gardening, soap making, tie&dye	Pottery, plaiting, petty trading (pancakes)
			None income	Groundnuts roasting, planting of trees	Fetching of water, cooking, pounding	Soap making
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Land for cultivation	Poor roads during the rainy season	Water for animals and domestic use
			2	Unemployment and high dependency	Food in security	Fertilizer
			3		Lack of sanitary tools	Farm implements
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Water and electricity	Skills centers	Education (higher grades)
			2	Lack of skills	Credit scheme	Food insecurity
			3	Land and pumping machines for rice fields	Lack of income generating activities	Farm implements
14	Major problems expressed by village Women (Prioritisation of problems)		1	Water and electricity	Electricity	Milling machine
			2	Lack of credit facilities	Support for orphans going to schools and disables	Fertilizer
			3		Lack of credit for business	Lack of labor saving devices
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank A Being the divisional commercial area the village needs development activities and is lacked of a lot of things. Therefore, the village needs outside intervention to succeed in this endeavour.	Rank B The activeness and cooperation of kafos are encouraging. They have a well committed VDC who will be able to bring changes on the development of the village provided an opportunity.	Rank D There is a lack of cooperation among villagers and kafos.

Appendix 2.1-13 ID of 60 villages (13/21)

(GARDA/ June 2003)

	Item			37	38	39
1	Village Name			Gambissara	Sare Bona	Mankamang Kunda
	Ward			Gambissara	Sabi	Jullangel
	District			Kantora	Fulladu East	Fulladu East
2	Name of Village Head			Alh Karamoko Dukureh	Colly Mballow	Sara Jawo
3	Estimated Population	Male		6,000	100	200
		Female		7,000	150	218
	Number of Households	Male		184	9	23
		Female			1	1
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2000	1999	2001
	Community Action Plan (CAP)			Yes	Yes	No
5	Content of CAP			Farm implements/inputs, vegetable garden wells, milling machines, loans for women petty traders and skill training groupmembers	Sinking of well, provisions of farm implements/inputs, milling machines, vegetable gardens and cattle drinking ponds	No CAP
	Present Status of CAP			Active	Not active	None
6	Staple Food		1	Millet	Late millet	Millet
			2	Maize		Rice
			3	Rice		
7	Accessibility			To Main Road 6km 1hour	To Main Road 2km 1hour	To Main Road 0km
				To Extension Center 6km 1hour	To Extension Center 3km 2hours	To Extension Center 0km
				To District Capital Market 12km 2.5hours	To District Capital Market 3km 2hours	To District Capital Market 35km 10minutes by bus
	Frequency of Extension Officers'				Monthly	Regular
8	Major Ethnic			Sarahule	Fula	Fula
				Mandinka		Mandinkas
				Fulla		Serere
9	Agricultural related Activities			Millet, maize, findoo, gardening, groundnut, rain fed rice	Groundnut, late millet, maize	Millet, maize, cassava, groundnut, sesame, cassava, findo, vegetable gardening, livestock production
	Non – agricultural Activities			Carpentry, welding, masonry, petty trading, soap making, tie&dye	Weaving, soap making	Butchery, welding, mechanics, welding, tie&dye, business, soap making, bakery
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Fertilizer, seed, farm implements	Food, seeds, malaria, fertilizer, farm input	Farm implements, seed, food, fertilizer
			Dry season	Dry wells in gardens, drinking points for animal	Bush fire, lack of enough seed	Seed store, lack of clean water
		Female	Rainy season	Seed stock (findo), poor roads (erosion)	Lack of farm machine, food, malaria	Seed, food (rice&g/nut), animal disease
			Dry season	Water for domestic use, electricity	Marketing, lack of transport facilities	Lack of proper fence for garden
11	Income and Non – income Generating Activities	Male	Income	Farming, traveling, petty trading, welding	Groundnut farming, petty trading, hired labor	Well digging, gardening, hired labour, farming crop
			None income	Fire wood fetching, fencing	Building construction, finding wood, fencing	Village cleaning exercise, domestic activities
		Female	Income	Business trading, soap making	V. gardening, petty trading	
			None income	Domestic work, voluntary services	Soap making, pounding, cooking, cleaning	
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Fertilizer	Health, food, water	Nursery school
			2	Water for animals and domestic purpose	Farm implement (machine)	Animal diseases
			3	Food insecurity	Drinking point for animals	Farm implements
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Farm implements (tractors)	Skills center	Health facilities
			2	Lack of skills trainings	Fertilizer	Undeveloped rice field (poor irrigation)
			3	Low soil fertility	Machines	Animal diseases
14	Major problems expressed by village Women (Prioritisation of problems)		1	Milling machine	Mailing machine	Lack of proper fence for community garden and water
			2	Garden wells	Food insecurity	Lack of capital
			3	Lack of credit facilities for business	Fertilizer	Animal diseases
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank B There are available factor of production, i.e. land, the readiness and cooperation among groups in the village development activities.	Rank B Although their CAP is inactive, there is community cooperation and determination in executing selfhelp projects. The community calls for outside support in strengthening and implementing their CAP.	Rank C This community needs more sensitiation programmes to be able to improve their initiatives towards community selfhelp projects rather than entirely depending on outside support. If this trend change with cooperation, there would be a fair prospect for development.

Appendix 2.1-14 ID of 60 villages (14/21)

(GARDA/ June 2003)

	Item			40	41	42
1	Village Name			Touba Tafsirr	Jah Kunda	Sare Ngai
	Ward			Sabi	Sare Ngai	Sare Ngai
	District			Fulladu East	Wulli West	Wulli West
2	Name of Village Head			Alagie Kassama	Alh. Sedia Barrow	Chocke Jallow
3	Estimated Population	Male		400	800	479
		Female		600	120	457
	Number of Households	Male		78	59	100
		Female		2	Nil	14
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2000	01/01/1998	2001
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Skill trainings of kafos, construction of school, maintenance of village hand pump well, provisions of vegetable garden materials	To construction of waiting shed, skills training, construction of ponds, road maintenance	Drugs for livestock, poultry and animal fattening, threshing and milling machines, establishement of skill centers
	Present Status of CAP			Not active	Not active	2001
6	Staple Food		1	Rice	Early millet	Early millet
			2	Millet	Maize	Sorghum
			3			
7	Accessibility			To Main Road 7km 1.5hour	To Main Road 50m 0hour	To Main Road 0km 0hour
				To Extension Center 6km 1hour	To Extension Center 0km 0hour	To Extension Center 5km 2hours
				To District Capital Market 7km 1.5hour	To District Capital Market 0km 0hour	To District Capital Market 32km 1.5 hours
	Frequency of Extension Officers'			Rare	Frequency	Not frequent
8	Major Ethnic			Jahanka	Mandinkas	Fullas
				Fula		Mandinkas
						Wolofs
9	Agricultural related Activities			Millet, melon, maize, groundnut, cassava, gardening and sesame Livestock-cattle, small ruminant, poultry	Cereals&cash crops productions, vegetables gardening, sesame prod	Growing of g/nuts, millets, sesame, sorghum, maize, findi
	Non – agricultural Activities				Weekly village cleansing, hired labor, thatching of roofs	Embroidery, weaving, tailoring, and domestic works
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Fertilizer, old bridge erosions	Inadequate farm implements/inputs, low soil fertility, malaria	Inadequate farm implement/iniputs, low soil fertility, newcastle and PPR diseases
			Dry season	Improper fence for garden insects (seeds) at garden	Water shortage, inadequate skills, bush fires	Water shortage, lack of sanitary tools, bush fires
		Female	Rainy season	Farm implements, fertilizer	Inadequate farm implements/inputs, low soil fertility, malaria, manual pounding, draught	Inadequate farm implement/iniputs, low soil fertility, malaria
			Dry season	Market for produce poor garden (fence)	Water shortage, inadequate vegetables products, lack skills	Water shortage, storage facilities, lack of capital for business, marketing of products
11	Income and Non – income Generating Activities	Male	Income	Petty trading, maize, groundnut, melon	Farming, smiting, cobbler work	Growing of cash crops, embroidery, weaving, smiting
			None income	Agro forestry, domestic work	Village cleansing exercises re-digging of wells	Cleaning of village, road maintenance, re-digging of wells, thatching of roofs
		Female	Income	Gardening, livestock, groundnut, sesame	Soap making, Tie&dye, embroidery	Embroidery, tie&dye, soap making, petty trading
			None income	Domestic duties (processing working etc)	Hair dressing, pounding, sweeping, fetching of fire woods	Fetching firewood, laundering, cleansing
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack education for children	Water shortage	Water shortage
			2	Lack of maintenance for pumping well	Lack of skill training	Inadequate farming implement/inputs
			3	Lack of adequate farm implements/inputs	Communication and transportation problems	Marketing of cash crops
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Kafoo capacity	Lack of employment opportunities	Lack of skill training facilities
			2	Education facilities	Poor road conditions	Inadequate farming implement/inputs
			3	Lack of skills training	Lack of skills	Lack of sanitary tools for village cleansing exercises
14	Major problems expressed by village Women (Prioritisation of problems)		1	Milling machine	Inadequate safe drinking water	Water shortage
			2	Materials for gardening	Inadequate farm implement/inputs	Lack of vegetable gardens
			3	Lack of skills training	Lack of skills	Lack of labor saving devices
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank A This village has no affiliation to outsiders and have ongoing development projects. The village should be recommended to the RRA survey and for other donor interventions, so as to capacities them.	Rank B The prospect for development is good in this village considering the activeness of their VDC and existing kafos; this village could be a potential village for the RRA study. They don't have any ongoing projects.	Rank A There is a well established VDC and a CAP formulated. They are well conversed to development project and have established their own community initiated poultry project. Therefore, this village should be recommended to RRA survey.

Appendix 2.1-15 ID of 60 villages (15/21)

(GARDA/ June 2003)

	Item			43	44	45
1	Village Name			Sare Talo	Foday Kunda	Kerewan
	Ward			Dampha Kunda	Foday Kunda	Sutukonding
	District			Fulladu East	Wulli East	Wulli West
2	Name of Village Head			Jatta Jawo	Alh. Muhamadu Singhateh	Kawsu Sillah
3	Estimated Population	Male			480	200
		Female			600	290
	Number of Households	Male		10	43	80
		Female			0	0
4	VDC Established				Yes	Yes
	Date of Establishment				1990	1996
	Community Action Plan (CAP)				Yes	Yes
5	Content of CAP				Storage facilities, women's vegetable garden, primary health care, adult literacy	Farming implements, seed store, fertilizer, clean drinking water, health post construction, erosion control
	Present Status of CAP				Not active	Formulated and active
6	Staple Food		1	Millet	Maize	Sorghum
			2			Millets
			3			Rice
7	Accessibility			To Main Road 5km 1hour	To Main Road Runs across the village	To Main Road Runs across the village
				To Extension Center 20km 3km	To Extension Center 11km 3.5 hours by horse carts	To Extension Center 15km 1.5 hours on foot
				To District Capital Market 22km 3.25hours	To District Capital Market 48km 1hour by minibus	To District Capital Market 7.5km 45mins on foot
	Frequency of Extension Officers'			Once every 6months	Not frequent	Monthly
8	Major Ethnic			Fullas	Mandinka	Jahankes
						Mandinkas
9	Agricultural related Activities			Cultivation of food and cash crops such as maize, sorghum, late millet, g/nuts.	G/nuts, millets, sorghum, animal husbandry, vegetable gardening	G/nuts, sorghum, maize, findo, beans, vegetable garden, mango jam making
	Non – agricultural Activities			Blacksmithing, weaving, soap making	Bread baking, soap making, embroidery, tie&dye, tailoring, petty trading	Tie&dye, embroidery, village cleansing, repair and maintenance of homes
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate water supply, lack of farm implements/inputs, food shortage	Lack of market, means of transportation, communication problems, hunger, lack of farm implement/inputs, lack of drugs for animals	Poor soil fertility, hunger, inadequate farm implements&draft animals, malaria, lack of animals drinking ponds, inadequate drinking water saving, lack of village seed store, lack of village cleansing tools
			Dry season			
		Female	Rainy season	Inadequate water supply, heavy workload, lack of income generating skills, lack of adequate farm implements/inputs, food insecurity	Inadequate water supply, lack of credit facilities, lack of adequate farming implements/inputs, hunger, malaria	Long distances travel lings to health centers, hunger, lack of labor saving devices, lack of skill training facilities, infertility of farm lands (low productivity), lack of proper garden fence
			Dry season			
11	Income and Non – income Generating Activities	Male	Income	Farming of cash crops, blacksmithing, weaving	Hired labor, farming of cash crops, making and selling of thatched grasses	Cash crop farming, business, remittances from relatives in abroad, hired labor
			None income	Farm clearing, thatching&home fencing	Village cleansing, roads maintenance	Fuel wood collections, home maintenance
		Female	Income	Farming, petty trading, tie&dye, soap making	Farming of cash crops, vegetable garden, embroidery, soap making, bread baking, tailoring	Farming of cash crops, hired labor, petty trading, tie&dye, soap making
			None income	Fetching of fuel wood, water, sweeping of compounds, clearing of farms, pounding of rock	Village cleansing, fetching water	Domestic homework, village cleansing
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of adequate farm implement/inputs	Inadequate water supply	Hunger
			2	Food shortage	Lack of adequate farm implements/inputs	Inadequate clean drinking water
			3	Inadequate water supply	Lack of storage facilities	Long distances to health facilities
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of adequate farm implements	Lack of skill centers	Inadequate clean drinking water
			2	Inadequate water supply	Lack of credit facilities	Inadequate farm implements
			3	Food shortage	Lack of a community center	Lack of village seed stores
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate water supply	Lack of vegetable garden	Lack of farm implements and draft animals
			2	Food shortage	Lack of credit for petty trading	Lack of seeds
			3	Inadequate farm implement/inputs	Lack of market structure	Poor soil fertility
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D There is no VDC and CAP formulated.	Rank A Thisvillage is recommended to RRA study. Political differences have been resolved. They have a verse swamp land area which will be able to alleviate food insecurity for many comunities if rehabilitated.	Rank C Though the VDC is inactive with little suport there is a fair prospect for improvements.

Appendix 2.1-16 ID of 60 villages (16/21)

(GARDA/ June 2003)

	Item			46	47	48
1	Village Name			Koina	Chamoi Challi	Sare Sebo
	Ward			Koina	Bajah Kunda	
	District			Kantora	Wulli West	Kantora
2	Name of Village Head			Alhagie Demba Bah	Fally Bah	Sulayman Jallow
3	Estimated Population	Male		1,602	28	186
		Female		2,348	18	214
	Number of Households	Male		546	2	25
		Female		0	0	1
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			1999	1999	2000
	Community Action Plan (CAP)			Yes	Yes	No
5	Content of CAP			More telephone lines, standpipes, wells, milling machines, gardens, construction of market and health center	Digging of well, construction of store, horse carts ambulances	None
	Present Status of CAP			Active-construction of market and health center on going	Not active	Not active
6	Staple Food		1	Millets	Millet	Cereal
			2	Sorghum		
			3			
7	Accessibility			To Main Road 0.5km 15mins	To Main Road Runs across the village	To Main Road 3km 1hour
				To Extension Center 10km 1hour	To Extension Center 15km 1hour by horse cart	To Extension Center 11km 2hours
				To District Capital Market 10km 1hour	To District Capital Market 45km 3hours	To District Capital Market 11km 2hours
	Frequency of Extension Officers'			Quarterly	Not frequent	Very rare
8	Major Ethnic			Sarahulles	Fullas	Mandinka
				Fullas		Fullas
9	Agricultural related Activities			Cultivations of g/nuts, beans, millets, orchard&veg. gardening	Millet, maize, sorghum, rice	Cereal production, leguminous crop production, sesame, cotton production
	Non – agricultural Activities			Petty trading, masonry, carpentry, tailoring	Villag-cleansing exercises, rearing of cattle's and other domestic ruminants	Petty trading, mason, black smith, carpentry
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate farm implements, inadequate water supply, malaria, lack of cattle drinking ponds, lack of adequate telephone lines	Pest infestations, erosion, and inadequate farm implements/inputs, lack of transportation means	Inadequate water supply, lack of health post, farm inputs(inadequate), farm implements (inadequate), pest infestation
			Dry season		Water shortage, lack of vetinary services for animals	
		Female	Rainy season	Inadequate water supply, inadequate farm implement/inputs, inadequate credit schemes, lack of skills trainings and electricity supply	Malaria, lack of milling machiines, insufficient mosquitos nets	Lackof farm implements, lack of farm inputs, lack of health post, food insecurity
			Dry season		Water shortage, lack of vegetable gardens	
11	Income and Non – income Generating Activities	Male	Income	Business, wielding, tailoring, carpentry, driving, remittances from abroad, hired labor, masonry	Mainly farming and selling cow milk	Farming, carpentry, mason, bakery, petty trading
			None income	Farm clearing, compounds repair and maintenance	Thatching of houses, village cleansing, digging of latrines, re-digging of village wells	Farming compound repairs
		Female	Income	Petty trading, remittances from abroad, horticulture, sewing, pottery making	Mainly farming and selling cow milk	Hired labor, selling farm products, petty trading
			None income	Household chores, fetching of fuel woods	Fetching of fuel wood, cooking, pounding, fetching of water, village cleansing	Village cleaning, farming
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of adequate farm implements/inputs	Inadequate water supply	Farm inputs
			2	Inadequate drinking water saving	Lack of storage facilities	Farm implement
			3	Inadequate telephones	Erosion - no land conservation	Pests&diseases
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of adequate farm implements/inputs	Inadequate water supply	Inadequate wells
			2	Inadequate water supply	Lack of storage facilities	Lack of health post
			3	Inadequate telephone lines	Inadequate farm implements/inputs	Farm implement
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate water supply	Inadequate water supply	Food insecurity
			2	Inadequate farm implements/inputs	Lack of vegetable garden	Health post
			3	Inadequate credit schemes	Lack of sufficient mosquito nets	Credit Schemes
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank B Koina is a big village with a well-organized kafos and VDC. The village has engaged in development activities.	Rank C Although the village has a VDC and a CAP formulated the chances to implement a sustainable projects are limited due to the size of the village. However, with the involvement of other cluster villages there is a fair prospect for improvement.	Rank D The VDC is not active. There is no CAP formulated.

Appendix 2.1-17 ID of 60 villages (17/21)

(GARDA/ June 2003)

	Item			49	50	51
1	Village Name			Fatoto	Tabanding	Borro Modi Banne
	Ward			Koina	Foday kunda	Baja Kunda
	District			Kantora	Wulli East	Wulli East
2	Name of Village Head			Alh. Alieu Sowe	Banding Saidy	Alh. Ousman Sanneh
3	Estimated Population	Male		415	350	250
		Female		879	396	300
	Number of Households	Male		176	28	15
		Female		11	Nil	Nil
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2000	2001 May	27/06/2002
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Village cleaning exercise, water sufficiency, building of poultry, milling machine, skill center, irrigated water	Communal farming, monthly subscriptions, vegetable gardening, tie&dye	Digging of wells, construct a waiting shed, buying of sanitary tools
	Present Status of CAP			It is formulated and developed.	Not active	Not active
6	Staple Food		1	Rice	Sorghum	Early millet
			2			Maize
			3			
7	Accessibility			To Main Road 0km 0hour	To Main Road 0km 0hour	To Main Road 5km 1hour
				To Extension Center 0km 0hour	To Extension Center 21km 4 hours by cart	To Extension Center 9km 3hours
				To District Capital Market 46km 1.35hours	To District Capital Market 62km 1.15hours by car	To District Capital Market 33km 7hours
	Frequency of Extension Officers'			Staying at the village	Not frequent	Not frequent
8	Major Ethnic			Fula	Mandinka	Fullas
				Mandinka		
				Bambara		
9	Agricultural related Activities			Farming, rice cultivation, gardening	Cereals&cash crop farming, animal husbandry	Growing of cereals&cash crops, vegetable gardening, selling of fruit, bread baking
	Non – agricultural Activities			Petty trading, carpentry, masonry, tailors, baking, welding, soap making	Tie&dye, soap making, leader work, embroidery	Soap making, embroidery, bread baking
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate farm implements/inputs, food insecurity, malaria	Low soil fertility, inadequate farm implements/inputs, malaria, lack of drugs for animals	Low soil fertility, lack of farming implements/inputs, malaria
			Dry season	Water shortage, drugs for animals and poultry	Water shortage, no stores, no credits, no transports	Bush fires, animals diseases, infestations of seeds
		Female	Rainy season	Food shortage, inadequate farm implements/inputs	Inadequate farm implements/inputs, low soil fertility, hunger, malaria	Lack of threshing&milling machines, accessibility to health facilities
			Dry season	Water shortage, heavy workload, low income	Water shortage, lack of milling machine and credit facilities, inadequate storage facilities	Water shortage, lack of storage facilities, credits
11	Income and Non – income Generating Activities	Male	Income	Petty trading, carpentry, mason, butchery, welding	Cash crops cultivations such as g/nuts, cotton and cassava, bread baking, petty trading	Farming, smiting, cobbler works
			None income	Compounds repairs, farm work	Thatching of houses, farm clearing	Thatching of roofs, fetching of fire woods
		Female	Income	Petty trading, vegetable gardening, soap making	Communal farming, tie&dye, soap making, embroidery, hired labor, monthly subscriptions	Soap making, petty trading, selling pumpkins
			None income	Household domestic work	Fetching of fire woods, cooking, laundry	Fire wood collection, home sweeping
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Inadequate water	Inadequate water supply	Water shortage
			2	Food insecurity	Inadequate farm implements/inputs	Lack of storage facilities
			3	Inadequate farm implements/inputs	Lack of adequate storage facilities	Inadequate farm implements/inputs
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Inadequate water	Lack of skill trainings	Lack of skill trainings (carpentry, tailoring, masonry)
			2	Food insecurity	Lack of credit facilities	Lack of employments opportunities
			3	Inadequate farm implements/inputs	Inadequate farm implements/inputs	Low income
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate drinking water saving	Inadequate water supply	Manual pounding
			2	Inadequate farm implements/inputs	Inadequate farm implements/inputs	Inadequate water
			3	Food insecurity	Lack of credit facilities	Low soil fertility
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank C Due to the fact there are many sustained development projects, the structures can be used as a entry point for deveopment projects.	Rank C The extend of kafo involvement in the CAP implementation is poor. However, with the intervention of CBOs and Action Aid there is some improvement on community participation in development work.	Rank D The VDC in this village is inactive and the CAP is also not active. No outside collaboration is provided.

Appendix 2.1-18 ID of 60 villages (18/21)

(GARDA/ June 2003)

	Item			52	53	54
1	Village Name			Touba Wopa	Madina Saho	Sutukoba
	Ward			Sutukonding	Baja-kunda	Barro Sambaya
	District			Wuli West	Wulli East	Wuli East
2	Name of Village Head			Gallow Sowe	Bakary Saho	Kumuntung Jabaya
3	Estimated Population	Male		200	400	1,243
		Female		299	500	1,500
	Number of Households	Male		23		120
		Female		Nil		5
4	VDC Established			Yes	Yes	Yes
	Date of Establishment			2001	20/05/1999	1999
	Community Action Plan (CAP)			Yes	Yes	Yes
5	Content of CAP			Communal farming, monthly subscription, tie&dye, adult literacy	Digging of wells, skills training, agric production	Farming implements, water shortage, day care center
	Present Status of CAP			Not active	Active	Active. There is day care center fully operational
6	Staple Food		1	Millet	Maize	Millet/hungry rice (fide)
			2		Sorghum	
			3			
7	Accessibility			To Main Road 0km 0hour	To Main Road 0km 0hour	To Main Road 0km 0hour
				To Extension Center 13km 3.3hours	To Extension Center 12.5km 4.5hours	To Extension Center 0km 0hour
				To District Capital Market 19km 5.3hours	To District Capital Market 18km 6hours	To District Capital Market 42km 9.5hours
	Frequency of Extension Officers'			Not frequent	Not frequent	Frequent visit
8	Major Ethnic			Fula	Sarahulles	Mandinka
					Fullas	
9	Agricultural related Activities			Farming of cereals like maize, millet, sorghum, g/nuts	Growing of cash&food crops	Cereals-millet, maize, rice, cash crop (groundnuts), animal husbandry
	Non – agricultural Activities			Tie&dye, embroider, soap making	Petty traing, cleansing, hired labor	Shop making, Tie&dye, carpentry, baking bread, mason
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Draught, inadequate farm implement/inputs, low soil fertility, malaria	Inadequate farm implements/inputs, hunger, malaria	Access to farm land, low soil fertility, malaria, farming implement
			Dry season	Water shortage, lack of cattle drinking ponds, bush fires	Water shortage, transportation difficulties	Shortage of water, bush fire, shortage facilities
		Female	Rainy season	Malaria, inadequate farm implements/inputs, lack of transportations, low soil fertility	Lack of farm implements/inputs, low soil fertility, malaria, markets	Inadequate farm input, low soil fertility, malaria
			Dry season	Water shortage, bush fires, lack of vegetables garden	Water shortage, sweeping, laundry, pounding	Pounding and looking fetching of fire wood, inadequate water supply
11	Income and Non – income Generating Activities	Male	Income	Farming of cash crops, weaving, selling fencing materials	Cash crop farming, smiting, weaving cobblery	Cassava cultivation, cotton, bread baking, fire wood selling
			None income	Thatching of roofs, making of fire belts, making and reparing of fences	Re-digging of wells, thatching, cleansing exercises	Fire wood fetching, thatching, fencing, re-digging of wells
		Female	Income		Farming of cash crops, soap making, tie&dye	Vegetable growing, soap making, tie&dye making, fire wood selling
			None income		Water shortage, cleansing services, poundings, fire wood collection	Cooking/pounding, fetching water, cleaning services, browsing peanuts
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Hunger as a result of poor harvest/low soil	Lack of drinking water saving	Low soil fertility
			2	Inadequate farm implements and inputs	Gully erosion	Limited farm land
			3	Lack of credit facilities for petty trading	Inadequate farm implements/inputs	Soil erosion
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Inadequate farm implements and inputs like seeds and fertilizers	Water shortage	Water and soil erosion
			2	Lack of cattle drinking points	Low soil fertilities	Inadequate water supply
			3	Lack of skill training	Inadequate farming implements/inputs	Pest infestation
14	Major problems expressed by village Women (Prioritisation of problems)		1	Inadequate water supply	Inadequate drinking water saving	Milling machine
			2	Inadequate farm implements and inputs like seeds and fertilizers	Inadequate farm implements/inputs	Vegetable gardening
			3	Lack of bed nets, malaria	Accessibility to health facilities	Inadequate water supply
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D Inactive VDC and CAP. No progress in any development project implemented in this community.	Rank A This village could be recommended to RRA survey considering community participation in village activities and kafos collaborations with CBOs&NGOs.	Rank A This village has a big arable land for rice cultivation which will be able to adddress the issue of hunger within the area. The area has been abandoned due to high tides that affects the seedlings. The VDC and other kafos have been looking for support. This village is recommended to RRA survey.

Appendix 2.1-19 ID of 60 villages (19/21)

(GARDA/ June 2003)

	Item			55	56	57
1	Village Name			Koli Kunda	Sotoma Sambakoi	Giroba Kunda
	Ward			Wellingara	Gambisara	Basse
	District			Wuli East	Jimara	Flladu Ward
2	Name of Village Head			Muminey Bah	Sarjo Jawo	Giroba Baldeh
3	Estimated Population	Male		160	200	200
		Female		178	300	250
	Number of Households	Male		19	40	54
		Female			3	5
4	VDC Established			Yes	Yes	
	Date of Establishment			1999	1999	
	Community Action Plan (CAP)			No	Yes	
5	Content of CAP			Nil	Seed store, milling machine, livestock well, vegetable garden fencing, classroom	Nil
	Present Status of CAP			None	Not active	None
6	Staple Food		1	Millet	Millet/coos, rice	Late millet
			2			Rice
			3			
7	Accessibility			To Main Road 0km 0hour	To Main Road 0km 0hour	To Main Road 0km 0hour
				To Extension Center 4.5km 1.5hours	To Extension Center 1km 20mins	To Extension Center Located in the village
				To District Capital Market 48km 5.5hours	To District Capital Market 6km 1.5hours	To District Capital Market 2km 30mins
	Frequency of Extension Officers'			Weekly visit	Regular	Daily
8	Major Ethnic			Fula	Fula	Fullas
				Mandinka	Mansuanka	Mandinkas
					Mandinka	Sarrahulles
9	Agricultural related Activities			Cereals/rice swamp, cash crops (groundnuts), vegetables	Farming, rearing animals, gardening	Late millet, maize, swamp rice, vegetable, orchard production
	Non – agricultural Activities			Fire wood selling, embroidering, mason, re-digging of well, petty trading	Soap making, baking, milk processing, wood seller, adult literacy	Cattle rearing, small ruminants, poultry, fire wood fetcing
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Low soil fertility, malaria, lack of farm implements/inputs	Erosion, farm inputs (seed ferity), farm implemet	Insufficient farm lands, insufficient farm implements, gully erosion
			Dry season	Water shortage, bush fires	Bush fire, storage of g/nut, animal diseases	Stray animals, lack of proper garden fences, lack of drinking ponds
		Female	Rainy season	Hunger, lack of farm implements, low soil fertility	Milling, impregnated nets dipping, malaria	Drudgery of farm labor, poor soil, inadequate farm implements/inputs
			Dry season	Lack of skill training, storage facilities, lack of labor saving	Water, animal&domestic bush fire	Transportation and marketing of products, lack of garden fences, food insecurity
11	Income and Non – income Generating Activities	Male	Income	Cash crop farming, weaving, business	Groundnut cultivation, sesame cultivation, rearing animals	Cereal production, g/nuts, cotton, cassava, pumpkin, fishing, calabash, vegetables production
			None income	Well digging, thatching of houses, farm clearing		Selfhelp, thatching, fencing
		Female	Income	Cash crop farming, embroidery, tie&dye		G/nuts browsing, soap making, hired labor, hired pounding, petty trading, garden
			None income	Cooking, pounding, cleansing exercises	Rice cultivation (food), domestic activities	Fuel wood, domestic works
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Inadequate water supply	Drinking ponds for animals	Food insecurity (due to low soil fertility)
			2	Low soil fertility	Farm inputs (seed fertilizers)	Water for domestic used
			3	Seed nuts	Milling machine	Poor nutrition
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Lack of storage facilities	School	Lack of maintenance of well pump
			2	Inadequate water	Farm implements	Accessibility to health facilities
			3	Low soil fertility	Garden fence and water	Inadequate farm implements
14	Major problems expressed by village Women (Prioritisation of problems)		1	Lack of fertilizers	Health facilities	Inadequate farm implements/inputs
			2	Lack of cattle drinking ponds	Farm inputs (seed fertilizer unavailable)	Transportation of farm to houses and markets
			3	Lack of seed nuts	Milling machine	Malaria diseases
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D There is no functional organisational structure in this village. The VDC doesn't know their roles and responsibility. Though there may be needs for assistant villagers need to make some improvement by themselves.	Rank C Though there is no active CAP in place the VDC and the village kafos are active and there is a fair prospect for improvement if given support.	Rank C Highly fractionalised village with leadership crises.

Appendix 2.1-20 ID of 60 villages (20/21)

(GARDA/ June 2003)

	Item			58	59	60
1	Village Name			Mansajang Kunda	Sare Bojo Baga	Sare Bojo Baga
	Ward			Basse	Julangeh	Julangeh
	District			Fulladu East	Fuladu East	Fuladu East
2	Name of Village Head			Alh. Jeidi Baldeh	Babey Baldeh	Babey Baldeh
3	Estimated Population	Male		800	80	80
		Female		900	110	110
	Number of Households	Male		120	16	16
		Female		30		
4	VDC Established				Yes	Yes
	Date of Establishment			2000	2001	2001
	Community Action Plan (CAP)				Yes	Yes
5	Content of CAP			Rehabilitation of rice fields by means of irrigation scheme, rehabilitation and expansions of village seed stores, provisions of farm implements, vegetable gardens	Agriculture, water supply, health, work load for women	Agriculture, water supply, health, work load for women
	Present Status of CAP			Active		
6	Staple Food		1	Millet	Early millet, rice and maize	Early millet, rice and maize
			2	Rice		
			3			
7	Accessibility			To Main Road Runs across the village	To Main Road 0.5km 25mins	To Main Road 0.5km 25mins
				To Extension Center 2km 30mins	To Extension Center 4km 2hours	To Extension Center 4km 2hours
				To District Capital Market 0km 0hour	To District Capital Market 22km 15mins	To District Capital Market 22km 15mins
	Frequency of Extension Officers'			Daily	Once in a year	Once a year
8	Major Ethnic			Fullas	Fula	Fula
				Mandinkas	Salahule	Salahule
				Bambaras	Manjako	Manjako
9	Agricultural related Activities			G/nuts, millet, cotton, maize, vegetable gardening, rice	Maize production, early millet, groundnut, rice, finde, animal rearing	Maize production, early millet, groundnut, rice, finde, animal rearing
	Non – agricultural Activities			Small ruminants, cattle, poultry, and equines production, soap making, tie&dye, portray making	Petty trading, soap making, tie&dye	Petty trading, soap making, tie&dye
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Inadequate farm implements/inputs, food insecurity, and insect infestations	Lack of fertilizer, lack of seeds, inadequate farm implement	Lack of fertilizer, lack of seeds, inadequate farm iimplement
			Dry season	Bush fire, drinking ponds, animals' theft, stray dogs	Lack of income activities, lack of success of income	Lack of income activities, lack of success of income
		Female	Rainy season	Farm implements/inputs, manual pounding, insects' frustrations, mosquitos	Lack of seeds, food shortage, lack of access to the little avilable	Lack of seeds, food shortage, lack of access to the little avilable
			Dry season	Water shortage, poor fence of vegetable gardens, transportations difficulties	Lack of income, heavy workload	Lack of income, heavy work load
11	Income and Non – income Generating Activities	Male	Income	Hired labor, cash crop productions, livestock management, poultry	Groundnut growing, petty trading, sale of livestock, buchary	Groundnut growing, petty trading, sale of livestock, butchary
			None income	Thatching and fencing of compounds	Weaving	Weaving
		Female	Income	Gardening, cash crops productions, selling of firewoods, petty trading	Petty trading, groundnut garming, soap making, v.gardening	Petty trading, groundnut farming, soap making, v.gardening
			None income	Cleansing services, cooking, pounding	Cooking, planting	Cooking, planting
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Lack of sufficient water for domestic use	Lack of money for schooling children	Lack of money for schooling children
			2	Lack storage facilities	Agricultural farm imputs	Agricultural farm inputs
			3	Lack of processing materials	Heavy work load labour intensity	Heavy workload labor intensity
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Employment opportunities	Inadequate success of income	Inadequate success of income
			2	Lack of skill training centers	Low literacy (schools)	Low literacy (schools)
			3			
14	Major problems expressed by village Women (Prioritisation of problems)		1	Food insecurity	Food shortage	Food shortage
			2	Poor health	Inadequate water supply	Inadequate water supply
			3	Inadequate farm implements	Health (malaria)	Health (malaria)
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank C They have well-established kafos that are capable of implementing projects and solving problems. Kafos were proved to run and sustain projects. The kafos need to be strengthened their capacity. It is highly affiliated to CBOs.		

Appendix 2.1-21 ID of 60 villages (21/21)

(GARDA/ June 2003)

	Item			61	62
1	Village Name			Jalakoto	Sare Alpha
	Ward			Diabugu	
	District			Sandu	Kantora
2	Name of Village Head			Samba Fatou Bah	
3	Estimated Population	Male		50	147
		Female		45	998
	Number of Households	Male		13	
		Female		0	0
4	VDC Established			Yes	Yes
	Date of Establishment			2002	
	Community Action Plan (CAP)			Yes	Yes
5	Content of CAP			Provision of farm inputs, income generating activities, petty trading, provision of vegetable garden, milling machine and hand pump well	
	Present Status of CAP			The CAP remains the same and formulated as the present need of the community	Active
6	Staple Food		1	Sorghum	Sorghum
			2	Millet	Millet
			3	Maize	Maize
7	Accessibility			To Main Road 1.5km 1hour	To Main Road Located on the high way
				To Extension Center 2km 1.5hour	To Extension Centre km hour
				To District Capital Market 3km 2hours	To District Capital Market km hour
	Frequency of Extension Officers'			Frequent	Frequent
8	Major Ethnic			Fula	Fula
				Mandinka	
9	Agricultural related Activities			Maize production of groundnut, millet, sorghum, findo, sesame, gardening	Horticulture, cereals, cashew and banana production
	Non – agricultural Activities			Petty trading, soap making, handy craft, tie&dye	Petty trading, pottery making, soap making, carpentry, masonry, smiting
10	Major problems in Different months (Jan – Dec)	Male	Rainy season	Lacks of fertilizer, lack of seeds, inadequate farm implement	Lack of fertilizer, lack of seeds, inadequate farm implement, storage facility
			Dry season	Lack of income activities, hunger	Thatching of houses, clearing of farms, re-digging of wells
		Female	Rainy season	Lack of seeds, food shortage, malaria	Lack of income generating, lack of seeds, food shortage, malaria
			Dry season	Lack of income, heavy workload	Lack of income, heavy workload
11	Income and Non – income Generating Activities	Male	Income	Groundnut growing, petty trading, sale of livestock, fishing	Groundnut growing, petty trading, sale of livestock, tailoring
			None income	Compound maintenance, clearing of farm fetching of fuel wood	Compound maintenance, clearing of farm, fetching of fuel wood
		Female	Income	Petty trading, groundnut farming, soap making, v.gardening	Petty trading, groundnut farming, soap making, v.gardening
			None income	Cooking, making hair, childcare	Cooking, laundry, g/nut browsing
12	Major problems expressed by village Elders (Prioritisation of problems)		1	Low income earning	Food in security
			2	Lack of agricultural farm inputs	Lack of agricultural farm inputs
			3	Lack of safe drinking water	Lack of safe drinking water for both human and animals
13	Major problems expressed by village Youths (Prioritisation of problems)		1	Inadequate farm implements	Inadequate farm implements
			2	Low literacy/skills	Lack of youth development skills
			3	Low productivity	Lack of safe drinking water
14	Major problems expressed by village Women (Prioritisation of problems)		1	Lack of credit facilities	Lack of labor saving devices (milling machine)
			2	Low skill in soap making and tie&dye	Lack of credit facilities for women's empowerment
			3	Lack of milling machine	Lack of vegetable fencing materials and bore-
15	Allocation of A,B, C,D rank to show village prospect of being among 16 target villages for RRA survey and explain why (A: Very good, B: good prospect, C: fair prospect, D: little prospect).			Rank D Although the VDC and Kafos exist their level of participation in development work is limited due to lack of cooperation.	Rank B This village sustains the FANDEMA project which faces out years ago. They meet regularly and work with with extension workers cooperatively. The VDC is active and there is a well defined CAP.

Appendix 2.2 Results of Baseline Survey

PART I. GROUNDNUT PRODUCTION IMPROVEMENT

1.Marketing channels used by Producers

The following table presents data on the marketing channels employed by beneficiaries. The responses highlight that whilst most marketed through the Cooperative Produce Marketing Societies also known as the Secco, the private traders constitute an important channel for marketing. The data indicates that 47 percent of respondents marketed through the private traders in both sites. With continued availability of various marketing channels and adequate market information, producers could better bargain on prices.

Table Groundnut Marketing Channels of Producers

Marketing Channel	Jaka Madina	Jah Kunda
Private Traders	47%	47%
CPMS(secco)	100%	100%
No. of respondents	19	21

Source: Baseline Survey

2. Home Consumption of Produce

Out of the total produce of beneficiaries a portion is kept for home consumption. The following table presents data on the consumption prioritization by respondents during the base line survey. It indicates that making of groundnut paste used in the cooking is the most significant consumption form, with 86 percent (18 out of 21) and 71 percent (15 out of 21) of respondents in Jah Kunda and Jaka Madina respectively reporting consumption in this form. Making oil was reported as a form of consumption by 14 percent of respondents in both Jaka Madina and Jah Kunda. However, only respondents in Jaka Madina (14 percent) utilize products for soap making.

Table Priority among home consumption

Purpose	Jaka Madina	Jah Kunda
Making Soap	14%	0%
Making Oil	14%	14%
Making Paste	15	18

Source: Baseline Survey

3. Marketing of groundnut hay

Groundnut by-products particularly hay are used as livestock feed by beneficiaries or sold to generate income. The following table presents data on the marketing of by-products of groundnut hay by respondents indicating differing levels for the two communities. Thus while 32 percent of respondents in Jah Kunda sell groundnut hay, only 5 percent of respondents sell hay in Jaka Madina. The differences in proportions marketed could be attributed to the

intensity of animal husbandry in the communities. With the need to provide to their livestock respondents in Jaka Madina will market of their hay.

Table Marketing of groundnut hay

	Jaka Madina	Jah Kunda
Sell groundnut hay	5%	32%
No. of respondents	19	21

Source: Baseline Survey

4. Size of groundnut holdings

The following table presents data on the size of groundnut holdings by respondents measured in the local plot units known as Julo (0.25 ha). The data indicates that most holdings fall in the ranges of 4-5 Julo or less (1 ha or less) as was reported by 79 percent and 81 percent of respondents in Jaka Madina and Jah Kunda respectively. Their exist slight differences amongst the communities in that 2-3 Julo is the holding for most respondents (42 percent) in Jaka Madina whilst 4-5 Julo is the most common holding in Jah Kunda (43 percent). With increased access to draught animals and traction implements women beneficiaries will likely increase their plot sizes. Access to production inputs such as seeds, fertilizers could also encourage women groundnut producers to expand cultivated area.

Table Size of plots grown to groundnuts in Julo (1 Julo=0.25ha)

Julo	Jaka Madina	Jah Kunda
8-	10%	4%
6-7	10%	9%
4-5	21%	42%
2-3	42%	23%
-1	15%	14%
total	19	21

Sources: Baseline Survey

5. Decision Making on Groundnut Cultivation

The following table presents information on decision making on groundnut cultivation by respondents. It indicates that most of the production decisions in both sites are made by the husbands with 63 percent reported for Jaka Madina and 38 percent for Jah Kunda. It is interesting that while 33 percent of the decisions are made by the respondents themselves in Jah Kunda only about 10 percent of respondents in Jaka Medina make decisions themselves about production. The Alkalo is a decision maker on production in Jaka Madina whilst he is not in Jah Kunda. The production decisions, respondents may be inferring to include land allocation; plot size (dependent on inputs and labour availability) and scheduling of operations(land preparation and seeding). This brings to the fore the resource constraints (land, land preparation machinery and inputs) encountered particularly by women. Without the access to productive resources, women beneficiaries will have to be dependent on their husbands for both resources and decision making.

Table Decision maker on groundnut cultivation

Decision maker	Jaka Madina	Jah Kunda
Husband	63%	38%
Myself	10%	33%
Alkalo	15%	0%
Compound head	5%	19%
Others	5%	10%
Total	19	21

Source: Baseline survey

6. Sources of Seeds

Seeds are a primary production input and its availability is a key determinant on the production and productivity of crops. A number of sources of groundnut seed exist, comprising from own produce, purchases, neighbours, Agriculture and NGOs. Table 6 highlights information on the sources of seed to respondents. Own seeds constitute by far, the most important source for both communities with 62 percent and 68 percent respectively for reported for Jah Kunda and Jaka Madina. Next in order of importance are purchases (21 percent for Jaka Madina and 10 percent for Jah Kunda), neigbours (10 percent for Jaka Madina and 4 perecnt for Jah Kunda). However, The Department of agricultural services, NGOs and others did not appear as significant sources of seed. In view of these findings interventions of seed selection,dressing and storage will have to be targeted at the producers in ensuring quality for production.

Table Source of seeds

Source	Jaka Madina	Jah Kunda
Own seed	62%	68%
Purchase	21%	10%
From neighbour	10%	4%
Department (Agric.)	0%	4%
NGO	5%	4%
Others	5%	4%
Total	19	21

Source: Baseline Survey

7. Seed Storage

Given that producers largely keep their own seed, storage has an important role in ensuring quality planting materials. In this regard seed storage centres have been constructed by Government and NGO agencies to boost production. The following table presents data on venue of storage by respondents and indicate that for the two communities communal seed stores are used by most respondents. According to the survey 58 percent of respondents in Jaka Madinaand ,71 percent in Jah Kunda their seeds in the communal seed stores. The rest keep in their own houses.

Keeping of seed in the communal stores facilitates provision of training on seed storage, selection and quality control on a group basis.

Table Where to preserve seeds of groundnut

Place	Jaka Madina	Jah Kunda
Own house	42%	28%
Communal Seed store	58%	71%
Total	19	21

Source: Baseline Survey

8. Pest Control During Seed Preservation

Pest control during the storage of seeds ensures the availability of quality planting materials to producers. As a variety of pests affect seeds, information on the application of a variety of materials was sought from respondents and presented in the following table. The data reveal that most respondents in both communities utilize pesticides. Neem is also utilized as pest control material in both communities. The availability of pest control materials is pivotal in ensuring that produce kept are available at the time of planting as good seed.

Table How to control pests in preservation of seeds

Items	Jaka Madina	Jah Kunda
Insecticide	47%	33%
Fungicide	26%	23%
Neem	26%	33%
Pesticide and Neem	0%	9%
Total	19	21

Source: Baseline Survey

9. Responsibility for Preservation of Seeds

The survey enquired on the responsibility for preservation of seeds from respondent, information from which is presented in the following table. The data indicates that husbands take most responsibility for seed preservation in both communities followed by the respondents themselves. Thus while husbands are responsible for 50 percent and 48 percent of preservation in Jaka Madina and Jah Kunda respectively; 39 percent and 29 percent respectively are preserved by respondents themselves It could be noted that compound heads (Jaka Madina), village store keepers (Jah Kunda) and others (Jah Kunda) also undertake preservation of seeds. As women farmers become more involved in groundnut cultivation their participation and skills in seed preservation will have to be enhanced.

Table Who is responsible for preservation of seeds

Decision maker	Jaka Madina	Jah Kunda
Husband	50%	48%
Myself	39%	29%
Compound head	6%	0%
Village store keeper		14%
Others	6%	10%
No. of respondents	18	21

Source: Baseline Survey

10. Land preparation of Women Groundnut Fields

Land preparation is an important groundnut husbandry practice which needs to be done timely, but which is a constraint particularly for women producers who generally lack access to farm implements used for this operation. The following table presents data on land preparation of women groundnut fields showing that most of the land preparation is done by the husbands. According to the data, 79 percent of fields in Jaka Madina and 62 percent of fields in Jah Kunda are cultivated by husbands. Preparation by self constitute only 16 percent and 19 percent in Jaka Madina and Jah Kunda respectively. Hired labour does not constitute a significant labour source for land preparation with 11 percent in Jaka Medina and 14 percent in Jah Kunda (including use of tractor). Access to land preparation machinery and endowment with the necessary skills on their operation is essential if the production and productivity potential of women producers is to be realized.

Table Who prepare the land where women cultivate groundnut

Who	Jaka Madina	Jah Kunda
Husband	79%	62%
Myself	16%	19%
Hired labour	10%	14% (5% by tractor)
Son	0 %	5%
Total	19	21

Source: Baseline Survey

11. Weeding of Women Cultivated Groundnut Fields

While weeding is an important cultural practice in the cultivation of groundnuts, it is quite tedious requiring several days to complete particularly in women cultivated fields were the possession of animal traction implement (sine hoe) is not likely. The following table highlights information on who performs the weeding in women cultivated fields. It reveals that women themselves perform most of the operations. Husbands, groups and hired labour constitute sources of labour for weeding in the fields owned by women. This operation is however still largely done with the hand hoe by women. The use of animal drawn implements (sine hoe) for this activity is confined to the men.

Table Who weeds where women cultivate groundnut

Who	Jaka Madina	Jah Kunda
Husband	2	4
Myself	11	11
Hired labour	2	1
By group		4
Others	1	2

Source: Baseline Survey

12. Harvesting of Women Cultivated Fields

Harvesting of groundnut fields as highlighted in the following table is performed by both

women and their husbands, the involvement of husbands in this activity is high. However differences in degree of involvement vary according to the community, for while 58 percent of the harvesting in Jaka Madina is done by husbands and only 26 percent by the women themselves 43 percent of harvesting is done equally by husbands and the women in Jah Kunda. Hired labour and help from their son also constitute support in harvesting the crop. With the availability of groundnut lifter, access by the women to this implement and enhanced skills in its operation will ensure their greater involvement.

Table Who harvest groundnut where women cultivate

Who	Jaka Madina	Jah Kunda
Husband	58%	43%
Myself	26%	43%
Hired labour	11%	10%
Son	5%	5%
No. of respondents	19	21

Source: Baseline Data

13. Threshing of Women cultivated Groundnut Fields

Threshing of groundnuts is largely performed using traditional techniques. According to the results presented in The following table husbands, the women themselves, hired labour and sons are all involved in the operations. The data however reveals differences in involvement amongst the participants and in the two communities. Thus while most of the threshing in Jah Kunda (62 percent) is done by the women themselves in Jaka Madina, only 37 percent is done by women themselves(husbands perform 42 percent).

Table Who threshes groundnut from women's farm

Who	Jaka Madina	Jah Kunda
Husband	42%	19%
Myself	37%	62%
Hired labour	16%	19%
Son	5%	0%
No. of respondents	19	21

Source: Baseline Survey

14. Transportation of Groundnuts to Markets

Groundnuts are transported to markets through various means including the use of animal drawn carts, vehicles and on the head. The following table highlights information on who transports to the market showing that this is largely done by the husbands in both communities although at varying degrees. In Jaka Madina 89 percent of this task is performed by husbands whilst in Jah Kunda it is 76 percent for the same task. Sons and the women themselves have a minimal role in this. This could be attributed to the fact that the men folk still constitute membership of the groundnut marketing cooperative and women coming as new entrants. However, with greater involvement of women their membership and presence in the

management committees will be vital.

Table Who send groundnut to market point

Who	Jaka Madina	Jah Kunda
Husband	89%	76%
Myself	5%	5%
Son	5%	10%
No. of respondents	19	21

Source: Baseline Survey

15. Management of money earned from women's farm

The following table presents data on the management of income realized from the women's farm. It indicates that the women largely manage their money in both communities (68 percent in Jaka Madina and 61 percent in Jah Kunda), although husbands also manage in some other forms such as both (26 percent in Jaka Madina) and husbands (29 percent in Jah Kunda).

Thus although women manage their resources they still consult with and involve their husbands.

Table Who keep and manage the money earned from women's farm

Who	Jaka Madina	Jah Kunda
Husband	5%	29%
Myself	68%	61%
Both	26%	10%
No. of respondents	19	21

Source: Baseline Survey

PART II. VEGETABLE PROCESSING AND PRESERVATION

1. Purpose of Vegetable Production

The survey sought information on the purposes of vegetable production ranging from home consumption, sale (income), processing and preservation and others. Results from the survey highlighted in the following table indicate that all respondents in all 4 sites reported producing for home consumption. This is an indication of the overriding importance of vegetables as nutritious food and an essential component of the diet. Producing for sale also emerged as a priority with all (100 percent) respondents in reporting that in Touba and Mansajang and 95 percent and 88 percent in Kosemarr and Fatoto respectively reporting that purpose. However only 45 percent in Kosemarr and 44 percent in Fatoto mentioned processing and processing as a purpose for growing vegetables. None of the respondents mentioned any other purposes for producing vegetables.

Table Purpose of Vegetable Production

	Kossemar	Touba	Fatoto	Mansajang
Home Consumption	100%	100%	100%	100%
Sale	95%	100%	88%	100%
Processing/Preservation	45%	0%	44%	0%
Others	0%	0%	0%	0%
No. of Interviewee	22	26	16	24

Source: Baseline Survey

2. Growing Vegetables in groups or as individuals?

The survey investigated on the approach employed by respondents in vegetable production, i.e whether they experienced production in groups, as individual or both. The results as presented in the following table indicate varying experiences. While most respondents in Touba (92 %) and Kosemarr(73 %) have experienced growing as individuals those in Fatato and Mansajang had more respondents (63 %) reporting growing in groups. Interestingly, only Kosemmar (23 %) had experience in growing under both approaches

Table Growing Vegetables in groups or as individuals

	Kossemar	Touba	Fatoto	Mansajang
Group	50%	8%	63%	63%
Individual	73%	92%	37%	37%
Both	23%	0%	0%	0%
No. of Interviewee	22	26	16	24

Source: Baseline Survey

3. Form of Consumption of vegetables

The Baseline Survey investigated the form of consumption of the most vegetables produced and consumed in the 4 sites. Consumption in the raw or cooked form constituted the subject of the responses.

3a. Vegetable Consumption in the Raw Form

The following table indicates data on common vegetables and their consumption in the raw form. It indicates varying consumption habit depending on the vegetable and the site. The vegetables mostly consumed in the raw form include Bitter tomato as reported by 96 %, 79 %, 75 % and 64 % for Touba, Mansajang, Fatoto and Kosemarr respectively.; followed by tomato 69 %, 56 %, 45 % and 42 % for Touba, Fatoto, Kosemarr and Mansajang; pepper , carrots , lettuce are also consumed in the raw form.

Table Vegetable Consumption in Raw Form

	Kossemar	Touba	Fatoto	Mansajang
Bitter Tomato	**64%**	**96%**	**75%**	**79%**
Carrot	**50%**	19%	38%	**46%**
Pepper	**50%**	**50%**	31%	38%
Tomato	45%	**69%**	**56%**	**42%**

Lettuce	23%	19%	**63%**	38%
Eggplant	14%	15%	13%	
Sweet Potato		15%		33%
Onion		8%	19%	
Cassava	18%			42%
Others	18%	4%	31%	17%
No. of Interviewee	22	26	16	24

Source: Baseline Data

3b. Vegetable Consumption in the Cooked Form

The following table presents data in on vegetable consumption in the cooked form .It indicates that most vegetables are as reported by most respondents consumed in the cooked form. This is the case particularly for okra as indicated by 88 percent, 71 percent, 68 perecnt and 62 percent of respondents in Fatoto, Mansajang, Kosemarr and Touba. Cabbage is also significantly consumed in the cooked form-as reported for Fatoto(69 %), Kosemarr (64 %), Mansajang(50 %) and Touba (42 %).Onions, pepper, egg plant and carrots are also significantly consumed in the cooked form The differences in proportions consumed as cooked may be attributed to sociocultural and food habit factors

Table Vegetable Consumption in the Cooked Form

	Kossemar	Touba	Fatoto	Mansajang
Okra	**68%**	**62%**	**88%**	**71%**
Onion	**68%**	31%	31%	**58%**
Cabbage	**64%**	42%	**69%**	**50%**
Pepper	**64%**	**62%**	**50%**	25%
Bitter Tomato	36%	27%	25%	21%
Carrot	**50%**			
Tomato	36%	31%	44%	38%
Lettuce	23%		38%	
Eggplant	36%	**62%**	25%	**63%**
Bisap	23%		38%	**50%**
Amaranthus				13%
Cassava				8%
Irihs Potato				8%
No. of Interviewee	22	26	16	24

4. Processing of Vegetables

Processing could prolong shelf life and ensure availability of vegetables even beyond their growing periods. Respondents were during the survey asked which vegetable they grow and which of these can be processed. The responses presented in table 4 indicate that pepper Fatoto (100 %), Touba (85 %), Kosemar(82 %) and Mansajang (63 %) can be processed ; for tomato Mansajang (71 %), Touba(69 %), Fatoto (69 %) and Kosemarr (50 %) can be processed and okra Fatoto (75 %), Kosemarr (50 %), Touba and Mansajang (38 %) can be also be processed.

Table Processing of Vegetables

	Kossemar	Touba	Fatoto	Mansajang
Okra	**50%**	**38%**	**75%**	38%
Onion	45%	35%	38%	42%
Cabbage	14%			
Pepper	**82%**	**85%**	**100%**	**63%**
Bitter Tomato	14%			4%
Lettus	41%			
Onion Leaves	5%			17%
Tomato	**50%**	**69%**	**69%**	**71%**
Bisap	14%			
Lettuce			6%	
Cassava				17%
No. of Interviewee	22	26	16	24

Source: survey Data

5. Where do you grow vegetables?

Table 5 presents data on the sites for vegetable production and indicates that most undertake are engaged in the communal gardens. Thus all the respondents in Fatoto (100 %), Mansajang (100 %), Kosemarr (95 %) and Touba (54 %) grow vegetables at the communal farm. However, a large proportion of respondents in Touba (73 %) and some in Kosemarr (27 %) reported growing vegetables on their own plots. Backyard gardens were not common except in Kosemarr (23 %).

Table Site for Growing Vegetables

	Kossemar	Touba	Fatoto	Mansajang
Back Garden	23%	0%	6%	4%
Own Plot	27%	73%	0%	17%
Commiunal Farm	95%	54%	100%	100%
Others	0%	0%	0%	0%
No. of Interviewee	22	26	16	24

Source: Baseline Survey

6. Plot size by Vegetable Garden

The following table presents the plot (bed) sizes in Kosemarr, Touba and Mansajang and that for Fatoto respectively. These indicate that Touba and Mansajang had uniform bed sizes for members and Kosemarr and Fatoto had different bed sizes. **The data did not indicate the number of beds per participants.**

Table Plot Size

Kossemar	7 farmers are 1m x 3m, Others(15 farmers) are 1m x 2m
Touba	All farmers plot size are 1m x 2 m
Mansajang	All farmers plot size are 1m x 2 m
Fatoto	5 farmers are 1m x 2m
	3 farmers are 1m x 3m

	3 farmers are 2m x 2m
	2 farmers are 1.5m x 2.5m

II. Production method of Vegetables

1. Source of vegetable seeds

The following table highlights source of vegetable seeds according to site as reported by the respondents. The data indicates purchasing by producers to be the most important source in all the sites with Kosemarr (100 %), Fatoto (94 %), Mansajang, (92 %) and Touba (54 %) The data also indicates that sourcing through self is significant in Touba (77 %), Fatoto (44 %), Mansajang (25 %) and Kosemarr (23 %). Neigbours were an important source only for Fatoto (19 %).

Table Source of Vegetable Seeds

	Kossemar	Touba	Fatoto	Mansajang
Self	23%	77%	44%	25%
Purchase	100%	54%	94%	92%
Neighbours	5%	0%	19%	0%
Others	0%	0%	0%	0%
No. of Interviewee	22	26	16	24

Source: Baseline Survey

2. Source of Irrigation

The following table .presents data on the sources of irrigation by site and indicates that wells are the exclusive source in all sites and by all respondents. Thus respondents in Kosemarr, Touba, Fatoto and Mansajang (100 %) all sourced irrigation from wells

Table Source of Irrigation

	Kossemar	Touba	Fatoto	Mansajang
Well	100%	100%	100%	100%
River	0%	0%	0%	0%
Others	0%	0%	0%	0%
No. of Interviewee	22	26	16	24

3. How often do you apply fertilizer?

Application of Fertilizers

The following table presents information on fertilizer application for vegetable production amongst participants and indicates varying degrees of application. While 96 percent and 91 percent in Touba and Kosemarr indicated applying fertilizers only 29 percent and 19 percent in Mansajang and Fatoto respectively applied fertilizer.

Table Application of Fertilizers

	Kossemar	Touba	Fatoto	Mansajang
With	91%	96%	19%	29%
Without	9%	4%	81%	67%
No. of Interviewee	22	26	16	24

Source: Baseline Survey

4. Availability of Organic manure

The following table presents data on the application of organic manure by respondents in the 4 sites identified for vegetable production. It indicates that in Kosemarr, Touba and Fatoto all respondents (100 %) apply organic and that even in Mansajang a high proportion (92 %) apply organic manure on their vegetable crop

Table Availability of Organic Manure

	Kossemar	Touba	Fatoto	Mansajang
With	100%	100%	100%	92%
Without	0%	0%	0%	8%
No. of Interviewee	22	26	16	24

5. Source of fertilizer?

The following table highlights information on the sourcing of fertilizer for vegetable production by respondents, an indicates significant differences according to site. While a very significant proportion- 96 percent and 95 percent of respondents in Touba and Kosemarr respectively purchase fertilizer, none in Fatoto and only 25 percent in Mansajang purchased fertilizer for their vegetable crop. While no data on fertilizer prices is available for Fatoto, prices are much higher in Kosemarr (D400) and Touba (D353). This non purchase of fertilizer implies that organic manure is the sole means of soil fertility enhancement in Fatoto and Mansajang.

Table Source of Fertilizer

	Kossemar	Touba	Fatoto	Mansajang
Self	5%	0%	13%	8%
Purchase	95%	96%	0%	25%
Neighbours	0%	0%	0%	0%
Others	0%	0%	0%	0%
Price of Fertilzer(GMD/Bag)	400	353	-	301.5
No. of Interviewee	22	26	16	24

6. Do you use compost ?

The following table presents data on the use of compost in the 4 sites identified for vegetable production. It indicates that while Kosemarr (68 percent) and Mansajang (29 percent) use compost Touba and Fatoto do not use compost at all. The lack of use in the later sites could be either due to lack of materials or lack of know-how.

Table Results for Compost Use

	Kossemar	Touba	Fatoto	Mansajang
Yes	68%	0%	0%	29%
No	32%	100%	100%	71%
No. of Interviewee	22	26	16	24

7. If yes, how do you obtain it ?

The following table presents data on the sourcing of compost by participants in the 4 sites. It indicates that in the two sites at Kosemarr and Mansajang where it is used, respondents indicate they largely source it themselves. However, those in Kosemarr source 68 % from self while in Mansajang 25 percent most of the sourcing is from neighbours (29 %) with only 25 % from self.

Table Source of Compost

	Kossemar	Touba	Fatoto	Mansajang
Self	68%	-	-	25%
Purchase	0%	-	-	4%
Neighbours	0%	-	-	29%
Others	0%	-	-	0%
No. of Interviewee	22	26	16	24

Source: Baseline Data

8. Skills in Compost Making

Respondents were questioned on whether they knew how to make compost and the results are presented in the following table. It highlights that respondents in Kosemarr and Mansajang have some skills in compost making whilst those in Touba and Fatoto indicate they cannot make it. While 68 percent of respondents in Kosemarr indicate being able to make compost, 25 percent in Mansajang and none in either Touba or Fatoto indicated ability to make compost. This is very much along the lines indicated in the use of the compost earlier discussed..

Table Knowledge on how to make compost

	Kossemar	Touba	Fatoto	Mansajang
Yes	68%	0%	0%	25%
No	32%	100%	100%	75%
No. of Interviewee	22	26	16	24

Source: Baseline Data

III. Processing and Preservation

1. **Processing of Vegetables**

Processing and preservation of vegetables reduces post harvest loss and ensure increased

length of the storage period, hence ability to employ these techniques can be very beneficial. The following table iindicates experience of respondents in processing and preservation of vegetables showing different skill levels according to sites and across crops. Most have experience in processing and preservation of pepper with Fatoto (100 %), Touba (96 %) Kosemarr (95 %) and Mansajang (67 %) and okra Fatoto (100 %), Kosemarr (77 %) and to some extent Touba (42 %) and Mansajang (38 %). However for the rest, except for Onions in Fatoto and Kosemarr little experience in the other crops exists.

Table Vegetables Processed and Preserved

	Kossemar	Touba	Fatoto	Mansajang
Okra	**77%**	42%	**100%**	38%
Onion	41%	15%	44%	17%
Cabbage				
Pepper	**95%**	**96%**	**100%**	**67%**
Bitter Tomato	9%			
Lettus	32%			
Onion Leaves				21%
Tomato	9%	8%	44%	
Big pepper				4%
Others	5%		19%	
No. of Interviewee	22	26	16	24

Source: Baseline Data

2. Reasons for Processing and Preservation

The following table presents information on the reasons for processing and preserving vegetables. The reasons range from lack of markets for fresh produce, later use, home consumption and sale. The data indicate very low figures with lack of markets emerging as the most important reason for processing and preservation.

Table Why do you process and preserve them

	Kossemar	Touba	Fatoto	Mansajang
Lack of Market	5	8	1	5
To use them later	4	6	-	4
For my home consumption	2	2	-	2
For sale and self consumption	-	-	2	-
No. of Interviewee	22	26	16	24

3. Method of Processing

The following table presents data on the methods of processing vegetables employed by respondents. The data provided indicates that drying is the most common method. This is highlighted for Kosemarr (22 %) and Fatoto (5 %).

Table Method of Processing

	Kossemar	Touba	Fatoto	Mansajang
Dry	22	-	5	-

No. of Interviewee	22	26	16	24

Source: Baseline Data

1. Utilization of Preserved Food

The following table shows data on what preserved food is most for consumption as indicated by respondents in the 4 sites. The data indicates pepper and okra to be the most consumed amongst the crops. Pepper as indicated is the highest consume with Kosemarr (73 %), Fatoto (69 %), Touba (54 percent) and Mansajang (38 percent). Onion, tomato, groundnuts also emerged as crops preserved for consumption.

Table Preserved Food That Most Needed at Home

	Kossemar	Touba	Fatoto	Mansajang
Okra	**50%**	15%	**50%**	17%
Onion	27%	12%	25%	8%
Pepper	**73%**	**54%**	**69%**	38%
Lettus	23%			
Tomato	9%	8%	19%	
Ground nut		19%		13%
Rice	9%			
Lemon	9%			
Cassava				8%
Others				8%
No. of Interviewee	22	26	16	24

Source: Baseline Data

5. Marketing of Preserved Vegetables

Table presents information on respondent perception of the marketing of preserved vegetables. Pepper has again emerged as the most important marketable vegetable with 94 percent of respondents in Fatoto(94 percent), Kosemarr (86 percent), Touba (77 percent) and slightly lower for Mansajang (42 percent). Okra registered as the second marketable vegetable in the preserved form particularly for Kosemarr (59 percent).

Table Preserved Food That Most Marketable

	Kossemar	Touba	Fatoto	Mansajang
Okra	**59%**		44%	13%
Onion	9%	8%	19%	8%
Pepper	**86%**	**77%**	**94%**	42%
Lettus	23%			
Tomato	9%	8%	25%	

Ground nut		12%		8%
Lemon	5%			
Bisap			6%	
Cassava				8%
Others				17%
No. of Interviewee	22	26	16	24

Source: Baseline Data

6. Preference for Preserved Vegetables

Table. . presents data on the preference for preserved vegetables among respondents in the production sites. It indicates that pepper is by far the most preferred preserved vegetable followed by okra and tomato. The data highlights that 82 percent of respondents in Kosemarr, 73 percent in Touba, 56 percent in Fatoto and 33 percent in Mansajang preferred pepper. Okra was second in order for Kosemarr (59 percent) .

Table Preserved Food that Most Wanted

	Kossemar	Touba	Fatoto	Mansajang
Okra	**59%**		25%	21%
Onion	41%	12%	38%	25%
Pepper	**82%**	**73%**	**56%**	33%
Lettuce				
Tomato	42%	12%	38%	13%
Bitter Tomato	5%			8%
Tomato Paste				25%
Ground nut		8%		
Rice	9%			
Bisap	5%			4%
No. of Interviewee	22	26	16	24

Source: Baseline Data

Appendix 2.3 Report on Problem Analysis on Selected Villages

THE STUDY ON AGRICULTURE AND RURAL DEVELOPMENT IN THE UPPER RIVER DIVISION OF THE REPUBLIC OF THE GAMBIA

REPORT ON THE 3-DAY WORKSHOP ON PROBLEM IDENTIFICATION BASSE, 22ND-24TH MAY 2003

Introduction

This is one of the series of workshops in the Study on Agriculture and Rural Development in the URD, being undertaken by the Study Team. The workshop brought together 16 participants from the Department of State for Agriculture (DOSA), comprising District Extension Supervisors (DESs) Subject Matter Specialists (SMSs), Village Extension Worker (VEWs), and two volunteers with the DOSA.

Workshop Organization

The workshop was planned to last for three days with the objective to facilitate the identification of the problems associated with agriculture and rural development in the URD, targeting the small farmers and women. Problem identification should result in the preparation of a problem tree and an objectives tree.

The workshop was organized at the premises of the Divisional Agriculture Coordinator, in Basse, under a lime tree, as there was no electricity and the prevailing heat at this time of the year compelled us to stay outside.

Workshop Process

The first two days of the workshop were planned for the preparation of the problem and objectives trees. The third day was used for group work to allow participants to provide answers to the question on Improvement of Cooperation between (a) Central and Local Government, (b) research and extension, and (c) administrative organizations and NGOs, CBOs.

Day # 1

The first two sessions of the first day of the workshop was devoted to an explanation of the objectives of the study, which were posted on flipchart as follows:

- To formulate a Master Plan for Agriculture and Rural Development in the URD contributing to the improvement of rural livelihood and household income based on agricultural activities
- To carry out technology transfer to the Gambian counterpart personnel for their capacity building
- To carry out technology transfer to the local people in the target area through the implementation of verification projects.

The overall goal of the study is to achieve an affluent rural area through the improvement of the rural livelihood and household income. Capacity building to enable counterpart personnel to promote extension to other areas and local people to carry out projects by themselves will be implemented in this study.

The Basic Approach of the Study
The achievement of the above objectives and goal will be through the basic approach. This was also posted on flipchart as:

- To build up close cooperation with other donors
- To work within the framework of the administrative reform under decentralization
- To strengthen the relationship between villagers and outsiders
  (1) To consider the social and cultural factors at villages
  (2) To put priority on women's' empowerment
- To make use of the social and economic characteristics of the area
- To formulate a financially and physically manageable Master Plan
- To improve living standard by agriculture related activities
- To seek full utilization of locally available resources.

Following this presentation, the facilitator then explained the process of problem identification and the subsequent method of developing problem and objectives trees.

Problem Identification
The entity to be analyzed was:
"AGRICULTURE AND RURAL DEVELOPMENT IN URD"
The target groups were defined as:
"THE SMALL FARMERS AND WOMEN"
Participants were then asked to write down all the problems they could think of as they relate to agriculture and rural development and the small farmer and women. Each participant was given three stick-on cards on which to write the problems as they see it. Each participant was asked to write one problem per card. If more cards were needed then they could add on their list. Each card was then posted on the two flipchart stands.
A participant was asked to select any of the lists of problem as the starter problem. The problem selected was SOIL EROSION. Subsequent problems were discussed by the participants to determine whether they were related to the starter problem. If they were causes of the problem, then they were placed at the bottom of the starter problem. If the participants determined that the problem was an effect of the starter problem, then they were placed above the starter problem.
This process continued for the rest of the day, and by the close of the day's session, the problem tree had been partly completed and the facilitator provided a recap of the whole day's work.

Day # 2
At the end of the previous day's sessions, it was determined by the Taiyo Team leader, the facilitator and the DAC that it seemed that the participants were only treating the problem identification superficially, and that a more in depth anlysis was needed. It was also observed that since they were the front line workers dealing with the farmers, they had a deeper perception of the problem. Thus it was decided that a role-play by participants on the problems facing the small farmer should be performed at the beginning of he second day's session. It would be facilitated by the DAC.

Two participants volunteered to do the role-play. One acted the role of the farmer, the other as the extension agent. All the problems listed on the problem cards were played out by the farmer. The extension agent listened carefully, questioning the farmer, and promising to return with assistance

to his questions. This session was greatly appreciated by the participants and it helped then in further analysis of the problems.

After this exercise, the next activity was the completion of the problem tree and this was concluded by the end of the day. The participants were introduced to the method for developing objectives tree. The process requires the problem to be restated as an achieved state. Example, if the identified problem was “Poor Supervision”, then the objective becomes, “Supervision Improved”. This would constitute the assignment for the third day.

Day # 3

The first session of day three was spent on the completion of the objectives tree. Each participant took turns to facilitate the process. By midday the objectives tree was competed and participants were introduced to the logframe, and shown how the objectives would facilitate the identification of activities as inputs within the logframe. They were then divided into three groups to do the assignment on improvement of cooperation.

Group Work
Each of the three groups was asked to do the exercise with the following instructions:

Examine the present state of cooperation between the entities mentioned, and determine their strengths and weaknesses/constraints. provide recommendations for improved cooperation.

After completing the exercise, their answers were presented in plenary. Their responses were then amalgamated into one version, avoiding repetitions were necessary. Their responses are summarized below:

1. COOPERATION BETWEEN CENTRAL AND LOCAL GOVERNMENT

Strengths
Policy formulation is done by central government, local government acts on those policies
CG seeks funding from donors, LG implements projects
CG checks LG
CG supports the operations of LG

Weaknesses
CG does not involve LG in policy formulation
Improper financial and auditing system, due to flexibility in administration
Trained personnel are at CG level
LG reform is going at a slow pace
Control of LG by CG

Recommendations
Decentralise policy formulation and institute bottom-up approach
Provide donor support for village and ward committees

2. COOPERATION BETWEEN RESEARCH AND EXTENSION

Strengths
There is linkage between research and extension
The relationship between research and extension is cordial
Research empowers extension through capacity building

Weaknesses
Absence of feedback from research to extension
There is poor supervision by research
There is insufficient coordination at the top
There is limited support from research to extension for programme implementation

Recommendations
Provision of training by research for the extension staff
Implementation of follow-up programmes
Provision of the required inputs to extension
Organisation of study tours and field trips for extension and farmers
Research findings and solutions should be communicated to extension

3. COOPERATION BETWEEN ADMINISTRATIVE ORGANISATIONS AND NGOs, CBOs.

Strengths
There is strong cooperation between CG, LG and NGOs, CBOs.
The cooperation is facilitated by the MDFTs who act as linkage between LG, NGOs, CBO WDCs and VDCs.

Weaknesses
NGOs and CBOs operate independently
Some policies formulated restrict fund accessibility or NGOs, CBOs
NGOs, CBOs depend on trained personnel from Central and Local Government for staffing of their organization
Staff shortage at Central Government

Recommendations
NGOs, CBOs should provide long-term training for their staff

Appendix 2.4 Notes for the Workshop at Pilot Villages

I. The Meetings - Process

All the meetings were opened with the usual Muslim prayers (FATHIYA), followed by the exchange of pleasantries, and the introduction of the Study team members and their Gambian counterparts. The lead consultant then explained the purpose of the visit and facilitates a discussion of what has been done so far and the next steps of the project, using the following format:

SENSITISATION WORKSHOP FOR THE 5 SELECTED VILLAGES

Process:

General introduction and acknowledgement of participants

Enquire whether an RRA team had visited them before and for what or on what mission

Seek their explanation of the reasons for the previous visits by the team- here the attempt is to see if they can recall the reasons given to them by the RRA team.

Ask them what was done and what their expectations are – if their expectations are in line with the idea of selecting pilot villages for the implementation of the rural and agricultural development project, and then proceed to explain the objectives of the Study and the objectives of the Pilot projects.

Objectives of the study:

To formulate a master plan for agriculture and rural development in the Upper River Division contributing to the improvement of rural livelihoods and household income, based on agricultural activities through pilot projects in 5 selected villages in URD.

Objectives and challenges of the workshops:

To conduct 5 workshops, one at each village, in order to:

Introduce the objectives of the Study;

Facilitate the needs assessment of the villagers;

To collect information on what type of project can be identified within the framework of their commitment and capacity to sustain;

Objectives of the Pilot Projects:

To carry out technology transfer to Gambian counterpart personnel to enhance their capacity in the promotion of extension services to other areas

To carry out technology transfer to local people in the target area through the implementation of pilot projects.
After this explanation, seek their understanding of the PLANNING PROCESS, by allowing questions to be asked, and by asking them questions on what was discussed.

INSTITUTIONAL QUESTIONS RELATED TO GROUPS IN THE VILLAGE

Do you have development-oriented groups operating in the village?
How many?
What are their names?
Who are the leaders – i.e. President, secretary, treasurer,
Have they been involved in any project implementation?
Give details of the project(s) implemented or being implemented.
Start date
Completion date
Cost
Partners
Source of funding
How will project be sustained in the long term?
Perceived impact/results
Which of the groups would you consider to be most suitable as a partner in the pilot project? And WHY?
Does this group represent most of the aspirations/need of the village?

This was followed by a confirmation and completion exercise of the former diagnostic findings of the CAP done by the MDFTs and the RRAs etc. (see attached frame)

Reference is made to past problem ranking, and finding out why some of the problems mentioned earlier were not mentioned during the RRAs. The discussion focuses on finding out what interventions had been carried out, and the impact of such interventions.

The group then discusses the present findings from the RRAs and prioritises them. They are informed that the focus of this project is on agriculture related activities.

Attention:

It is important to explain to the villagers that if the village is selected for a pilot, then there must be visible attempts by the community to indicate their commitment.

Ask them how would we know that they are committed?
List their indicators of commitment.
Add the following criteria for judging commitment by the team when they visit in a week's time:
A registered group
The group has elected officers
The group has a bank account or a VISACA account
There is a management committee
The group has experience in project implementation
The group has a good track record with funding agencies
And loan repayments
The group has initiated projects on their own

After this exercise, the attendees at the meeting (the large group) are then divided into two smaller groups of 5 men and 5 women so as to complete the questionnaire, which reflects male and female dimensions of their agriculture related activities from production to marketing.

II. Questionnaire

QUESTIONNAIRE ON AGRICULTURE RELATED ACTIVITIES
FROM PRODUCTION TO MARKETING

Name of village……

TARGET = (MEN) OR (WOMEN)

1. List all crops grown in the village, both cash and food crops, by using (F) for Food crops, and (C) for Cash crops.

    1) ……
    2) ……
    3) ……
    4) ……
    5) ……
    6) ……
    7) ……
    8) ……
    9) ……
    10) ……

2. Do a pair-wise ranking of the crops and list prioritised crops, indicate whether (F) or (C).

    1) ……
    2) ……
    3) ……
    4) ……
    5) ……

3. Select the top 3-5 crops and let them explain why they have prioritised them as such

4. Conduct a SWOT analysis of the first 3-5 prioritised crops, using these questions as a guide.

Strengths = what is good about this crop, and why?

Weakness = what don't you like about this crop, and why?
What are the problems associated with this crop?

Opportunities = what can we do to improve on the weaknesses?
What opportunities exist outside of the village that we access to help us to improve on the crop?

Threats =what are the threats beyond our control that can destroy the good points (strengths) of this crop.

4.1. CROP # 1……

Strengths	Weaknesses	Opportunities	Threats
1.			
2.			
3.			
4.			
5.			

4.2. CROP # 2……

Strengths	Weaknesses	Opportunities	Threats
1.			
2.			
3.			
4.			
5.			

4.3. CROP # 3……

Strengths	Weaknesses	Opportunities	Threats
1.			
2.			
3.			
4.			
5.			

4.4. Crop Production System (soils, extension services, technology, etc)

Strengths	Weaknesses	Opportunities	Threats
1.			
2.			
3.			
4.			
5.			

4.5. Marketing of crops (distance from main roads, accessibility, clientele, etc)

Strengths	Weaknesses	Opportunities	Threats
1.			
2.			
3.			
4.			
5.			

5. Which of these crops do you want to put more effort and attention on?

   1) ……..

   2) ……..

   3) ……..

   4) ……..

6. Why do you choose this/these crops?

   - Is it for increasing income?

   - Is it to help you during the hungry season?

   - Are there any other reasons?

7. What do you think you have to do for that crop (mentioned at 5.) for achieving the objective (mentioned at 6.)?

III. FINDINGS:

A. Touba Tafsir

Touba Tafsir is a mainly Jahanka with a minority Fula community, with an estimated population of 1000 people. It is in Fulladu East District and within Sabi Ward. There are 78 male and 2 female-headed households. It is 7 km (1 hour, 30 minutes by cart) from the main highway and District capital market; and 6 km (1 hour by cart) to the Extension Centre. The VDC was established in 2000 and a CAP was developed, which is considered to be still active.

A.1 Kafos

There are three (3) kafos in the village, Yiriwa, Fandema and Tolay kafos with the most active being Yiriwa kafo.

Yiriwa kafo is an all male kafo, which was reconstituted last year. It has an executive committee with a constitution and byelaws. It has savings, which are kept at the village.

It has participated in the construction of a bridge and rehabilitation of a feeder road with the assistance of the Department of Community Development. The village contribution in that instance was the provision of gravel, sand, water, and the feeding of the workers.

There is also a garden and a woodlot, which were sponsored by CARITAS, and for which the community provided the fencing poles and labour requirements.

Their income generating activities include hiring out of their labour, a communal farm and subscriptions from the members.

Fandema Kafo is 10 years old and is an all female group. There is an executive committee, but they are yet to have a constitution and be registered. Their savings are kept in the village, and they have also participated in the project activities of the village mentioned above.

They hire out their labour, engage in communal farming, soap making (periodic) and collect subscriptions from members as part of their income generating activities.

Tolay Kafo is 6-7 years old and is also an all women's group. It has an executive committee, but does not have a constitution or a bank account.

It main income-generating activities are hired labour, communal farming and village cleansing, for which token sums are given to them.

A.2 Village crop Preferences (Male/Female)

The preferred crops of the men are: food grains (sorghum, early millet, maize, and late millet) groundnuts, watermelon, cassava, and fruits. The women on the other hand prefer groundnuts, vegetables, rice, and sesame.

A.3 Crop Preference Ranking (general)

Crop	Reasons for choice	Crop	Reasons for choice
Rice	• Food crop • Staple diet • Easy to cook especially for guests. • Animal feed • Mattress fillings	Vegetables	• Cash • Food • Cultivated during dry season
Groundnuts	• Food crop • Cash crop • Various dishes • Animal feed (also can be sold	Millet/Maize	• Food • Cash (but only when desperate for cash)
Sorghum	• Food crop • Easy to process • Processed food is economical • Does o.k. with low soil fertility • Animal feed	Fruits	• Cash • Food • Easy market

A.4 Key problems relative to their livelihood and income

The key problems relative to their livelihood and income are the labour intensity of their production and processing activities, and the lack of entrepreneurial skills.

A.5 Village Suggested Solution

The village suggested solutions to alleviate these problems are the provision of labour saving devices, such as milling machines, farm implements and associated inputs, a vegetable garden and development of their entrepreneurial skills to enhance their marketing capacities.

B. Jaka Medina

Jaka Medina is mainly Jahanka with a minority Mandinka community, with an estimated population of 200 people. It is in Sandu District and within Sandu Ward. There are 10 male-headed households. It is 4 km (1 hour by cart) from the main highway, 15km to the District capital market; and 20 km (1 hour, 30 minutes by cart) to the Extension Centre. The VDC was established in 2001 and a CAP was developed, which is considered to be still active.

B.1 Kafos

There are two (2) kafos in the village of Jaka Medina, namely Yampi and Kambeng Kafos, with the latter being the main village group.

Yampi comprises both males and females. It is the main village kafo and has an executive committee to manage its affairs. It has a constitution and is registered with SDF. It also has a bank account with the Trust Bank Limited- Basse.

One of their successful projects has been the construction of a cereal bank in 2001, with the support of SDF (D100, 000.00). The project was completed within 8 months of the signing of the contract, and it is one of the expressed needs in the CAP that has been addressed. The community's contribution was labour, gravel, sand, and feeding of the workers.

There is a community fund set aside for effecting repairs to the building.

The group also accessed a loan from GAWFA amounting to D10, 000.00 that was repaid within 8 months.

Their income generating activities are the hiring out of their labour, a communal garden and membership subscriptions. Each member of the group has to maintain a banana plantation to ensure regular earnings from the sale of the bananas. This eases their access to cash especially, during hard times.

Kambeng Kafo is also composed of men and women. It is a sub-group of the main village group i.e. Yampi kafo. It has a constitution and byelaws, and like its parent kafo keeps a bank account with Trust Bank Limited, Basse. Its members participate in all village-based development activities.

They are engaged in the same income generating activities as their parent kafo, i.e. the hiring out of their labour, a communal garden and membership subscriptions. Each member of the group has to maintain a banana plantation to ensure regular earnings from the sale of the bananas. This eases their access to cash especially, during hard times.

B.2 Village Crop Preferences (Male/Female

The preferred crops of the men are: sorghum, groundnuts, early millet, maize, and late millet. The women on the other hand prefer rice, groundnuts, sorghum, vegetables and millet.

B.3 Crop Preference Ranking (general)

Crop	Reasons for choice	Crop	Reasons for choice
Rice	• Food crop • Staple diet • Easy to cook especially for guests. • Animal feed • Mattress fillings	Vegetables	• Cash • Food • Cultivated during dry season
Groundnuts	• Food crop	Millet	• Food

	• Cash crop • Various dishes • Animal feed (also can be sold		• Cash (but only when desperate for cash)
Sorghum	• Food crop • Easy to process • Processed food is economical • Does o.k. with low soil fertility • Animal feed		•

C. Jah Kunda

Jah Kunda is a Mandinka community, with an estimated population of 920 people. It is in Wuli District and within Sare Ngai Ward. There are 59 male-headed households. It is 50 km from the main highway, and the Extension Centre is within the village. The VDC was established in 1998 and a CAP was developed, but which is *not* considered to be active.

C.1 Kafos

There are seven (7) kafos in the village, namely Sabu Nyima, Yiriwa, the Young Farmers' Club, Kuteh Jumbulu, Kaira, Fangnafa and Alamuta Kafos.

Sabu Nyima Kafo was established by AATG about four (4) years ago and comprises mostly females and has an executive committee to manage its affairs. It has a constitution but is yet to be registered. It has a bank account with the Standard Chartered Bank- Basse.

It has participated in the construction of a seed bank three years ago; a waiting shed in 2000(VSO/WASDA support), and is presently engaged in the maintenance of the seed store and management of a cereal bank. In the case of the latter, the kafo lends out seeds to its members, who repay in kind, but the interest is paid in cash, which is then saved in their account.

In each of the construction projects, the kafo was responsible for the provision of labour, sand, gravel, the fetching of water, and the feeding of the workers.

Their income generating activities are the hiring out of their labour and the interest paid on seed loans.

Yiriwa kafo is composed of women only. It has a constitution and byelaws, and keeps a bank account with the Standard Chartered Bank, Basse. It is registered with the AG's Chambers. Its members participate in all village-based development activities.

It was established by CUSO and is approximately 10 years old. It main project was a garden with a windmill to lift water, but this has experienced consistent breakdowns that it is no longer functioning.

Their income generating activities are the hiring out of heir labour, proceeds collected from their communal farm, member subscriptions, soap making and embroidery.

Young Farmers' Club is composed of 50 males, and 47 females. It has been reconstituted and is now 4 years old. It has an executive committee; it is registered with the National Youth Council, and saves with the VISACA.
It main income-generating activities are hired labour, communal farming, village cleansing for which a token sum is given to them by the community members. It also collects Membership dues.

Kuteh Jumbulu has 25 males and 6 females in the group. It has an executive committee, with a constitution and byelaws, but is yet to be registered and to have a bank account.
Its main income-generating activities are hired labour, a communal farm and membership subscriptions.

Kaira kafo is a predominantly female group (80), with men numbering 40. It is 9 years old, has a constitution and is registered with GAWFA.
It has a vegetable garden project and a poultry, which has been reduced to three birds.
Its income-generating activities are the hiring of their labour, a communal farm and proceeds from the sale of hens (when operational).

Fangnafa Kafo is an all female group with 75 members. It is 3 years old, and has a constitution. It is registered with GAWFA and Banks with them.
They have not undertaken any project as yet, but are presently building up capital through hired labour and member subscriptions.

Alamuta is also an all female kafo with 35 members. It is 3 years old, with an executive committee and a constitution. It is not registered as yet, but maintains an account with the VISACA at Chamoi.
It has not executed any projects, but is engaged in income-generating activities through hired labour and subscriptions from members, to build up capital.

C.2 Village Crop Preferences (Male/Female)

The preferred crops of the men are: groundnuts, sorghum, maize, early millet, and findo. The women on the other hand prefer groundnuts, findo, sesame, coco yams and beans.

C.3 Crop Preference Ranking (general)

Crop	Reasons for choice	Crop	Reasons for choice
Groundnuts	• Cash crop • Food crop • Various dishes • Animal feed (also can be sold	Findo	• Food crop • Easy storage
Sorghum	• Food crop • Easy to process • Processed food is economical • Does o.k. with low soil fertility • Animal feed • Fencing materials • Easy storage	Sesame	• Cash • Oil • Animal feed • Market availability (NAWFA)
Maize	• Cash • Food	Coco yams	• Cash • Food
Millet	• Food • Cash (but only when desperate for cash)	Beans	• Cash • Food • Storage easy

C.4 Key problems relative to their livelihood and income

The key problems relative to their livelihood and income are the labour intensity of their production and processing activities, difficult to access markets, spoilage of surplus produce, and entrepreneurial skills.

C.5 Village Suggested Solution

The village suggested solutions to alleviate these problems are the provision of labour saving devices, such as milling machines, farm implements and associated inputs, groundnut grinder, a vegetable garden, market linkage, entrepreneur training, and the expansion of the solar panels in the village to accommodate the increased water demands for the garden since the windmill is not guaranteed.

D. Fatoto

Fatoto is a Fula community, with mixture of Mandinka and Bambara ethnic groups. It has an estimated population of 1300 people. It is in Kantora District and within Koina Ward. There are 176 male and 11 female-headed households. It is on the main highway, and the Extension Centre is within the village. The VDC was established in 2000 and a CAP was developed, which is considered to be active.

D.1 Kafos

There are five (5) kafos in the village, namely, Yiriwa, Dental, , Kambeng, and the Youth kafo.

Yiriwa was established about 10 years ago and comprises 60 females and 3 males. It has an executive committee to manage its affairs. It has a constitution and is registered with the Women's Bureau. It has a bank account with the VISACA at Suduwol.
It has not executed any development projects as yet, but their income generating activities are hired labour, a communal farm of sesame and sorghum, petty trading, and the sale of embroidery materials.
They have received a loan before from the Women's Bureau in the amount of D800.00.

Dental is composed of 80 women and 10 men. It has a constitution and byelaws, and keeps an account with the VISACA at Suduwol. It is registered with the AG's Chambers (March 2000). Its members participate in all village-based development activities. It was established approximately 20 years ago.
Its main project is the construction of a skills training centre, which is yet to be completed. Funding for this project was provided by FAO (D31, 000.00), and the main constraint is the severe rise in the cost of building materials due to the delay in implementation (buying the materials on time). There is also a garden project, which was funded by the Peace Corps with the provision of fencing wire and nails. In both of these projects, the community contributions were in the form of local materials, labour and the digging of local wells.
Their income generating activities are the hiring out of heir labour, proceeds collected from their communal farm, member subscriptions, and soap making. The group is also engaged in the processing of foods, such as cereals, pepper, and poultry feed. They have a communal garden of sesame and they also do tie and dye.

Haldeforti is composed of 12 males, and 27 females. It has a constitution and an executive committee. It is 3 years old. It is not yet registered and saves its income within the village.
Its main income-generating activities are a communal farm and a vegetable garden.

Kambeng Kafo has 7 males and 30 females in the group. It has an executive committee, with a constitution and byelaws, but is yet to be registered and to have a bank account. Its income is kept in the village.
Its main income-generating activities are the provision of loans to its members with a 5% interest charge for 6 months. It also collects subscriptions from its members.

The Youth Kafo has recently been reconstituted and is actively engaged in resource mobilisation through hired labour, communal farming and collection of subscriptions from members.
It has a work plan, which features the following activities: the completion of the skills centre, construction of a consumer shop, upland rice irrigation and the management of a milling machine.

D.2 Village Crop Preferences (Male/Female)

The preferred crops of the men are: sorghum, groundnuts, early millet, rice, maize, pumpkins and cassava. The women on the other hand prefer groundnuts, rice, vegetables, and cereals.

D.3 Crop Preference Ranking (general)

Crop	Reasons for choice	Crop	Reasons for choice
Groundnuts	• Cash crop • Food crop • Various dishes • Animal feed (also can be sold	Pumpkins	• Food • Cash • Easy to store • Marketable
Sorghum	• Food crop • Easy to process • Processed food is economical • Does o.k. with low soil fertility • Animal feed • Fencing materials • Easy storage	Rice	• Food crop • Staple diet • Easy to cook especially for guests. • Animal feed • Mattress fillings • Easy storage
Maize	• Cash • Food	Cassava	• Food • Cash • Sold at farm gate
Millet	• Food • Cash (but only when desperate for cash)	Vegetables (garden produce)	• Cash • Food

D.4 Key problems relative to their livelihood and income

The key problems relative to their livelihood and income are the labour intensity of their production and processing activities, spoilage of surplus produce, and lack of entrepreneurial skills.

D.5 Village Suggested Solution

The village suggested solutions to alleviate these problems are the provision of labour saving devices, such as milling machines, rice threshers, farm implements and associated inputs, groundnut grinder and roaster, a vegetable garden, storage facilities, and entrepreneur training.

E. Kossemar

Kossemar is a Mandinka community, with a minority ethnic Fula group. It has an estimated population of 470 people. It is in Fulladu District and within Julangel Ward. There are 48 male and 12 female-headed households. It is 3 km from the main highway. The VDC was established in 1997 and a CAP was developed, which is considered to be active.

E.1 Kafos

There are two (2) kafos in the village, namely, Fandema and the Youth kafo called "King's Club"

Fandema was established about 25 years ago and comprises 235 females and 15 males. It has an executive committee to manage its affairs. It has a constitution and is registered with the Cooperative Society (1999). It has a bank account with the VISACA at Bakadaji.

It has executed two main development projects, the construction of dykes for land reclamation to enhance rice cultivation (EDF/LADEP) and a vegetable garden through AATG and AFET (a local NGO). The contribution from the community was in their own words "intensive labour" input into the digging of dykes.

Their income generating activities are hired labour, sale of products from their communal farm of sesame (oil, animal feed, soap), petty trading, fines and subscriptions from members.

The Youth Kafo or "King's Club" is composed of 24 women and 40 men. It has yet to develop a constitution and byelaws and to be registered. It keeps its income in the village. Its members participate in all village-based development activities. It was established approximately 16 years ago.

Their income generating activities are the hiring out of heir labour, proceeds collected from their communal farm, member subscriptions, and interest earned from loans. With an amount of D950.00, loans are given out for a period of 6 months with an interest rate of 20%.

E.2 Village Crop Preferences (Male/Female)

The preferred crops of the men are: rice, groundnuts, sorghum, late/early millet, maize, and cassava. The women on the other hand prefer rice, groundnuts, rice, vegetables, and sesame.

E.3 Crop Preference Ranking (general)

Crop	Reasons for choice	Crop	Reasons for choice
Groundnuts	• Cash crop • Food crop • Various dishes • Animal feed (also can be sold	Sorghum	• Food crop • Easy to process • Processed food is economical • Does o.k. with low soil fertility • Animal feed • Fencing materials • Easy storage
Maize	• Cash • Food	Millet	• Food • Cash (but only when desperate for cash)
Rice	• Food crop • Staple diet • Easy to cook especially for guests.	Sesame	• Food • Cash • Oil • Animal feed • Soap making

	• Animal feed • Mattress fillings • Easy storage		• Easy to store • Marketable thro' NAWFA
Cassava	• Food • Cash • Sold at farm gate	Vegetables (garden produce)	• Cash • Food

E.4 Key problems relative to their livelihood and income

The key problems relative to their livelihood and income are the labour intensity of their production and processing activities, spoilage of surplus produce, and lack of entrepreneurial skills.

E.5 Village Suggested Solution

The village suggested solutions to alleviate these problems are the provision of labour saving devices, such as milling machines, rice threshers, farm implements and associated inputs, groundnut decorticator, a vegetable garden, and entrepreneur training

IV. Community Contribution to Projects

Monetary contributions

There is general agreement among the pilot villages that if monetary contributions were required for the implementation of the projects, then they would be able to contribute at least 5%-10%.

One village stated that an amount of 2%-5% would be more realistic for them.

In-kind contributions

In-kind contributions from villages are easier for them to contribute in any project. These are usually labour, sand, gravel water and the feeding of workers for infrastructural development.

Appendix 4.1 Technical Manuals

I

NEEM EXTRACT TO BE USED AS LOCAL PESTICIDE FOR THE CONTROL OF INSECT PEST

Prepared by
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SMS Pest Management
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The Neem can be extracted as pesticide formulation in order to control insect pests from our agricultural crops. It is also known to effective against more than 200 species of insects.

The Neem has a chemical substance which can act as a repellent to adult insects and can also control young larvae of insect pests, can even destroy eggs of insects so that they will not have the ability to hatch.

Due to its strong smell the neem can be extracted into several formulations.

a) The Neem leaves
b) The Neem seeds
c) The Neem bark

These extracts can be prepared into three different formulations with added materials that will serve as ingredients to support the extract. Added materials are as follows;

1) Garlic
2) Hot pepper
3) Laundry soap
4) Water

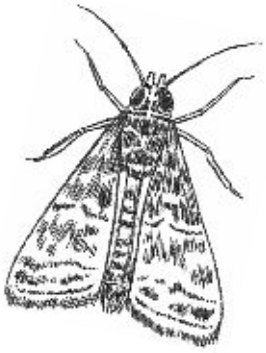
PAGE 1

The cabbage head borer, the eggs, the larvae and the adult moth and their mode of control;

Cabbage

eggs

larvae



Adult moth

CONTROL METHOD

1)One kilo of Neem seeds.
2)One bulb of Garlic
3)Handful of hot pepper
4)Half bar laundry soap
5)10 liters of water

APPLICATION METHOD

a)Apply or spray at two days interval
b)Do not spray when it is about to rain

PAGE 2

White flies on tomatoes and their control, the leave beetle on Okra plant, and their control;

Tomato

White fly

Okra

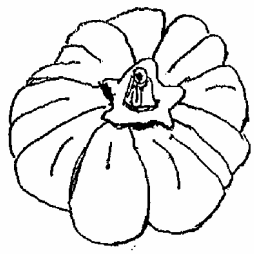
Beetle

CONTROL METHOD:

1)Uproot all affected plants and bury them.
2)Neem leaves; one kilo crushed ones
3)One bulb of Garlic
4)One handful of hot pepper
5)Half bar laundry soap
6)10 liters of clean water
7)Spray at two days interval

PAGE 3

The leaves eating insects on Bitter Tomatoes, the larvae and the adult insect and their control;



Bitter tomato

Larvae

Adult moth

CONTROL METHOD

1)Use neem extract
2)One kilo of Benefinjong leaves
3)One Bulb of Garlic
4)Handful of Pepper
5)10 liters of clean water

APPLICATION METHOD

a)Spraying at two days intervals
b)Do not spray when it is about to rain

PAGE 4

Grasshoppers on hot pepper affecting the leaves and its control measures;

Hot pepper

Grass hopper

CONTROL METHOD

1)Use Neem Extract
2)Boil one kilo of Neem leaves or Bark
3)One Bulb of Garlic
4)Handful of hot pepper
5)Half bar of Laundry soap
6)Get 10 liters of solution

APPLICATION METHOD

a) Spray when necessary at two days intervals.

PAGE 5

A cabbage head borer has been controlled by local pesticide called Benefinjong leaves or seeds;

Local formulation known as Benefinjong seeds or leaves can control the moths of the cabbage head borer and some leave eating insects like leave beetles on Okra and Sorrel.

CONTROL METHOD

Proper sanitation / regular monitoring.

1)Use one kilo of Benefinjong leave or seed boiled
2)Add one bulb of Garlic
3)Add one handful of pepper crushed together
4)Add half bar of laundry soap
5)The solution should be 10 liters.

With the above mixtures you then have your local product as pesticide. The above materials should be mixed into a fine solution.

APPLICATION METHOD

a) Use back pack sprayer at two days intervals
b) Use local brooms at two days intervals
c) Use local calabash at two days intervals
d) Do not apply this product during or before watering, always apply after watering at two days interval.

PAGE 6

Leaves eating caterpillar, the larvae and adult on large pepper leave and their control measures;
Local formulation known as Mahogany or "Jalo" bark;

CONTROL METHODS

1) Hand picking of larvae which is cultural control method
2) Proper sanitation of the cultivated area
3) 1 kilo of Mahogany bark boiled
4) Add 1 bulb of garlic
5) Add 1 handful of hot pepper
6) Add half bar of laundry soap

Mix the solution into a fine solution and it is ready for application.

APPLICATION METHOD

a) use knap sack sprayer
b) use local broom
c) use local calabash

The method of controlling the insect pests;
The type of equipment to be used during application of the product from Neem

APPLICATION METHOD

a) The ten liter solution can cover 6 beds of 1 x 5 m square
b) In the absence of a sprayer, watering cans can be used to spray your beds.
c) Use a back pack knap sprayer during your control of insect pests when available
d) Hand pick the larvae from your field
e) Use your local broom in order to sprinkle on the plants
f) Use your local calabash to splash on the plants
g) Do not spray when it is about to rain
h) Stop spraying two days before harvesting
i) Wash your spray clean and standby for your next spraying.

II
QUICK COMPOST HEAP

Prepared by
Mr. Peter Baldeh
SMS crop production
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♦ **Introduction**

High cost of chemical fertilizer and its untimely availability to farmers and, of course, continued farming on the same piece of land year after year, have contributed immensely to the decrease in field produce and soil fertility. This trend is so alarming that to sustain production with reasonable yields would be immediate solution (plan) to address improving soil fertility by the use of composting.

Quick compost heap making has contributed the way forward in upgrading the maintenance of soil fertility and increasing yields of crop producers in (vegetable, cereal + cash crops) at very low cost compared to chemical fertilizers which can be readily available.

♦ **Preparation Period of Quick Compost Heap**

The compost heap can be prepared within 14 – 20 days and is ready for application on production area (farm land).

♦ **Materials needed**

a. Animal dung (cow, donkey, horse and small ruminants)
b. Cereal bran/husk (groundnut shell, rice husk, L/millet, E/millet husk or bran)
c. Dry or wet grass (straw)
d. Top soil
e. Water

♦ **Equipments**

a. Spade
b. Cutlass
c. Empty jute bags/plastic paper

♦ **Preparation Process**

Step I (Groundnut shell, rice husk, cereal bran/husk)

1. Animal dung: 10 parts (units)
2. Bran/husk: 6 parts (units): mix 1 and 2 together properly first
3. Top soil: 2 parts (units): mix with first mixture thoroughly to have a good and even mixture
4. Water: 15-20 l to be sprinkled gradually not flooded to have a wet mixture to enhance decomposition
5. Cover totally through the preparation period: cover totally to accelerate decomposition in a two week period
6. Turn compost every other day and observe temperature: To reduce high temperature at 30 to 35 ºC, sprinkle water and uncover, and leave open for 30 minutes and then cover again
7. Reduce water sprinkling: If temperature normalizes from 12 to 18 days, water sprinkling is not necessary
8. Maturity: The heap matures between 14 to 20 days at most in normal condition

NB: The volume of heap depends on available materials and your own requirement. Compost heap should be air tight.

Step II (Dry and wet grass straw)

1. Animal dung: 10 parts (units)
2. Dry/wet straw: 4 parts (units) (cut in very small pieces): mix 1 and 2 thoroughly even first
3. Top soil: 2 parts (units): mix thoroughly with previous mixture to have an even mix
4. Water: 10 to 20 l: to obtain a wet mixture that sticks together but do no flood
5. Jute bags/plastic paper: Cover totally and air tight to enhance and accelerate decomposition
6. Turn compost
7. Reduce water sprinkle
8. Maturity: for 6, 7 and 8 refer to Step I

Advantages

- Materials are locally available
- Low cost
- Easy to make
- Can be prepared anywhere (at farm or home)
- Proper supervision and care

♦ **Disadvantages**

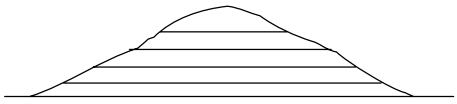
- Have to prepare many heaps for larger area
- Labour intensive

♦ **Conclusion**

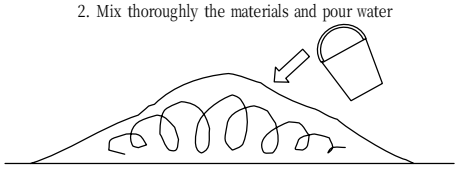
Preparation and application of compost has proven to farmers who have adopted the practice the followings.

1. Top soil (texture) is gradually in the increase.
2. Water holding capacity of the soil is also increased.
3. Grain size, length and weight has also increased compared to non-composted soils and/or with chemical.
4. Serve as a mulch for crop especially vegetable.

1. Gather materials and make heap

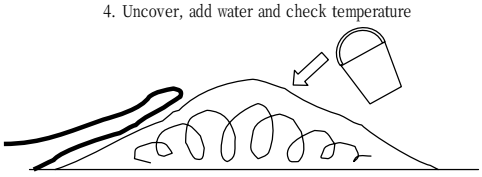


2. Mix thoroughly the materials and pour water



3. Cover and air tight

4. Uncover, add water and check temperature



III
QUICK COMPOST MAKING

Prepared by
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♦ **Materials required**

Domestic animal dung (cow, sheep, goat, chicken)

- Vinegar
- Sugar
- Cereal bran
- Rice husk
- Dry soft grass
- Urea

♦ **Process**

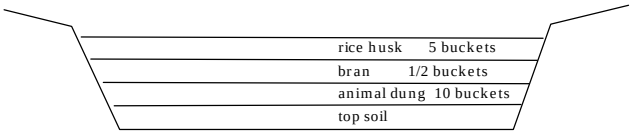
- ✓ Dig a pit of 0.5m x 1.5m.
- ✓ Spread the top soil on the floor of the pit.
- ✓ Spread 10 liter bucketful of animal dung.
- ✓ Spread 1/2 bucketful of bran on top.
- ✓ Spread 5 bucketful of rice husk on top.
- ✓ Prepare a solution of 10 liter of water.
  - 1 table spoonful of urea
  - 10 table spoonful of sugar
  - 1 table spoonful of vinegar
- ✓ Mix well and sprinkle the solution on the heap developed.
- ✓ Mix the heap thoroughly from the top soil on the floor to rice husk on top.
- ✓ Spread dry soft grass on top of the mixed heap.
- ✓ Water well to saturation but avoid flooding.
- ✓ Inspect the heap for decomposition after two weeks.
- ✓ If not well decomposed, allow to stay for the third week.

NB. Vinegar could be substituted by sour milk.
Urea could be substituted by chicken waste.

There is no fixed measurement of the quantities of materials like domestic animal dung, and dry soft grass. Their quantities depend on the availability of the materials and the number of layers of the compost, pit or heap.

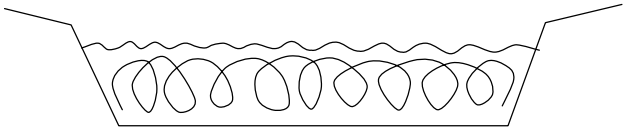
Note that the recommendation is to use a compost heap during the rainy season and a compost pit during the dry season.

1. Put materials

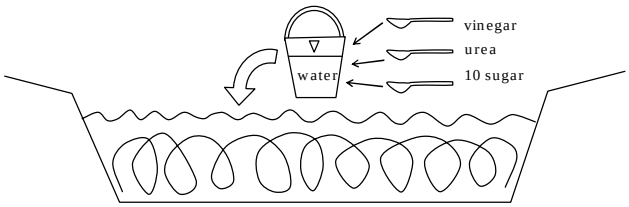


The volume of one bucket is 10 liters.

2. Mix thoroughly the basic materials

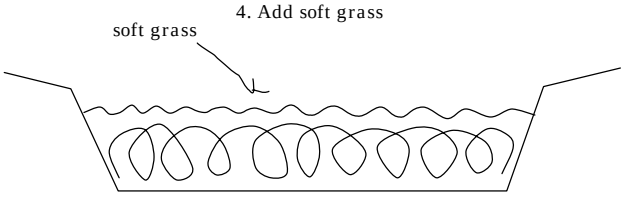


3. Pour liquid



mixed heap

4. Add soft grass



mixed heap

IV
Fruit and Vegetable Processing and Preservation

Prepared by
Ms. Mariama Trawalley
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Fruits and Vegetables form essential part of our diet. They provide nutrients in the form of vitamins C, minerals, carbohydrates, protein and fibre. Fresh fruits and vegetables also add variety and improve flavour of meals. In the Gambia and many other parts of the world, fresh produce product, process and preserve serve as an important source of employment, income and foreign exchange.

WHAT IS FOOD PROCESSING / PRESERVATION

Food processing is a separation of the edible portion of food stuff from inedible portion or instituting chemical, physical or micro-biological changes in the food to improve their flavour, tenderness, texture and their resistance to spoilage. Food preservation is a reduction in degree of spoilage by prevention of contamination, delaying spoilage by making condition unfavourable and elimination of spoilage by destruction of factors producing it.

METHODS OF PRESERVATION

1. Drying
2. Fermentation
3. Evaporation
4. Canning
5. Smoking
6. Curing
7. Freezing
8. Sterilization
9. Pasteurization

PRE-TREATMENT OF A FOOD RAW MATERIAL PRIOR TO PROCESSING

1. CLEANING - Separating contaminants from the raw material.
2. SORTING - Separating the raw materials into categories

of different physical characteristics such as size, shape and colour

3. GRADING - Separating the raw materials into categories of different qualities.
4. WASHING - Washing is used only to remove field soil and surface micro-organisms.
5. SKINNING - Some fruits and vegetables require skin removal. This can be done mechanically and / or thermal e.g. boiling.
6. BLANCHING - Heating of vegetables (or some fruits) in hot water at temperature below boiling point (100c)

FOOD HYGINE AND SANITATION

Food hygiene is the use of all measures necessary to ensure the safety, soundness and wholesomeness of food at all stages from its growth, production or manufacture until its final consumption. Sanitation is the use of practices which will make an environment or substance harmless to human health. Environmental hygiene in areas where raw materials are derived should not be grown or harvested where the presence of potentially harmful substances would lead to an unacceptable level of such substance in the food. Raw materials should be protected from contamination and be free from pests and disease attack.

EQUIPMENT AND UTENSILS

All equipments and utensils used in food processing should maintain the following criteria:

1. Resistant to corrosion
2. Surface free of all articles not required in food preparation.
3. All equipments, utensils and surfaces should be cleaned after each usage.
4. Food contact surfaces should be smooth and seamless.

PEPPER SAUCE

INGREDIENTS	QUANTITY
Large pepper	One (1) tomato tin –large size
Vinegar	Two and half (2.5) cups – standard cup
Garlic	One (1) clove
Black pepper	One (1) tablespoon
Jumbo	Three (3) cubes
Mustard	Two (2) tablespoon
Vegetable oil	Half (0.5) cup
Salt	Two (2) tablespoon

METHODS

1. Select a ripe pepper
2. wash the pepper thoroughly
3. remove seeds from the pepper
4. pound the pepper until soft
5. pound the black pepper, garlic until well pounded
6. add all the ingredients, garlic, mustard, oil, vinegar, jumbo and mix thoroughly
7. put the mixture in the cooking pot and then put it on the fire
8. stir the mixture frequently and add salt until you get the taste
9. leave it on fire until well cooked

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MANGO JAM

INGREDIENTS	QUANTITY
Mango	One (1) kilogram
Sugar	700g
Lime juice	Three (3) tablespoon

METHOD

1. select, wash and peel the fruit and cut it into smaller pieces
2. squeeze the lime , ensuring that all the pips are removed
3. put the fruit, sugar and limejuice into a pot and bring top boil
4. simmer and stir frequently
5. test for setting point
6. pour into sterilized jars and cover tightly
7. turn the jars upside down for 30 minutes so that the hot jam sterilizes the lid and leave to cool
8. when cool, label the jars and store in a cool place

TOMATO PASTE

INGREDIENTS	QUANTITY
Tomato	Any amount
Salt	To taste

METHOD

1. Wash jar thoroughly and sterilize them.
2. Select ripe tomatoes.
3. Wash tomato thoroughly with clean water.
4. Chop the tomatoes into small pieces and place it in a cooking pot.
5. Simmer until soft and the skins have separated stirring frequently.
6. Remove from the heat and strain through a metal sieve to get rid of skins and seeds.
7. sieve the juice through a medium size sieve to get rid of seeds
8. Return the sieved juice to the heat, leave to boil till it becomes concentrated.
9. Draw a spoon across the top. The track should be clear off free water. If liquid is present, boil a little longer. If liquid is not present, remove from the heat band pour it into hot sterilized jars and cover tightly.
10. Turn the jars upside down and leave it to cool.
11. When cool, label date and store in a cool place.

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SOLAR DRIED MANGO

INGREDIENTS	QUANTITY
Mango	One (1) kg
Limejuice	7.5 tablespoon
Water	500ml

METHOD

1. select, wash and peel the fruit and cut into pieces according to preferred shape
2. squeeze the lime, ensuring that the pips are removed
3. Put the pieces of mangoes into the lime juice solution and allow standing for 15 minutes. This helps the mango to retain its natural colour
4. remove the mango and drain
5. place the pieces on a drying tray, leaving a space between each pieces
6. put the tray in the solar dryer
7. when the mango is dry, store in a tightly closed jar or bag which has been labeled with date

V

AN OVERVIEW ON SOIL AND WATER CONSERVATION

Prepared by
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DAO, Basse

Land degradation is a serious problem in the Gambia, particularly in URD. Crop yields are steadily declining owing to poor land husbandry practices despite numerous efforts to implement conservation, have not succeeded in reverting this trend.

The land topography have distinctly marked URD into upland (colluvial soils) and lowland soils (alluvial soils) ecologies, with a slope gradients lowering towards the river which disect the country into north and south. This sloppy nature of the land makes it prone to water run-off, even during less heavy rainfalls. Erosion in the form of 'sheet-washing' degrades farmlands and makes production less worthy.

Accelerated sheet erosion occurs in many of the cultivated areas in the Gambia. In no limited areas particularly in Upper River Division, severer forms of erosion such as gully erosion is taking place. There is therefore a need to take active measures to encourage soil conservation. In most cases, such conservation will involve good management practices and simple preventative measures such as contour planting, rather than major physical layout planning and terrace construction.

Modern techniques introduced from elsewhere have not been successful in erosion control for smallholder farmers in the Gambia. They require a labour investment which farmers cannot afford.

They also use too much of the farmers land which is needed for crops. There is therefore, the need to go back to the farmers and to focus attention on the techniques that farmers are already using with the aim of jointly improving their efficiency. Research and support should now focus on indigenous soil and water conservation practices. To date, there are no data in the Gambia that can be used to explain the benefits of various indigenous practices. However, it may be easier to improve traditional soil and water conservation practices which farmers already know about than to introduce modern techniques that are currently being advocated, such as graded bunds and marked ridges, which in many cases are incompatible with the small holder farmer situation in the Gambia, and URD in particular.

The common denominator of indigenous soil and water conservation techniques is that, apart from using local materials, they generate food for people and fodder for livestock. In a land scarce area like in Wulli and Sandu districts, farmers want techniques that produces more food, firewood, pools and fodder for livestock; while at the same time helping to conserve soil and water. Techniques that consume too much land and do not bring those additional benefits have very little future in the area.

Annex 4.2-1. Individual Household Survey in FATOTO (1/3)

Village	Fatoto	Name	Ramala Suwareh											F1
Date	Jul. 18	Age	40				Number of people you eat togethe	10						

VEGETABLE		Group Garden						Private Garden					Total
		Tomato	Onion	Cabbage	Lettuce	B.Tomato	Eggplant						
Area	Before the												
	Last Year (m2)												
	This Year (m2)												
Production	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Amount)	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Price)	Before the												
	Last Year (D)												
	This Year (D)												
Consumption	Before the												
	Last Year (kg)												
	This Year (kg)												
Seed price	Before the												
	Last Year (D)	D20	D30	D70	D30	D25	-						D175
	This Year (D)	-											
Fertilizer price	Before the												
	Last Year (D)												
	This Year (D)												D30
Source of seed	Last year's												
	Buying from DAS												
	Provided by ---												
Source of fertilizer	Buying from DAS												
	Provided by ---												
Reason for planting this crop	Preserved long												
	Easy to cook												
	Sold expensive	Yes	Yes	Yes	Yes	Yes	Yes						
Difficulties in raizing	Drought												
	Flood												
	Getting seed	Yes	Yes	Yes	Yes	Yes	Yes						
	Seeding												
	Weeding												
	Marketing	Yes	Yes	Yes	Yes	Yes	Yes						
	Insects												
	Diseases												

1. How many times have you attended trainings during the project?			5 times
Which training was the most interesting?	Preservation and Processing		
2. Do you think your nutrition level has increased?		Yes	
Reason:			
3. What changes have you obtained AFTER the project?	Income increased	Yes	
	Amount of vegetable to eat increased	Yes	
	Kind of Vegetable to eat increased	Yes	
	Increased using instruments	Yes	
	Got interest in marketing	Yes	
	Got interest in bookkeeping	Yes	
	Got interest in new Technology	Yes	
Others:			
4. How do you want to use if GROUP income increases?	Buying new vegetables' seeds		No
	Making storage		No
	Bookkeeping training		No
Others:	Use for repair and maintenance	Yes	
5. How do you want to use if YOUR income increases?	Pay for children education		
6. How much is your ANNUAL INCOME?	Before the Project	None	Dalasi
	Last year	2000	Dalasi
	This year	2400	Dalasi
7. What difficulties do you have in marketing?	No one in family do help me		
How do you think they can be solved?	Marketing because children are in school		
8. What constraints do you have in continuing vegetable production?	Pest and diseases		
How do you think they can be solved?	Spray		
9. What constraints do you have in continuing group activities?	Timeliness in meetings/ Decision-making		
How do you think they can be solved?	Enforce rules		

Village	Fatoto	Name	Mariama Sireh Baldeh											F2
Date	July. 18	Age	45				Number of people you eat togethe	5						

VEGETABLE		Group Garden						Private Garden					Total
		Tomato	Onion	Pepper	Okra	maranthu	Sorrel						
Area	Before the												
	Last Year (m2)												
	This Year (m2)												
Production	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Amount)	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Price)	Before the												
	Last Year (D)												
	This Year (D)												
Consumption	Before the												
	Last Year (kg)												
	This Year (kg)												
Seed price	Before the												
	Last Year (D)				D4								
	This Year (D)	D10	D50	D10	D20								
Fertilizer price	Before the												
	Last Year (D)												
	This Year (D)												
Source of seed	Last year's												
	Buying from ---												
	Provided by ---												
Source of fertilizer	Buying from ---												
	Provided by ---												
Reason for planting this crop	Preserved long												
	Easy to cook												
	Sold expensive												
Difficulties in raizing	Drought												
	Flood												
	Getting seed	Yes	Yes	Yes									
	Seeding												
	Weeding												
	Marketing	Yes	Yes	Yes									
	Insects												
	Diseases												

1. How many times have you attended trainings during the project?			4 times
Which training was the most interesting?	Compost-making		
2. Do you think your nutrition level has increased?		Yes	
Reason:			
3. What changes have you obtained AFTER the project?	Income increased	Yes	
	Amount of vegetable to eat increased	Yes	
	Kind of Vegetable to eat increased	Yes	
	Increased using instruments	Yes	
	Got interest in marketing	Yes	
	Got interest in bookkeeping	Yes	
	Got interest in new Technology	Yes	
Others:			
4. How do you want to use if GROUP income increases?	Buying new vegetables' seeds		No
	Making storage		No
	Bookkeeping training	Yes	
Others:			
5. How do you want to use if YOUR income increases?	Pay for children education		
6. How much is your ANNUAL INCOME?	Before the Project	400	Dalasi
	Last year	1400	Dalasi
	This year	2000	Dalasi
7. What difficulties do you have in marketing?	high wastage of		
How do you think they can be solved?	introduce cedit buying		
8. What constraints do you have in continuing vegetable production?	water		
How do you think they can be solved?	provide pipes		
9. What constraints do you have in continuing group activities?	timeliness		
How do you think they can be solved?	charge fines		

Annex 4.2-1. Individual Household Survey in FATOTO (2/3)

Village	Fatoto	Name	Fafou Sanyang											F3
Date	July. 18	Age	40	Number of people you eat together										

VEGETABLE		Group Garden						Private Garden						Total
		Tomato	Onion	Sorrel	Okra	B.Tomato	Cabbage	Sorrel	Okra	Pepper	Tomato			
Area	Before the													
	Last Year (m2)													
	This Year (m2)													
Production	Before the													
	Last Year (kg)													
	This Year (kg)													
Selling (Amount)	Before the													
	Last Year (kg)													
	This Year (kg)													
Selling (Price)	Before the													
	Last Year (D)													
	This Year (D)													
Consumption	Before the													
	Last Year (kg)													
	This Year (kg)													
Seed price	Before the													
	Last Year (D)													
	This Year (D)	30	50	-	-	50	30							160
Fertilizer price	Before the													
	Last Year (D)													
	This Year (D)													45
Source of seed	Last year's													
	Buying from ---													
	Provided by ---													
Source of fertilizer	Buying from DAS													
	Provided by ---													
Reason for planting this crop	Preserved long				Yes									
	Easy to cook			Yes										
	Sold expensive	Yes	Yes			Yes	Yes							
	Mature easily				Yes	Yes								
Difficulties in raizing	Drought													
	Flood													
	Getting seed	Yes	Yes			Yes								
	Seeding													
	Weeding													
	Marketing	Yes	Yes		Yes									
	Insects													
	Diseases													

1. How many times have you attended trainings during the project? 5 times
   Which training was the most interesting? Compost Making
2. Do you think your nutrition level has increased? Yes
   Reason: Use my own produces instead of buying
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: No
   - Making storage: No
   - Bookkeeping training: Yes

   Others:
5. How do you want to use if YOUR income increases? Use income forfamily expenses
6. How much is your ANNUAL INCOME?
   - Before the Project: 1000 Dalasi
   - Last year: 1500 Dalasi
   - This year: 1700 Dalasi
7. What difficulties do you have in marketing? Lack of Channels
   How do you think they can be solved? More middlemen to come to buy produces
8. What constraints do you have in continuing vegetable production? Lac of enough Water
   How do you think they can be solved? Create reservoirs
9. What constraints do you have in continuing group activities? Punctuality
   How do you think they can be solved? Charge fines

Village	Fatoto	Name	Mariama Drammiel											F4
Date	July. 18	Age	42	Number of people you eat together										

VEGETABLE		Group Garden						Private Garden						Total
		Tomato	Onion	Pepper	Okra	Cassave	S.Potato							
Area	Before the													
	Last Year (m2)													
	This Year (m2)													
Production	Before the													
	Last Year (kg)													
	This Year (kg)													
Selling (Amount)	Before the													
	Last Year (kg)													
	This Year (kg)													
Selling (Price)	Before the													
	Last Year (D)													
	This Year (D)													
Consumption	Before the													
	Last Year (kg)													
	This Year (kg)													
Seed price	Before the													
	Last Year (D)													
	This Year (D)	D30	D50	-	-	-	-							D80
Fertilizer price	Before the													
	Last Year (D) 90													D90
	This Year (D)110													D100
Source of seed	Last year's													
	Buying from													
	Provided by													
Source of fertilizer	Buying from DAS													
	Provided by ---													
Reason for planting this crop	Preserved long													
	Easy to cook					Yes	Yes							
	Sold expensive	Yes	Yes	Yes										
	Mature early				Yes									
Difficulties in raizing	Drought													
	Flood													
	Getting seed	Yes	Yes											
	Seeding	Yes		Yes										
	Weeding													
	Marketing	Yes	Yes	Yes										
	Insects	Yes		Yes										
	Diseases	Yes												

1. How many times have you attended trainings during the project? 5 times
   Which training was the most interesting? Preservation and Processing
2. Do you think your nutrition level has increased? Yes
   Reason: Grow my own vegetable, instead of buying
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: Yes
   - Making storage: Yes
   - Bookkeeping training: Yes

   Others:
5. How do you want to use if YOUR income increases? Sponsor my children to travel overseas
6. How much is your ANNUAL INCOME?
   - Before the Project: 1000 Dalasi
   - Last year: 1800 Dalasi
   - This year: 1100 Dalasi
7. What difficulties do you have in marketing? Lack of places ↑problem of seeds
   How do you think they can be solved? Provide linkage with middlemen
8. What constraints do you have in continuing vegetable production? water
   How do you think they can be solved? provide water and distribute it within garden
9. What constraints do you have in continuing group activities? timeliness in group activities
   How do you think they can be solved? charge fines

Annex 4.2-1. Individual Household Survey in FATOTO (3/3)

Village	Fatoto	Name	Faboumata Jallow									F5
Date	July. 18	Age	35			Number of people you eat tog		50				
VEGETABLE		Group Garden						Private Garden				Total
		Tomato	Onion	Okra	Sorrel	B.Tomat	Pepper					
Area	Before the											
	Last Year (m2)											
	This Year (m2)											
Production	Before the											
	Last Year (kg)											
	This Year (kg)											
Selling (Amount)	Before the											
	Last Year (kg)											
	This Year (kg)											
Selling (Price)	Before the											
	Last Year (D)											
	This Year (D)											
Consumption	Before the											
	Last Year (kg)											
	This Year (kg)											
Seed price	Before the											
	Last Year (D)	20	10	-								
	This Year (D)	30	40	-	-	20	20					110
Fertilizer price	Before the											
	Last Year (D)											50
	This Year (D)											
Source of seed	Last year's											
	Buying from DAS											
	Provided by ---											
Source of fertilizer	Buying from DAS											
	Provided by ---											
Reason for planting this crop	Preserved long			yes								
	Easy to cook				yes							
	Sold expensive	Yes	Yes			Yes	Yes					
	useful											
Difficulties in raizing	Drought											
	Flood											
	Getting seed	Yes	Yes			Yes	Yes					
	Seeding											
	Weeding											
	Marketing	Yes	Yes			Yes	Yes					
	Insects											
	Diseases											

1. How many times have you attended trainings during the project? 4 times
   Which training was the most interesting? Compost-making
2. Do you think your nutrition level has increased? Yes No
   Reason:
3. What changes have you obtained AFTER the project?

Income increased	Yes
Amount of vegetable to eat increased	Yes
Kind of Vegetable to eat increased	Yes
Increased using instruments	Yes
Got interest in marketing	Yes
Got interest in bookkeeping	Yes
Got interest in new Technology	Yes

   Others:
4. How do you want to use if GROUP income increases?

Buying new vegetables' seeds	No
Making storage	No
Bookkeeping training	Yes

   Others:
5. How do you want to use if YOUR income increases? Sponsor children to travel
6. How much is your ANNUAL INCOME?

Before the Project	1000	Dalasi
Last year	1000	Dalasi
This year	900	Dalasi

7. What difficulties do you have in marketing? Transportation
   How do you think they can be solved? Middlemen to come to village themselves
8. What constraints do you have in continuing vegetable producti Water
   How do you think they can be solved? Reservoirs
9. What constraints do you have in continuing group activities? Punctuality
   How do you think they can be solved? Change fines

Annex 4.2-1. Individual Household Survey in TOUBA (1/2)

Village Touba Tafsir | Name Mama Kaba | T1
Date 20/07/05 | Age 40 | Number of people you eat together 36

VEGETABLE		Group Garden: Onion						Private Garden: L/pep	B/tom	chilli	toma	okra	Total
Area	Before the												
	Last Year (m2)												
	This Year (m2)												
Production	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Amount)	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Price)	Before the												
	Last Year (D)												
	This Year (D)												
Consumption	Before the												
	Last Year (kg)												
	This Year (kg)												
Seed price	Before the												
	Last Year (D)												
	This Year (D)												
Fertilizer price	Before the												
	Last Year (D)												
	This Year (D)										yes	yes	60
Source of seed	Last year's								yes		yes	yes	70
	Buying from ---												
	Provided by ---												
Source of fertilizer	Buying fromBasse												
	Provided by ---												
Reason for planting this crop	Preserved long												
	Easy to cook												
	Sold expensive		yes									yes	
	matures early							yes	yes				
Difficulties in raizing	Drought												
	Flood												
	Getting seed												
	Seeding												
	Weeding												
	Marketing												
	Insects							yes	yes				
	Diseases												
	Fence							yes	yes	yes	yes	yes	

1. How many times have you attended trainings during the project? 3 times
   Which training was the most interesting? Preservation & processing
2. Do you think your nutrition level has increased? Yes
   Reason: can preserve veg. for long (onion)
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: No
   - Making storage: No
   - Bookkeeping training: No
   - Do business with Savings: Yes

   Others:
5. How do you want to use if YOUR income increases?
6. How much is your ANNUAL INCOME?
   - Before the Project: 3000 Dalasi
   - Last year: 3000 Dalasi
   - This year: 5000 Dalasi
7. What difficulties do you have in marketing? Transportation
   How do you think they can be solved? Arrange for transport weekly
8. What constraints do you have in continuing vegetable production? Fence
   How do you think they can be solved? Request for assistance to buy
9. What constraints do you have in continuing group activities? No idea
   How do you think they can be solved?

Village Touba Tafsir | Name Jaka Jaikteh | T2
Date 20/07/05 | Age 30 | Number of people you eat together 10

VEGETABLE		Group Garden: Onion						Private Garden: L/pep.	Chilli	B/tom	toma	Okra	Total
Area	Before the												
	Last Year (m2)												
	This Year (m2)												
Production	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Amount)	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Price)	Before the												
	Last Year (D)												
	This Year (D)												
Consumption	Before the												
	Last Year (kg)												
	This Year (kg)												
Seed price	Before the												
	Last Year (D)		20										
	This Year (D)												
Fertilizer price	Before the												
	Last Year (D)							yes	yes	yes	yes	yes	370
	This Year (D)							yes	yes	yes	yes	yes	1500
Source of seed	Last year's												
	Buying fromBasse												
	Provided by ---												
Source of fertilizer	Buying from vill.												
	Provided by ---												
Reason for planting this crop	Preserved long												
	Easy to cook												
	Sold expensive		yes					yes	yes	yes	yes	yes	
Difficulties in raizing	Drought												
	Flood												
	Getting seed		yes										
	Seeding												
	Weeding												
	Marketing		yes					yes	yes	yes	yes	yes	
	Insects								yes		yes		
	Diseases												

1. How many times have you attended trainings during the project? 3 times
   Which training was the most interesting? Compost-making
2. Do you think your nutrition level has increased? Yes
   Reason: the increased in production
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: No
   - Making storage: No
   - Bookkeeping training: No
   - Buy a milling Machine: Yes

   Others:
5. How do you want to use if YOUR income increases? open up a Business
6. How much is your ANNUAL INCOME?
   - Before the Project: 4000 Dalasi
   - Last year: 2000 Dalasi
   - This year: 4000 Dalasi
7. What difficulties do you have in marketing? Marketing Channels are few
   How do you think they can be solved? Make arrangement with middlemen to buy from village
8. What constraints do you have in continuing vegetable production? Lack of good fence for my private garden
   How do you think they can be solved? Contribute to provide fence on our own
9. What constraints do you have in continuing group activities? Punctuality at meetings
   How do you think they can be solved? Change timing of meetings especially during rainy season

Annex 4.2-1. Individual Household Survey in TOUBA (2/2)

Village Touba Tafsir | Name Funney Suwareh | T3
Date 16/07/05 | Age 30 | Number of people you eat together 8

VEGETABLE		Group Garden						Private Garden					Total
			Onion					B/tom.	L/pep.	Chilli	E/pla.	Toma.	
Area	Before the												
	Last Year (m2)												
	This Year (m2)												
Production	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Amount)	Before the												
	Last Year (kg)												
	This Year (kg)												
Selling (Price)	Before the												
	Last Year (D)												
	This Year (D)												
Consumption	Before the												
	Last Year (kg)												
	This Year (kg)												
Seed price	Before the												
	Last Year (D)												
	This Year (D)												
Fertilizer price	Before the												
	Last Year (D)		25					yes	yes	yes	yes	yes	725
	This Year (D)		12.5										812.5
Source of seed	Last year's												
	Buying from ---												
	Provided by ---												
Source of fertilizer	Buying from Vill.												
	Provided by DAS												
Reason for planting this crop	Preserved long												
	Easy to cook										yes		
	Sold expensive		yes					yes	yes	yes		yes	
Difficulties in raizing	Drought												
	Flood												
	Getting seed		yes										
	Seeding												
	Weeding												
	Marketing		yes					yes	yes	yes	yes	yes	
	Insects											yes	
	Diseases												

1. How many times have you attended trainings during the project? 2 times
   Which training was the most interesting? both are equally interesting
2. Do you think your nutrition level has increased? Yes
   Reason: the number of vegetables has increased
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: Yes
   - Making storage: Yes
   - Bookkeeping training: No

   Others:
5. How do you want to use if YOUR income increases? Use it wed my two daughtersw
6. How much is your ANNUAL INCOME?
   - Before the Project: 4800 Dalasi
   - Last year: 6250 Dalasi
   - This year: 3730 Dalasi
7. What difficulties do you have in marketing? Transportation
   How do you think they can be solved? I want to buy a cart
8. What constraints do you have in continuing vegetable production? Attending meeting during rainy season
   How do you think they can be solved? no idea
9. What constraints do you have in continuing group activities?
   How do you think they can be solved?

Village Touba Tafsir | Name Ma-Ngansa Jabbi | T4
Date 25/07/05 | Age 40 | Number of people you eat together 9

VEGETABLE		Group Garden					Private Garden					Total
			Onion				L/Pep.	Chilli	B/Tom	Okra		
Area	Before the											
	Last Year (m2)											
	This Year (m2)											
Production	Before the											
	Last Year (kg)											
	This Year (kg)											
Selling (Amount)	Before the											
	Last Year (kg)											
	This Year (kg)											
Selling (Price)	Before the											
	Last Year (D)											
	This Year (D)											
Consumption	Before the											
	Last Year (kg)											
	This Year (kg)											
Seed price	Before the											
	Last Year (D)											
	This Year (D)		500	Group								500
Fertilizer price	Before the											
	Last Year (D)						yes	yes	yes	yes	yes	700
	This Year (D)						yes	yes	yes	yes	yes	900
Source of seed	Last year's											
	Buying from DAS											
	Provided by ---											
Source of fertilizer	Buying from DAS											
	Provided by ---											
Reason for planting this crop	Preserved long									yes		
	Easy to cook											
	Sold expensive		yes				yes	yes	yes			
Difficulties in raizing	Drought											
	Flood											
	Getting seed		yes									
	Seeding											
	Weeding											
	Marketing		yes				yes	yes	yes	yes		
	Insects						yes					
	Diseases											

1. How many times have you attended trainings during the project? 3 times
   Which training was the most interesting? Compost-making
2. Do you think your nutrition level has increased? Yes
   Reason: The ability to preserve produces for long
3. What changes have you obtained AFTER the project?
   - Income increased: Yes
   - Amount of vegetable to eat increased: Yes
   - Kind of Vegetable to eat increased: Yes
   - Increased using instruments: Yes
   - Got interest in marketing: Yes
   - Got interest in bookkeeping: Yes
   - Got interest in new Technology: Yes

   Others:
4. How do you want to use if GROUP income increases?
   - Buying new vegetables' seeds: No
   - Making storage: No
   - Bookkeeping training: No

   Others: Purchase a milling machine: Yes
5. How do you want to use if YOUR income increases? open a new business
6. How much is your ANNUAL INCOME?
   - Before the Project: 2000 Dalasi
   - Last year: 2220 Dalasi
   - This year: 700 Dalasi
7. What difficulties do you have in marketing? the high cost of transportation
   How do you think they can be solved? Arrange with a taxi owner to collect produces weekly
8. What constraints do you have in continuing vegetable producti Pest and Diseases
   How do you think they can be solved? Spraying
9. What constraints do you have in continuing group activ As the leader, how to pass information to every member
   How do you think they can be solved? entrust that role to some one else

Appendix 6.1 Newsletter

Government of the Gambia

Japan International Cooperation Agency

No. 1 2/3/2004

Agriculture and Rural Development Study in URD, The Gambia

Figure 1. Vegetable field in Kossemar

Introduction

The first phase of the study was mainly concerned with data collection through interviews, literature reviews and general needs assessment .Sixty villages were initially selected but after analysis, six were selected for the Verification Project which is supposed to run for two years. The whole exercise was conducted by the staff of the Department of Agricultural Services in URD and members of the Japanese study team.

In the second phase, the Verification Project sponsored by the Government of Japan is being implemented in six communities in URD. The main objective of the project is to try development strategies that can bring about socio-economic development in the communities. These strategies are now being verified in the areas of vegetable production and processing and groundnut production, followed by the NERICA project and Coordination skill development program. The vegetable component is being carried out at Fatoto, Touba Tafsir, Kossemar Tenda, and Mansajang Kunda. Groundnut production projects are in Jah Kunda and Jaka Madina

Developments that have taken place since the projects started three months ago are being discussed below.

Vegetable Processing and Preservation Project

Kossemar Tenda.

This is one of the villages selected for the verification of vegetable production and processing. Assorted vegetable seeds were distributed in November and nursery beds were prepared and sown in the same month. At the same time, main beds were being demarcated with the daily supervision of the Village Extension Worker in Bakadagy under Mankamang Kunda DEC area.

Fencing and transplanting are now completed but the construction of the water reservoir is still in progress.

In January 2004, two-day training in compost making was conducted by the contractor. Topics covered during the training included:

- The advantages of compost
- Materials for compost-making
- Types appropriate for the rainy season
- Types appropriate for dry season.

Five out of the 25 members of the group were trained with the understanding that they will in turn train other members.

Some inorganic fertilizers were issued to the group for application on the main beds, however the urea which should be applied as a top dressing was issued before the compound fertilizer.

Our advice to the group was that there was no need to apply the compound because the vegetables have already established and need more urea than compound at their present stage of growth.

Progress at this garden is very satisfactory and the VEW is getting positive responses from the group,

Mansajang Kunda

This garden is at the same stage of growth with others .Lettuce is being sold at Basse market. Weeding and watering are in progress.

An agreement was reached to alter the design of the water supply system in the garden since the initial design does not ensure efficient distribution. The contractor has agreed to use the design at a garden in Bwiam in the Western division.

Touba Tafsir

The main activities in the garden now are fertilizer application, watering and turning of beds to enhance vigorous development. Early planted lettuce is now ready for the market but not in large quantities.

There were pest and disease incidences mainly on cabbage and egg plants. These were found in only one part of the garden which made us to suspect soil borne micro-organisms. We have advised the farmers not to apply chemical pesticides after the crops have started to bear fruits. This is because these types of vegetables can be eaten raw. Training program on the use of organic pesticides is planned for the farmers by end of February 2004.

The other vegetable cultivars are doing very well and the group is very active in adhering to the recommended production techniques.

Figure 2. Onion garden in Touba

Fatoto

Progress in this garden is very satisfactory at the moment after the initial set back. The northern part of the garden is being planted with bananas by male members of the group even though we advised them to wait until one month before the rainy season. However, we are happy to learn that there is no significant increase in the demand for water that could put the women at a disadvantage.

Divisional Agriculture Quarter (edited by Mr. Jerreh Sanneh, DAC)

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Government of the Gambia

Japan International Cooperation Agency

No. 2 1/6/2004

Agriculture and Rural Development Newsletter in URD

WEATHER

March characterizes sunny and hot weather during the day and early evenings but the temperature drops at night which indicates the starting of the rain season.

Works continues in vegetable gardens and pest and disease monitoring reports indicated that most vegetables are infested with cabbage being the most affected crop. The pests observed includes; Red Creole and Texas grano. The tomatoes are infected with soil-borne diseases.

Weed infestation is also a problem and the species found *(yperus spp) especially in Mansajang* kunda is difficult to control.

DEC ACTIVITIES:

Activities at DEC consist of nurseries preparation and DEC maintenance. At the Giroba kunda DEC, JUJUBE budding programme is in progress. This is a project where the local 'tomborong,' a wild Gambian berry will be used to bud the jujube on. Twelve mother plants have already been pruned the objective of the project is to improve the local tomborong berry, a popular fruit for the young in the country

Sprayed stores were found to be free from infestation while on the contrary, a lot of home-stores are reported to be infected. Seed preparation is in progress.

CAPACITY BUILDING:

A total of one hundred farmers mainly women were gathered for a two-day farmer training programme in each of the four JICA sponsored vegetable garden schemes. Farmers were trained on processing and preservation of vegetables, organic preparation, the use of the Neem tree leaves and berries as pesticides.

Naudeh DEC also organized a sensitization workshop on Hiv/Aids for two days and eighty farmers from eight villages were sensitized the topic "the impact of Hiv/Aids on Agricultural development".

As part of the counterpart training, the DAC went on a study tour to Japan in March 2004. Among the places visited was the YACHIMATA Groundnut Research Station where appropriate technologies were observed such as groundnut spacing wheel as shown in the picture.

DRY SEASON VEGETABLE PRODUCTION:

The main extension activities in the month of March 2004 are focused on the monitoring and supervision of garden schemes. The farmers mostly women are busy at the peak of vegetable growing season.

Grasshoppers and white flies' infestation are reported to be affecting seedling and includes blight and damping-off. The crops affected most are tomatoes, bitter tomatoes and okra.

AGRICILTURAL ACTIVITIES

Japanese international co-operation Agency – JICA

As highlighted in the previsions report, ongoing activities were mainly harvesting. Some crops performed poorly due to a lot of grasses that lead to pest-diseases particularly tomatoes.

COLLABORATION:

The month under review showed collaboration with a lot of other agencies such as SDRD, AATG and WASDA in community Action Plans development, community sensitization on AATG's new approach and meeting and a visit by the SOS for Agriculture to URD.

NATIONAL NERICA SEED CENTRES:

There are three (3) seed centers selected within the Division; namely Kerewan Nyakoi, Suduwol and Nafugan pateh along side the twin villages to each seed center to conduct PVS test on five Nerica varieties and one (1) non-Nerica variety.

JICA STUDY VERIFICATION PROJECTS:

In addition to the ongoing vegetable verification programme, there are two other components, groundnut programme and the Nerica programme respectively. The groundnut verification programme is in two is in two villages Jah-Kunda and Jaka Madina of the North Bank Division. Whilst the Nerica component is in (3) three sites of the South Bank of URD namely Bassending, Sotuma Samba for On-Farm PVS trials, and Mansajang Kunda with varieties screening trial.

ATM COLLABORATION ACTIVITY

Rice seeds of three varieties have been distributed to farmers at reasonable prices. These varieties are suitable in both the upland and lowland swamps. The seeds are ATM selected 5 varieties, RASI and NERICA P31. A total of 10,000 kgs have been issued to the Divisional Agric. Office.

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Government of the Gambia

Japan International Cooperation Agency

No. 3 1/9/2004

Agriculture and Rural Development Newsletter in URD

CROP / WEATHER SCENARIO

The rainy season began in June in most parts of the division but as usual, some parts experience extended dry spells which delayed sowing. The first weed prevented the use of animal-drawn implements thus increasing the demand for tractor ploughing. The dry spell affected mostly Sandu and Wuli where the JICA sponsored Groundnut Verification Programme trials.

In August, a significant rainfall was recorded which were evenly distributed. The highest rainfall of 83.3 mm was recorded in Jah-kunda during the first decade and the lowest of 1.9 mm was in Giroba kunda.

VEGETABLE PRODUCTION & PROCESSING

As mentioned in the May 2004 report, that the dry season vegetable production is completed and group performance is being assessed. The best group so is Touba Tafsir and they were awarded a prize from the DAC office and the study team.

GROUNDNUT PRODUCTION

The farm implements supplied by AFET were found to be poor quality. The agreed to use the implements after modification was done on them.

Poor germination occurred at Jah-kunda due to bad seeds provided. The group however, received additional seeds on loan from the DES. Germination was better at Jaka Madina

The farm at Jaka Madina is a success story and a field-day was held in September, 2 farmers were invited from 10 villages to learn from the group the operations carried out on the field during the season through questions and answer session.

RICE PRODUCTION (NERICA)

JICA started the Nerica observation trials in URD at the villages of Sotuma and Bassending in Sotuma two replicas are being tested upland and lowland. The on-farm Nerica trials are in three varieties to be replicated in adjacent plots. Good harvest is expected although trials at Sotuma were submerged and paddy field at Bassending has failed due to lack of weeding.

COORDINATION SKILL TRAINING

The skills development trainings continue during the last part of this quarter. Staffs are now being introduced to Excel which many found to be exciting. However, attendance rate is low during the period and reason is attributed to the busy schedules. The DAC suggested the inclusion junior staffs that have less busy schedules in order to maximally utilize the time allocated for training.

THREAT OF LOCUST INVASION

The Disaster Relief Committee formed 15 teams and four were deployed to URD. Teams in URD are at Nawdeh, Jah-kunda, Fatoto and Basse.

PEST SITUATION

There were few reports of blister beetles outbreak in some areas but action was taken to contain them. The four teams for the locust control campaign continue on their routine surveillance but so far there are no signs of the existence of this pest in this area of the Gambian territory.

MARKET PRICE DATA COLLECTED

Vegetable market price collection began in July and is conducted by staff of the Department of Planning (DOP) in nine markets in URD including Basse regular market and eight weekly markets (Lumos. The prices are collected on a monthly basis.

SALES OF INPUTS

As end of this quarter, a total amount of two hundred thousand dalasis (D200.000.00) is the outstanding balance of the fertilizer sales. However, reconciliation with mixed farming centers and other buying point within the division is in progress.

The groundnut seeds supplied to this office a balance of two thousand eight hundred and eighty bags (2280 bags) are still stored and there high fear for the crop to be infested by insects.

DEC CROPPING

Crops performance at the DEC farms during the period is very good especially at Jah-kunda DEC. The crops cultivated include groundnuts, maize, early millet and sorghum. Weeding is in progress and soil infertility is the only constraint reported at Fatoto DEC.

COLLABORATION WITH ROC MISSION

As already mentioned in earlier reports, the DAC office in Basse has been collaborating with the Agricultural Technical Mission of ROC based in Sapu in rice production. Over ten tones of improved rice seed varieties have been sold to farmers in URD.More than 80% of the fields visited are doing well and a bumper harvest is expected if the rainfall pattern continues to be favourable.

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Appendix 6.2 Procedure of Vegetable Market Price Collection

1. Introduction

The JICA verification Project in URD includes a market price data survey in nine (9) markets in the division. The collection started in July 2004 and is expected to continue for a period of one (1) year. The Department of Planning (DOP) field enumerators are responsible for the collection under the supervision of the JICA office in Basse. The programme is expected to help identify marketing trend for vegetables within the division.

2. The Rationale for the Market Data Collection

The rationale behind the market price data collection in URD funded by JICA project is primarily to establish the price trend for vegetable throughout the year in URD. The data will enable the DAS office in URD to advise farmers on the various types of vegetable to grow for better marketing. It will also form the basis for a feature Vegetable Price Database.

The provision of timely and reliable market data will also go a long way to help the DAS office to better plan the vegetable production calendar. Enhanced flow of market price information, will help both farmers, extension workers and policy-makers improve vegetable production and maximize income. It will also indicate stock-gap that affects both income and nutritional level of farmers.

3. Methodology

The Department of Planning (DOP) which is charged with providing primary data on the Agricultural sector has its staff in all divisions in The Gambia. JICA Project has assigned the price data collection to five (5) of its staff in nine (9) markets both weekly (Lumo) and regular (retail) markets in URD. The Basse regular market is the only retail market included and the other eight (8) markets are held weekly (Lumos) provides market out lets for producers and also the avail the opportunity to collect farm-gate prices.

The prices are collected monthly where enumerators goes to the market with a 50 kilogram Salter Scale to weigh selected vegetables sold in various units which is calculated in cost/kilo. In order to obtain a reliable average, enumerators conduct three (3) observations per item and recorded unit/costs and the unit/weighed. The cost/unit is divided with weight/unit on each observation to obtain the average cost/kilo. The average is calculated for each item using the 3 observations per item and divided by 3.

Table : Selected Markets for Data Collection and Enumerators

Market	Category	Location (Ward)	Enumerator
Basse	Regular	Basse	Lamin Juwara & Alpha Sey
Sabi	Weekly	Sabi	
Kossemar	Weekly	Julangel	Samba Ndow
Sare Bojo	Weekly		
Gambisara	Weekly		Medou Jambang
Dingiri	Weekly	Dampha Kunda	
Fatoto	Weekly	Koina	Amat Sallah
Gambisara Lamoi	Weekly		
Sare Ngai	Weekly	Sare Ngai	Haruna Secka

4. Background Information

Basse Market (Regular)

Basse is the second Capital of The Gambia and its market serves as major market for the most remote region in the country. The Basse market is the largest in the division and the only one within a ten (10) km radius.

It is also the main regular market where products ranging from agricultural produces such as vegetables, cereals and groundnuts to imported goods are on sale daily. The is dominated by middle men who operates in two categories;

- Those operating in Agricultural Sector, goes to buy agricultural produces paying farm gate prices either at the weekly market (Lumo) or farmer's own home. These produces are brought to Basse Market and resold at retail prices to consumers.
- The second category deals imported items and purchases these items from Banjul use Basse market as major distributing outlet to the rest of URD.

5. Characteristics of a Lumo

1. Transportation across the borders is mainly by horse and donkey carts, bicycles and headload.
2. Lumos are always held in alternate date to allow more competition
3. Most of the Lumos are located on border villages to enable people from both countries to converge.
4. Lumos days have less restriction is applied on cross border trade, thus allowing a lot people to attend lumos.
5. Lumos provide the oppunity for different kind of goods to be displayed and give consumers a choice.

Sabi Market (Lumo)

The Sabi Lumo is located at Sabi village in Sabi Wand and has a characteristic common to all Lumos and that is its location at the border with Senegal. Lumo markets started in Senegal during

the early 60s and by the early 70s, some strategic places like Farafenni and Kerr Pateh in the North Bank of The Gambia had started organizing Lumos. These markets are organized using alternating dates to attract more vendors and encourage competition.

Lumos provides very good marketing out lets for agricultural produces, livestock and the re-export trade in the Gambia which accounts for Of GDP.

Sabi is a large Sarahule community who are very active in the Commercial Sector. The Lumo is located 3 kilometers from Basse and 100 meters from the border linking The Gambia with the Northern Senegal region of Cassamance. It also gives traders from Senegal to bring goods demanded from the Gambia weekly.

Farmers also have the opportunity to market their produces especially groundnut even before government set out producer prices but this market is important mainly due to the re-export trade and is held every Sunday.

Sare Bojo Lumo

Sare Bojo is the first village after entering URD from Banjul. It borders with CRD in the West and Senegal in South. Sare Bojo is also strategically located which made it ideal for a Lumo. The Sare Bojo Lumo provides a good opportunity for middle men from both Senegal and the Gambia to converge at this strategic point to buy and sell for a whole day every week. The village is 1 kilometer from the Banjul to Basse high Way and in the Julangel Ward. It is thus easily accessible by motorists coming from both East and West of the country. It also borders with Senegal in the South and is always well attended by Senegalese.

Large number of middle men comes to this Lumo to buy agricultural produces especially groundnut and also small ruminants to resell either in other Lumos or in other markets within the country or in retail markets mostly Banjul and Serekunda Markets. It is one of the largest and well attended weekly markets in URD and is held every Tuesday.

Kossemar Tenda Lumo

Kossemar is also found in Julangel Ward and it the peculiar characteristic of being located on the bank of The River Gambia and also just about three (3) kilometers from the main high way linking URD to the rest of the country. It also serves as a link to the north bank of URD (Sandu District). Kossemar Tenda use to be very important trading center as the name reflect “Tenda” meaning Trading Center in the Mandinka language.

In an attempt revive the old trading activities, a lumo was set up. It however does not attract as many vendors as other lumos such as Sare Bojo and Sabi especially during the rainy season. This is mainly attributed to the fact that it is far from the border with either Northern or Southern Senegal where most vendors comes to attend lumos in The Gambia.

The Kossemar Lumo is none the less important as many petty traders from Sandu District and the surrounding villages in Julangel Ward takes advantage of the Market Day to sell their goods

especially agricultural produces such as groundnuts and vegetables. Middle men from Basse and other Lumos also come to the Kossemar Tenda Lumo. The Lumo is held every Saturday.

Sare Ngai Lumo

Sare Ngai is also a border village with Northern Senegal. It is in the Sare Ward and serves as one of the major Lumos in URD. This weekly market has similar characteristics with other lumos. The proximity to Senegal is always important in order to maintain a level of attendance in any lumo in The Gambia. Sare Ngai Lumo is located almost in the middle between Wuli East, Wuli West and Sandu. It is also at a good meeting for traders coming from Basse and those from Senegal.

The Sare Ngai lumo provides a good marketing channel for farmers in Wuli and Sandu districts who couldn't travel to Basse market the opportunity to sell their produces. Large number of ruminant are also marketed at this Lumo mainly from Northern Senegal (Futa) an area known for having a lot of small ruminants. The Lumo started and the lumo is held every Monday.

Fatoto Lumo

Fatoto has long been an important and a major trading center on the far Eastern bank of River Gambia. Fatoto is not a border village but is never the less an important trading point as the Gambia's borders with Senegal becomes narrower, Fatoto is not far from the South, North and Eastern Senegal. Fatoto is in Koina Ward in the Kantora District. It is about forty (40) kilometers from Basse and serves as a major distributing point for the East region of URD. The local inhabitants are mainly farmers.

The Fatoto Regular Market site also serves as the Lumo venue every Sunday. It is inhabited by a lot of Mauritanian traders who stock theirs shops with rice, sugar, cooking oil and other imported goods used in the re-export trade. A lot of Senegalese comes to Fatoto on a lumo day to buy goods. Farmers also use the market to sell their produces to middle men from Basse and Senegal as well as to consumers.

Dingri Lumo

Dingiri is also along the Southern Senegal border with The Gambia not far from Wellingara (a major border town in Senegal). It is in Dampha Kunda Ward in the Fulladu district. Dingiri is almost mid-way between Basse and Fatoto and thus the lumos provide a market opportunity for those living in and around this large village.

Every Thursday, vendors, farmers, consumers and middle men converged at the lumo. The market is another outlet for the re-export trade and farmer's produces such groundnut and vegetables. It is important to note as in all other lumos, vendors also bring goods from Senegal and the type and quantity depends largely on seasonal or request.

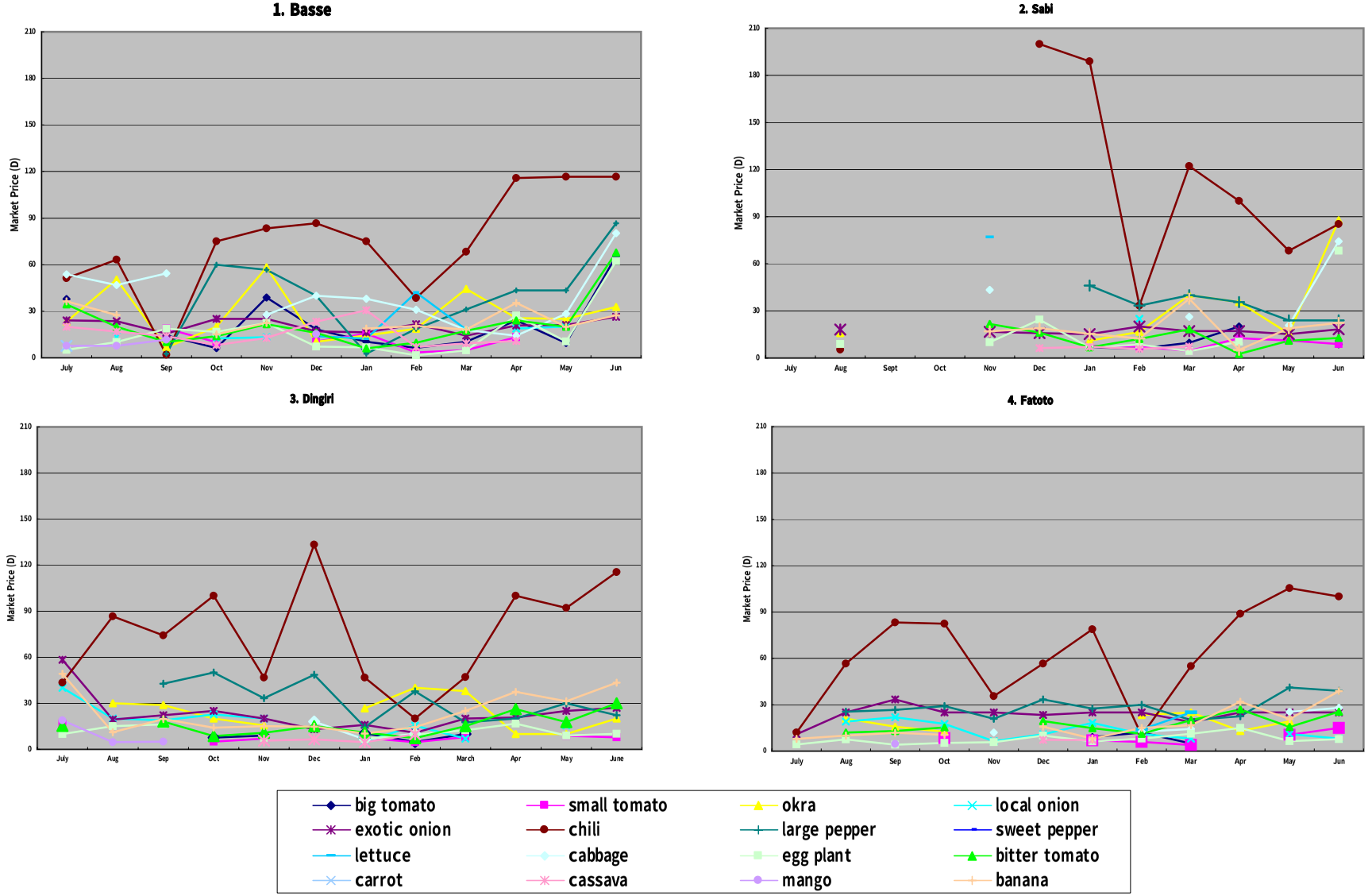
Gambisara Lamoi Lumo

Gambisara Lamoi is found on the North - East part of URD bordering with another village in Senegal called Lamoi. These two villages shared border and that provided a good opportunity for cross border trade. The Lumo is held every Saturday. Gambisara Lumo is a large village inhabited by mainly Sarahule tribe. The market brings vendors from Basse, Senegal and other parts of the Kantora district to buy and sell. Various goods such as local agricultural produces and imported goods ranging from rice, cooking oil and sugar are displayed on market days.

Gambisara Lumo

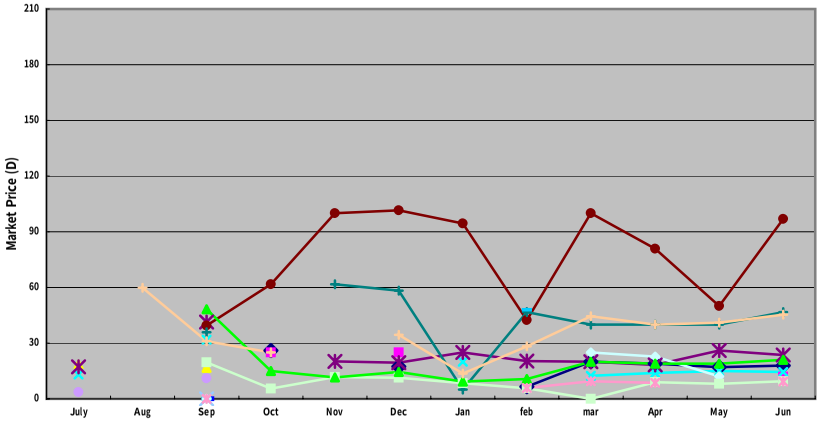
Gambisara is one of the biggest settlements in URD and is near the border linking Southern Senegal with The Gambia. It is in Gambisara Ward in Fulladu District. It is mainly inhabited by Sarahules. Gambisara attract a lot Foreigners mainly from Senegal, Guinea Conakry and Guinea Bissau. A lot of commercial activities take place there on daily basis and the weekly market open up for vendors and middle men across the border to Senegal and beyond to attend. The goods sold in all the lumos are almost the same it only the market location changes and other markets farmers sell their produces to middle men and consumers while other imported item are also sold on market day to be mainly transported across the border.

Vegetable Price at each lumo and Basse Market (1 / 3)

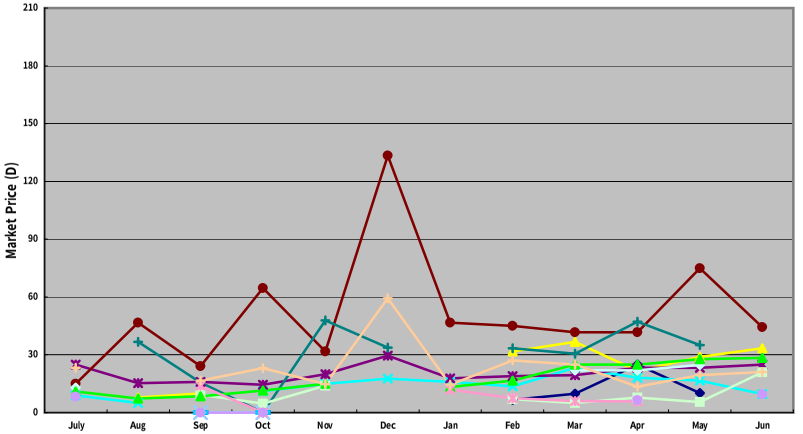


Vegetable Price at each lumo and Basse Market (2 / 3)

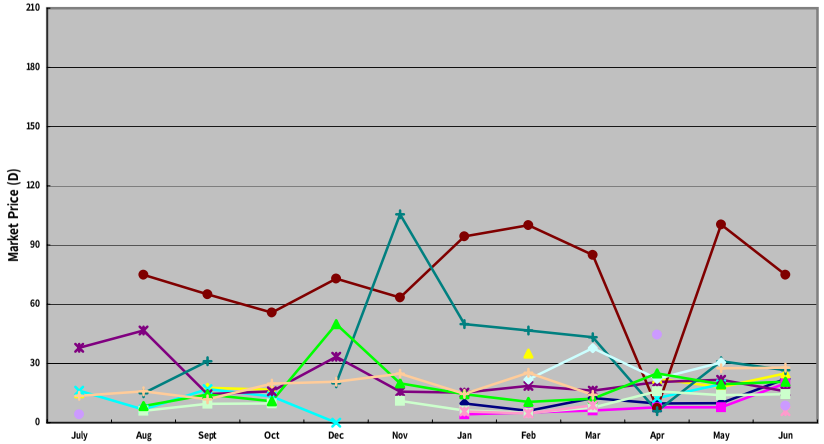
5. Sare Ngai



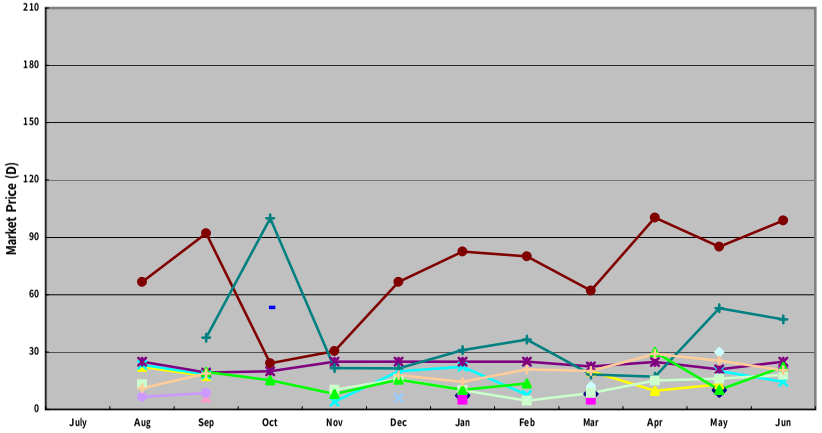
6. Sare Bojo

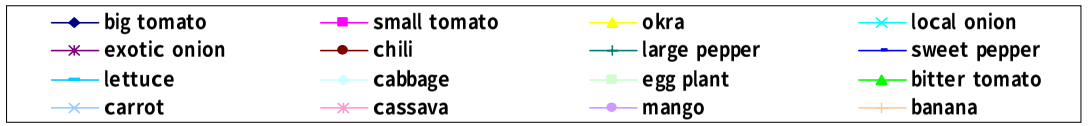


7. Gambisara



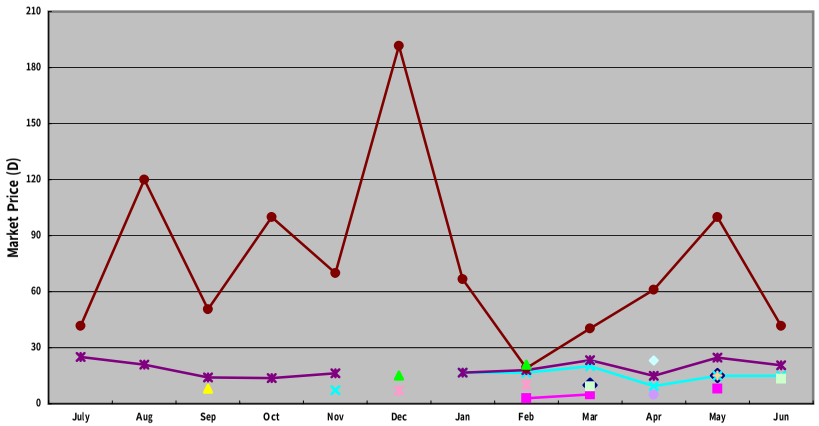
8. Gambisara Lamol





Vegetable Price at each lumo and Basse Market (3 / 3)

9. Kossemar



Appendix 6.3-1 Vegetable Production Potential Data (1/4)

Ward	Dec Circle	No.	Village	Name of Group	Garden Head	Membership			Area	Year	No. & Type of Wells						Type of Fence				Marketing Place	Main Donor	Type and Number of Trainings Provided					Private Garden	Production		Selling	Main Fund	Visited Date (dd/mm/yy)
						Sex	Male	Female	(ha)	Established	Wells	Local	Lined	Est.depth	W/depth (m)	comments	Local	Improved	Status	comments			Compost	Preservation	IPM	Others	Sponsor		Kafo	Private			
Diabugu	Mankamang Kunda	1	Sinchang Samba Jawo	Tesito Kafo	Kaddy Njie	F	4	400	6	1998	7	4	3	7				yes	poor		To neighboring villages Weekly market (Sare Bojo)	EDF, Somebody from Europe	no	no	no	no	-	Some has private garden	amaranthus, banana, bitter tomato, cassava, eggplant, okra, onion, pepper, sorrel, sweet potato, tomato	mango	some of the products		15/07/98
	Nawdeh	2	Demba Wandu Ochard																														
		3	Jagajari	Women Kafo	Karamo Sise	M	20	30	1	1995	2											Catholic Mission											
		4	Kuraw Arafang	Women Kafo	Tida Janko	F	4	30	1	1996	3											SDF											
		5	Kuraw Arafang	Women Kafo	Mariama Bah	F	3	30	1	1994	3											DCD											
		6	Nawdeh	Women Kafo	Tida Janko	F	3	177	2.5	1990	10											DCD											
		7	Njaibeh	Women Kafo	Sanneh Jawla	F	4	200	2	1993	4											DAS											
		8	Nyankui	Women Kafo	Jula Sillah	F	5	150	1	1995	3											CRS											
Julangel	Giroba	9	Sare Mbye	Kawral	Rockia Danso	F	3	30	1	1996	2		2	24				yes	good		Gambisara Lumo	EDF	no	no	yes	production technics	DAS		bitter tomato, cabbage, chilli, okra, onion		part of products	D500	10/12/98
	Makamang Kunda	10	Bakadagi	Jokereh Endam	Fatou Jawo	F	0	18	0.5	2001	2	0	2	12				yes	poor	imcompleted	Through middlemen Consumeres come	NAWFA	yes	no	no	no	DAS	no	bitter tomato, cabbage, eggplant, lettuce, okra, onion, pepper, sorrel, tomato	no	part of the products harvesting amount is not enough		
		11	Bantakore(Sandi	Tesito Kafo	Penda Mballo	F	8	70	1	1995	2		2	15		2nd well was not completed		yes	poor	Not operating		EDF	no	no	no	production technics		yes				no	12/08/98
		12	Fatako	Fangdema	Solo Janko	M	2	63	1	2004	2		2	12				yes	ok	new	Sare Bojo Lumo, Kossemar and Basse mkt	SDF	no	no	no	no		no	amaranthus, bitter tomato, cassava, eggplant, onion, pepper, sorrel, sweet potato, tomato		part of products		15/07/05
		13	Julangel	Badiya Kafo	Isatou Baldeh	F	3	309	2	1996	6	0	6	5		I well is without water		yes			Sare Bojo,	EDF	yes	no	no	no	DCD, DAS		amaranthus, bitter tomato, cassava, eggplant, okra, onion, pepper, sorrel, sweet potato, tomato		part of the products	D300	15/07/05
		14	Mankamang Kunda	Kanbeng Kafo	Ajnyama Jawara	F	1	66	1	1994	2	0	3	5	4	were poorly constructed but now improved		yes	poor	now repaired	Neighboring villages, Senegal, Basse, Weekly market(Sara Bjo,Brikamba in CRD)	EDF/SDF	no	no	no	no	no	3 small holdings mainly grow banana, 20 people each	onion, okra, eggplant, tomato, sorrel, pepper, amaranthus, cassava, sweet potato, bitter tomato	banana	bitter tomato, okra, sweet potato, tomato, sorrel, amaranthus, cassava	no	
		15	Njum Bakary	Check recent visit																													
		16	Sare Bakary	Fangdema	Kadijatou Sanneh	F	5	30	1	1996	1		1	15		not enough water	no	no	no	no fence, wires and nails are		EDF	no	no	no	no	no		no production started			no	12/09/98
		17	Sare Bojo Gamma	Tesito Kafo	Satu Dukaneh	F	5	85	1	1993	4		4	7		not enough water		yes	Poor	animals intrudes		EDF	no	no	no	production tech.	DAS, DCD		amaranthus, chilli, okra, onion, rice, sesame, shallot, sorrel		none	D500	
		18	Sare Bojo Oukassa	Tesito Kafo	Kumba Sowe	F	20	300	1.5	1990	4		4			EDF wells were in poor stage		yes	Poor	reduced to manageable size	weekly mkt located in village	EDF / WID	no	no	no	no	no	yes	amaranthus, cabbage, fodder trees, lettuce, maize, okra, onion, sorrel, tomato		part of products	no	
		19	Sare Mbye	Kawal Kafo	Rockia Danso	F	3	30	1	1996	2		2	24		one of the wells need redigging		yes	ok	properly maintained	Gambisara Lumo	EDF	no	no	yes	production technics	DAS		bitter tomato, chilli, maize, okra, onion		part of products	D500	12/10/98

Appendix 6.3-2 Vegetable Production Potential Data (2/4)

Ward	Dec Circle	No.	Village	Name of Group	Garden Head	Membership			Area	Year	No. & Type of Wells						Type of Fence				Marketing Place	Main Donor	Type and Number of Trainings Provided						Private Garden	Production		Selling	Main Fund	Visited Date (dd/mm/yy)
						Sex	Male	Female	(ha)	Established	Wells	Local	Lined	Est.depth	W/depth (m)	comments	Local	Improved	Status	comments			Compost	Preservation	Processing/	IPM	Others	Sponsor		Kafo	Private			
Misera	Nawdeh	20	Changally LangKaddy	Women Kafo	Nyima Sise	F	3	40	1	1996	3											EDF											
		21	Dasilameh Mandinka	Women Kafo	Hawa Sako	F	5	100	1.5	1988	3			4	7							Canada Fund / SDF											
		22	Jendeh	Women Kafo	Bakumba Touray	F	180	60	1	1993	4											AFET											
		23	Kuraw Kemo	Women Kafo	Nyima Sise	F	3	40	1	2000	0											SDRD											
		24	Kuraw Kemo	Women Kafo	Funneh Jallow	F	4	40	1	1992	4											VSO / CUSSO											
		25	Mbye Kunda	Women Kafo	Mbayeh		8	60	1	1997	3											EDF / CRS											
		26	Misera	Women Kafo	Mama Jawla	F	7	90	1	1996	3											DAS											
Sutukonding		27	Madina Koto	VDC	Aye Sisay	F	5	200	3	1990	6	2	4	6				yes	poor		Basse market, neighbouring villages		yes	no	yes	production technics	Forestry	yes	bitter tomato, cassava, onion, pepper, sweet potato, tomato	bitter tomato, onion, pepper, sweet potato	part of produces	no	23/07/05
		28	Sutukonding	Badinya Kafo	Jankeh Fayinkeh	F																												
		29	Taibatou	Yiriwa Kafo	Haja Madibasy	F																												
		30	Tuba Wuli	Denkuta Kafo	Haja Faye Camara	F	20	200	0.5	1987												CUSSO											
Basse	Giroba	31	Giroba Kunda	Kan Ben Kafo	Nandinding Damba	F	0	120	2	1996	9		9	2	2	2wells added from 1998 record		yes	ok		Basse Market, Lumos at Sare Ngai, Dingiri, Sare Bojo, Gambisara and Brikama Ba in CRD	WID / EDF	no	no	no	production technics	WID		banana, cassava, rice, sweet potato		part of products	D500	07/05/05
		32	Kaba Kama	Kan Ben Kafo	Kurumba Drammeh	F	2	375	1.5	1980	6		6	2		extended to a new site		yes	fair		Basse market, surrounding villages, weekly markets at Sabi, Gambisara and Sare Bojo	CUSSO / AFET / SDRD	no	no	yes	management and production techs.	DAS		bitter tomato, cabbage, chilli, eggplant, lettuce, onion, okra, sorrel, sweet potato		some of the products	D785	16/12/98
		33	Kanube	Tesito Kafo	Kunferr Jambeng	F	6	170	2	1986	4		4	5		not enough water		yes	poor	barbed wires on the ground	Brikamaba-lumo,Sare Bojo-lumo, F/Bantang	CUSO	no	no	yes	production technics	DAS		bitter tomato, chilli, tomato		last production was in 1995	D500	10/12/98
		34	Koba Kunda	Kan Ben Kafo	Aja Maimumba Baldeh	F	5	96	1	1996	6		6	3		dries quickly		yes	poor	poles are stolen	Basse market	EDF			yes	management and production	DAS, DCD		cabbage, cassava, chilli, sorrel, okra, onion, sweet potato		some of the products	D500	15/12/98
		35	Manne Kunda	Alatento Kafo	Aja Kumba Kora	F	5	240	1	1996	4		4	3	1		0	4	poor		Basse market	SDF / EDF	no	no	yes	management and production	DAS, DCD		cabbage, okra, onion, sorrel, sweet potato		some of the products	no	15/12/98
		36	Mansajang	Jokereh Endam	Amie Touray	F	0	204	1		4											CUSSO											
		37	Mansajang	Tesito Kafo	Aja Katty Wurri Baldeh	F	0	200	2		12											CUSSO											
Dampha Kunda	Fatoto	38	Keneba	Kambel Kafo	Aja Sandeh Nawafi	F	4	306	1	1997	3		3	10				1	poor		none	G.O.T.G / EDF	no	no	no	production technics	DAS		amaranthus, chilli, eggplant, maize, okra, onion		part of products	D1,000	01/12/05
		39	Waliba Kunda	Tesito Kafo	Jenneba Jawo	F	4	110	1	1996	4		4	4				yes	poor	poles broken		EDF / SDF	no	no	no	no	no		no activity			no	23/12/98
	Giroba	40	Dampha Kunda	Yiriwo Kafo	Nabandy Ceesay	F	16	608	1	1997	8		8			no depth indicated		yes	poor	animals intrudes fence	Basse, Soma and Serekunda	EDF	no	no	yes	management and production	DAS, DCD		chilli, okra, sweet potato, tomato		some of the products	no	17/12/98
		41	Saja Kunda	Fandema	Haja Kumbanding Dibasi	F	0	180	2		2											Fandema							amarantus, bitter tomato, cassava, onion, pepper, sweet potato		some of the products		
		42	Sanunding	Fandema	Masaya Drammeh	F	4	196	2	1980	2	0	2	5			no	yes	ok		weekly mk, wellina (Seneal), asse mk, neihouin ill.	Cuso & SDF	yes	yes	yes	yes, seed selection	DAS	none	amarantus, bitter tomato, okra, onion, pepper, sweet potato	none	some of the products		

Appendix 6.3-3 Vegetable Production Potential Data (3/4)

Ward	Dec Circle	No.	Village	Name of Group	Garden Head	Membership			Area	Year	No. & Type of Wells						Type of Fence				Marketing Place	Main Donor	Type and Number of Trainings Provided					Private Garden	Production		Selling	Main Fund	Visited Date (dd/mm/yy)
						Sex	Male	Female	(ha)	Established	Wells	Local	Lined	Est.depth	W/depth (m)	comments	Local	Improved	Status	comments			Compost	Preservation/ Processing	IPM	Others	Sponsor		Kafo	Private			
Dampha Kunda	Giroba	43	Tamba Sansang	Caritas Kafo	Dusu Jamba	F	0	400	2		9											CARITAS											
		44	Waliba Kunda	Tesito Kafo	Sainabou Jawo	F	2	90	3	2003	4		4	6			no	yes	removed by flood		none, because production is low and all is consumed	SDF	no	no	no	no	no	none	amarantus, bitter tomato, cassava, onion, pepper, sweet potato	none	none		
Sare Ngai		45	Barrow Kunda	Yirowa Kafo	Matta Fatti	F	5	370	1	1998	2	2	2	12		not enough water		yes	fair	some of the wires used were taken from an abandoned Action Aid garden	Sare Ngai - Lumo, neighbouring villages	EDF	no	no	yes	production technics	DAS		amaranthus, cassava, chilli, onion, sorrel, sweet popato		part of produces	D600	03/02/99
		46	Foday Kunda	Fandema	Jawaro Jamba	F	7	130	1	1996	2		2	10		toppings were not made by the contractor		yes	fair	repair in progress	Fatoto - Lumo, neighbouring villages	EDF	yes	no	no	n	DLS		amaranthus, bitter tomato, chilli, green, onion, sorrel, sweet potato, tomato		part of produces	D100	02/02/99
		47	Jaa Kunda	Kaira Kafo	Haja Kanku Sanneh	F	2	200	1													CUSSO											
		48	Jaka Medina/Draman	Jaka Medina Yirowa Kafo & Draman Kambeng Kafo	Fanta Jaiteh & Fatou Drammeh	F & F	11	62	1	1997	2		2	15		wells were redug		yes	poor	a watchman is appointed keep animals away	Sare Ngai-Lumo,neighbouring vill.	EDF	yes	no	yes	production technics	DAS		cassava, chilli, maize, okra, onion, sweet potato		part of produces	D700	02/03/99
		49	Kolibantang	Young Farmers Club	Mayang Marena	F	12	150	1.5	1989	2		2	36		8reservoirs, 1tank and solar panels were installed		yes	poor	broken down	Sare Ngai-Lumo,neighbouring vill.	CUSSO	no	no	yes	production technics	DAS		last produce in 1998			no	02/03/99
		50	Limbambulu Yamadou		Faye Camara	F	5	100	1													CUSSO											
		51	Yorro Bawol	Tesito Kafo	Tening Sanneh	F	4	80	1	1997	2		2	35		a catrol-system is put on one of the wells		yes	poor	part of fence has fallen		EDF	yes	no	no	no	DLS		amaranthus, bitter tomato, cabbage, cassava, onion, sesame, tomato		last production was in 1999		02/03/99
	Makamang Kunda	52	Sinchu Sara	SS Women Group	Ansara Jawo	F	2	17	1	1996	3		3	5		low water level		yes	poor	removed by villagers		EDF	no	no	no	no	no					D200	
Sutukonding	Giroba	53	Kerewan		Jonsaba Dansira	F			1.5																							
Kulari	Fatoto	54	kundam Mafatty	Kambeng Kafo	Fenda Drammeh	F	0	136	1.25	1998	0	0	0			Well digging is not started, but comm. Contribution is paid		yes	fair	incomplete		EDF	no	no	no	no	no		production not started yet			D3000	28/12/98
		55	Sare Alpha	Jokereh Endam	Hulleh Damba	F	5	97	1	1996	4		4	5		need redigging		yes	poor			EDF	no	no	no	production technics	DAS		amaranthus, cabbage, onion, sorrel, sweet potato		none	EDF	23/12/98
	Giroba	56	Badarri	Fandema	Sherifo Jawla	F	30	320	3	1999	4		4	4				yes	ok		neighbouring villages, Basse market, Weekly markets at sare Ngai, Sare Bojo, Sabi and Gambisara	Fandema	yes	yes	yes	nursery	Fandema	none	amarantus, bitter tomato, cabbage, cassava, okra, onion, pepper, sweet potato		some of the products	D500	31/12/98

Appendix 6.3-4 Vegetable Production Potential Data (4/4)

Ward	Dec Circle	No.	Village	Name of Group	Garden Head	Membership			Area	Year	No. & Type of Wells						Type of Fence				Marketing Place	Main Donor	Type and Number of Trainings Provided						Private Garden	Production		Selling	Main Fund	Visited Date (dd/mm/yy)
						Sex	Male	Female	(ha)	Established	Wells	Local	Lined	Est.depth	W/depth (m)	comments	Local	Improved	Status	comments			Compost	Preservation	IPM	Others	Sponsor		Kafo	Private			
Foday Kunda	Makamang Kunda	57	Tabajang	Kawral	Oumou Cham	F	10	184	2	2003	2	0	2	6				yes	Poor		Weekly markets - Kossemar & Sare Bojo	Relative in Europe	yes	no	yes	no	DAS	None	eggplant, okra, onion, tomato	none	part of products		
Koina	Fatoto	58	Brikama	Yiriwo Kafo	Teye Sanyang	F	1	35	1	1997	2		2	15				1	poor			EDF	yes	no	yes	nursery preparation	DAS		amaranthus, chilli, okra, onion, sesame, sorghum, sorrel		none	D50	01/01/05
		59	Fantunbu	Women Kafo	Sira Sanyang	F	3	60	0.5		2																						
		60	Fatoto	Women Kafo	Maimuna Drammeh	F																											
		61	Fatoto	Women Kafo			2	87	1.25		3											SDF											
		62	Fatoto Busseh Kunda	Women Kafo	Ida Sanneh	F	6	75	1		3											Holland / Gambia Ass.											
		63	Gedda	Tesito Kafo	Jonkondo Saho	F	3	95	1	1996	2			12		no enough water		1	poor	animals were intruding fence	Koina and Fatoto and Keneba	Fandema & SDF / EDF	no	no	no	production technics			amaranthus, cabbage, carrot, cucumber, eggplant, maize, okra, onion, sweet potato, sorghum, tomato		part of products	D500	01/01/99
		64	Kasi Kunda	Women Kafo	Mbalu Manneh	F	0	200	1	1986	3		3	10				yes		fence eroded away by rains	Neighbouring villages	SDF / EDF	no	no	no	no	no		amaranthus, bitter tomato, chilli, onion, sweet potato, tomato		part of product		01/02/98
		65	Kemambugu	Women Kafo		F	5	82	1		1			1				yes	ok														
		66	Song Kunda	Tesito Kafo	Haja Kanni Sanneh	F	500	800	2	2002	3		3	6				yes	poor	paly emoed as lood		SDF	no	no	no	no			anana, eggplant, omao, onion				
		67	Tubanding	Yiriwo Kafo	Aja Jankeh Hydra	F	4	35	1	1996	2		2	11		water is not enough		yes	ok	well maintained	Neighbouring villages	SDF / EDF	no	no	no	no	no		amaranthus, chilli, eggplant, maize, okra, onion		part of products	D300	02/05/01
Sabi		68	Baniko Ismaila	Jokereh Endam	Haminata Saidy	F	3	45	1	1996	4		4	2				yes	fair	animals intrude fence	Basse mkt,Dingiri-Lumo and Wellingara (Senegal)	EDF	no	no	no	production technics	DAS		banana, chilli, okra, onion, sorrel		part of produces	D1200	16/12/98
	Giroba	69	Sare Bona	Fandema	Gina Mballow	F	2	39	1	1997	4		4	4	4	good		yes				EDF	no	no	no	no	no		no cultivation this year			D500	16/12/98
		70	Sare Sambel	Tesito Kafo	Jabo Jawo	F	4	48	1	1996	4		4	2	4	wells gets dry		yes	poor	fence re-enforced with thorny materials by women	basse mkt,neighbouring vill.	EDF	no	no	yes	production technics	DAS, DCD, AFET		bitter tomato, chilli, onion		part of produces	no	16/12/98
		71	Touba Tafsir	Fandema	Naasanding Jabby	F	2	26	1		6											CARITAS / JICA							amarantus, bitter tomato, cassava, onion, pepper, sweet potato		some of the products		
Gambisara	Makamang Kunda	72	Demba Kunda Kuta	Tesito Kafo	Jarbu Jawo	F	15	700	1	1996	2		2	4		wells are ok		1	ok		Basse mkt, Cassamance(Senegal)	EDF	no	no	yes	production technics	DAS, DCD		amaranthus, lettuce, okra, sorrel		part of products	no	15/12/98
		73	Soutuma Samba Koi	Women Kafo	Kumba Jawo	F	6	59	1	1986	3		3	4	3	poorly constructed		yes	good	well maintained		CUSO	no	no	no	no							
		74	Soutuma Sere	Tesito Kafo	Kanja Touray	F	10	300	1	1984	2		2	6	3	enough water in wells		yes	poor	has fallen down	Basse Market, Numuyel, Gambisara	EDF	no	no	no	production technics	DAS		bean, sesame, sorghum		part of produces	no	12/10/98
Garawol	Fatoto	75	Baragi Kunda	Women Kafo	not indicated		3	93	1	1996	3		3	4				yes	fair			EDF	no	no	no	no			none			no	24/12/98
		76	Kunsunu	no name	Sisay Suko	F	6	96	1	1998	1	1		15				yes	poor		none	EDF	no	no	no	no			cabbage, onion		none	D260	24/12/98
		77	Sami Koto	Women Kafo	Sira Jarra	F	4	130	1	1998	0	0	0			water source is outside garden	yes	no	poor	individual plots fenced		Fandema	no	no	no	no	no		cassava, okra, sorrel, sweet potato, tomato		none	none	
		78	Sami Kuta	Women Kafo			10	125	1.5		4											Fandema											

Appendix 7.1 Estimation Cost of Master Plan Projects

PREMISE		
CONTENT		UNIT PRICE
Exchange Rate		1$ = D 28
Gasoline	Petrol	1 = D 27
	Diesel	1 = D 25
Lecturer	Expert from outside	1day = $ 50
	SMS	1day = D 300
	DEW	1day = D 200
	VEW	1day = D 200
Trainee	Per-diem	1day = D 100
	Accommodation	1day = D 100
Stationery	Notebook, Pen	1set = D 100

Projects		Price	
		Policy -Led	Community Initiative
A	1. Farming Practice Improvement Project	D 1,474,600	-
	2. Seed Replacement Project	D 1,886,400	-
	3. Strengthening Rice Growers Association	D 1,151,880	D 72,000
	4. Promotion of NERICA	D 954,750	-
	5. Study on Pre and Post Harvest of Rice Production	D 1,086,000	-
	6. Compost Farming Project	D 255,920	D 7,700
	7. Fodder Production around Household Project	D 110,250	D 8,700
	8. Improvement of small ruminant production	D 2,746,550	
	9.Women Animal Traction	D 3,840,800	D 50,500
B	10.Small Scale Food Processing/Preservation	D 638,500	D 14,450
	11.Cereal Bank Management	D 1,019,000	D 33,350
	12.Introduction of Labour Saving Devices for Women	D 2,407,620	D 131,090
C	13.Resource Mapping for Extension Workers	D 457,000	-
	14.Training on Livestock Management and Disease Control	D 164,000	-
	15.Coordination Skill Development at Divisional Level	D 270,000	-
	16.Agriculture and Marketing Database	D327,000	-
	17. Training and Promotion of Mixed Farming	D 204,800	-
D	18.Organisation Management Skill Training	D 1,119,000	D 14,000
	19.Entrepreneurial Skill Training		
Projects Promotion Staff D 8,000/month x 12 months x 2 people x 10 years		D 1,920,000	-
TOTAL		D 22,033,070 (88.1 MYen)	

A. Livelihood Improvement Programme
1. Farming Practice Improvement Project
(1) Policy-Led

Item	Content			Cost
Construction of Giroba Training Center	Lecture room	130 m²		
	Kitchen	48 m²		
	Dormitory	234 m²		
	Total	412 m²		D 651,000
2 sets of Computer	Computer	$ 2,000	$ 2,600	
	Printer	$ 500		
	Stabilizer	$ 100		
	$ 2,600 × D 28 / $ × 2 sets			D 145,600
Local consultant	$ 1,000 / month $ 1,000 × 3 months × D 28 / $			D 84,000
Training on Center	Lecturer; Expert $ 50 × 10 days × D 28 / $		D 14,000	
	Per-Diem + Accommodation For DEW and VEW D 200 × 10 days × 20 people		D 40,000	D 54,000
Gasoline (Petrol) for DEW and VEW	100 × 20 people × D 27 / × 10 years			D 540,000
	Total			D 1,474,600

2. Seed Bank Project
(1) Policy-Led

Item	Content			Cost
Subsidy for Quality Seed (with husk)	Exchange Quality Seeds with Farmers' Seeds (Same Quantity) ・Purchasing Price (Quality Seeds) : D 9,000/ton ・Selling Price (Farmers' Seeds) :D 7,000/ton D 2,000 / ton x 5 tons x 10 villages x 9 years			D 900,000
Seed Transportation Fee	Truck Driver D500 x 2days x10villages	D 10,000	D 80,000	
	Truck D3,000x2daysx10villages	D 60,000		
	Gasoline (Diesel) for tracks 20 liter x 2 days x 10villages x D25/liter	D 10,000		
	D 80,000 x 9 years			D 720,000
Training on Extension	Lecturer; Expert $ 50 x 4 days x D 28 / $		D 5,600	
	Per-Diem + Accommodation For SMS, DEW, VEW, Community Representatives D 200 x 4 days x 30 people		D 24,000	
	D 29,600 x 9 years			D 266,400
	Total			D 1,886,400

3. Strengthening Rice Growers Association (LADEP)
(1) Policy-Led

Item	Content		Cost
Training on Strengthening Rice Growers Association for SMS and DEWs	Lecturer; Expert $ 50 × 4 days × D 28 / $	D 5,600	
	Per diem + Accommodation For 3 staffs from 19 LADEP associations and one staff from 4 DEC (sub-total 4 persons) D 200 × (1+4) people × 4 days	D 4,000	D 9,600
Training on Strengthening Rice Growers Association for farmers	Lecturer; SMS or DEW D 300 x 3 days	D 900	
	Per diem D 100 x 20 farmers × 3 days	D 6,000	
	D 6,900 x 19 groups		D 131,100
Material	2.4m² x 500m		
	Cement	D 4,000	
	Sand	D 10,000	
	Gravel	D 6,000	
	D 20,000 x 19 groups		D 380,000
Labour Cost for Repair	20 people x 20 days for one groups D 25 x 20 people x 20 days x 19groups		D 190,000
Gasoline	Extension Workers : 3days for training + 20 days for repair + 20 days for monitoring 20 liter x (3 + 20 + 20) x 19 groups x 27D/liter		D 441,180
	Total		D 1,151,880

(2) Community Initiative

Item	Content	Cost
Training for farmers	Lecturer; SMS D 300 × 5 days × 10 years	D 15,000
Stationery	D 100 × 50 people	D 5,000

Item	Content	Cost
Gasoline (Diesel) for SMS	100 × D 25 × 10 years	D 25,000
Gasoline (Petrol) for VEW	100 × D 27 × 10 years	D 27,000
	Total	D 72,000

4. Promotion of NERICA
(1) Policy-led

Item	Content			Cost
NERICA Research	$ 1,000 per month $ 1,000 × 6 months $ 6,000 × D 28 / $	D 168,000	D 174,250	
	NERICA Seeds D 25 / kg × 250kg	D 6,250		
	D 174,250 × 3 years			D 522,750
Training for Extension	Lecturer; NERICA expert (Included in Research)			
	Per-Diem For Farmers D 100 × 30 people × 5 times × 3 years			D 45,000
Materials for Verification Study	Fence D 2,500 × 10		D 25,000	
	Tractor D 500 × 10	D 5,000	D 56,500	
	Fertilizer D 1,000 × 10	D 10,000		
	Labour D 2,500 × 10	D 25,000		
	Assistant D5,500 × 3people	D 16,500		
	D 56,500 × 3 years = D 169,500			
	D 67,500 + D 169,500			D 237,000
Gasoline (Diesel) for NERICA Research	2,000 × D 25 / × 3 years			D 150,000
	Total			D 954,750

5. Promotion of Rice Production
(1) Policy-led

Item	Content	Cost
Post harvest Expert	$ 1,000 per month $ 1,000 × 10 months × D 28 / $	D 280,000
Agriculture Expert	$ 1,000 per month $ 1,000 × 16 months × D 28 / $	D 448,000
Extension Expert	$ 1,000 per month $ 1,000 × 10 months × D 28 / $	D 280,000
Training for farmers	Trainer; DEW D 200 × 30 days	D 60,000
Gasoline (Diesel) for Experts	20 × (10 + 16 + 10) months 720 × D 25 /	D 18,000
	Total	D 1,086,000

6. Compost Farming Project
(1) Policy-led

Item	Content			Cost
Training on Compost making	Lecturer; SMS D 300 x 3 days		D 900	
	Per-Diem for DEWs and VEWs D 100 x 10 people x 3days		D 3,000	D 3,900
Training for farmers	Lecturer: DEW D 200 × 3 days × 5 villages × 9 years			D 27,000
Material (1 for demonstration 5 villages at each year)	Urea	1 kg	D 7	D 200
	Vinegar	5	D 125	
	Sugar	2.5 kg	D 35	
	Others		D 33	
	D 200 x (1 plot + 5villages × 9 years)			D 9,200
Labour Cost	D 10 x 30 people x 3 days x (1+Σ5t) (Σ5t = 225 (t=9))			D 203,400

Item	Content	Cost
Gasoline (Petrol)	10liter x (1 plot + 5 villages x 9 years) x 27D/liter	D 12,420
	Total	D 255,920

(2) Community Initiative

Item	Content			Cost
Training for farmers	Lecturer; DEW or VEW D 200 × 3 days × 5 times			D 3,000
Material	Urea	1 kg	D 7	
	Vinegar	5	D 125	
	Sugar	2.5 kg	D 35	
	Others		D 33	
	D 200 × 10 years			D 2,000
Gasoline (Petrol) for VEW	10 × D 27 / × 10 years			D 2,700
	Total			D 7,700

7. Fodder Production around Households Project
(1) Policy-led

Item	Content		Cost
Training for fodder production	Lecturer; SMS (DLO)	D 200	
	Trainees; 10 DEW of 5 DEC Per-diem and Accommodation D 100 x 10 people	D 1,000	
	D 1,200 x 5 villages		D 6,000
Seeds	Leucaena; D67/kg x 1kg x 10 people	D 670	
	Legumes; D45/kg x 1kg x 10 people	D 450	
	(D 670 + D 450) x Σ5t villages : Σ5t = 75		D 84,000
Gasoline (Petrol) for DEC	10 liter x Σ5t villages x D 27 / liter : Σ5t = 75		D 20,250
	Total		D110,250

(2) Community-led

Item	Content			Cost
Training	Lecturer; DEW or VEW D 200 × 10 years			D 2,000
Seeds	Leucaena; D67/kg × 2kg	D 134	D 400	
	Legumes; D45/kg × 2kg	D 90		
	Others	D 76		
	D 400 × 10 years			D 4,000
Gasoline (Petrol) for DEW	10 × D 27 / × 10 years			D 2,700
	Total			D 8,700

8. Improvement of small ruminant production
(1) Policy-led

Item	Content			Cost
Intensive Feed Gardens	2,500 m² : D 19,000 x 2 plots			D 38,000
Construction of Small Ruminant Houses	60 m² : D 70,000 x 2 plots			D 140,000
Freezer	2sets x D 50,000			D 100,000
Refrigerator	6set x D 24,000			D 144,000
Gas Tank for Refrigerator	12 tanks x D 900			D 10,800
Cooler	15 sets x D 500			D 7,500
Vaccine	PPR	40,000 doses / year	D 122,000	
	Pateurellosis	40,000 doses / year	D 122,000	
	(D 122,000 + D 122,000) x 5 years			D 1,220,000
Labour Cost for Vaccination	D 300 x 30days x 15 people x 5 years			D 675,000
Gas for Refrigerator	60kg x D700/kg x 5years			D 210,000
Gasoline(Diesel) for DLO	800 liter x D 25 / liter x 5 years			D 100,000

Item	Content	Cost
Gasoline （Petrol） for Livestock Assistants	750 liter x D 27 / liter x 5 years	D 101,250
	Total	D 2,746,550

9. Animal Traction
(1) Policy-led

Item	Content			Cost
Training for farmers	Lecturer; DEW or VEW OJT for farmers D 200 × 4 days		D 800	
Equipment	Seeder	D 7,500	D 81,000	
	Sine-Hoe	D 4,500		
	Donkey	D 1,500		
	D 13,500 × 6 sets			
Transportation	Truck	D 3,000	D 17,000	
	Driver	D 500		
	Gasoline 30liter x 25 D/liter	D 750		
	D 4,250 x 4 days			
Spare Parts for implements	D 3,000 x 6 sets		D18,000	
Fertilizer for 6 years	D 340 x 0.7ha x 30 people x 6 years/village		D 42,840	
Gasoline（Petrol） for VEW	200 liter x 27 D / liter x 6 years/village		D 32,400	D 192,040
	5 villages x 4 times			
	Total			D 3,840,800

(2) Community-led

Item	Content		Cost
Training for farmers	Lecturer; VEW OJT for farmers D 200 × 5 days × 2 times		D 2,000
Equipment	Donkey	D 1,500	
	Seeder	D 7,500	
	Sine-Hoe	D 4,500	D 13,500
Deposit for Repair	(Collecting Task Fee) D 300 × 10 years		D 3,000
Cart	Cart Rent for transportation		D 5,000
Gasoline（Petrol） for VEW	10 × 10 times × D 27 / × 10 years		D 27,000
	Total		D 50,500

10. Small Scale Food Processing/Preservation
(1) Policy-led

Item	Content			Cost
Training for trainers	Lecturer; Expert Place; Banjul $ 50 x 5 days x D 28 / $		D 7,000	
	Per-diem + Accommodation for DEWs and VEWs D 200 x 5 days x (4+12) people		D 16,000	D 23,000
Training for farmers	Lecturer; SMS, DEW, or VEW D 300 x 2 days		D 600	
	Per-Diem, D100 x2days x10 people		D 2,000	
	D 2,600 x 5 villages x 10 years			D 130,000
Kitchen Utensils	Pan	D 300	D 2,350	
	Stove etc. Firing Place	D 2,000		
	Folk D25 × 2	D 50		
	D 2,350 x 5 villages x 10years			D 117,500
Stationery	D 100 x 1set/villge x 5 villages x 10 years			D 5,000
Labour Cost	D 10 x 2 days x 10 people x Σ5t villages : Σ5t = 275 (t=10)			D 55,000

Item	Content			Cost
Materials	Salt and/or Pepper	D 50	D 850	
	Charcoal	D 300		
	Bottles D 5 × 100 bottles	D 500		
	D 850 x Σ5t villages : Σ5t = 275 (t=10)			D 233,750
Gasoline（Diesel） for SMS	10 liter x 27D/liter x Σ5t villages : Σ5t = 275 (t=10)			D 74,250
	Total			D 638,500

(2) Community Initiative

Item	Content			Cost
Training for farmers	Lecturer; SMS D 300 × 5 days			D 1,500
Stationery	D 100 × 50 people			D 5,000
Materials	Salt and/or Pepper	D 100	D 350	
	Charcoal	D 100		
	Bottles D 5 × 30 bottles	D 150		
	D 350 × 10 years			D 3,500
Kitchen Utensils	Pan		D 100	
	Stove		D 3,000	
	Folk D25 × 2		D 50	D 3,150
Gasoline（Petrol） for VEW	10 × 5 days × D 26 /			D 1,300
	Total			D 14,450

11. Cereal Bank Management
(1) Policy-led

Item	Content			Cost
Training for Extension Staffs	Lecturer; Cereal Bank Expert OJT for Cereal Bank Management $ 50 x 10days x D 28 / $		D 14,000	
	Per-Diem + Accommodation D 200 x 30people x 10days		D 60,000	D 74,000
Training for Farmers by DEW and VEW	Lecturer		D 300	
	Per Diem : D 100 x 10 people		D 1,000	
	D 1,300 x 5 villages x 9 years			D 58,500
Repair of store	Door	D 3,500	D 5,350	
	Corrugate	D 1,650		
	cement	D 200		
	D 5,350 x 5 villages x 9years			D 240,750
Labour Cost for Repair	D 100 x 30 days x 5 villages x 9 years			D 135,000
Labour Cost for Management	D 100 x 20 man･days x Σ5t : Σ5t = 225 (t=9)			D 450,000
Gasoline（Petrol） for DEW	10 liter x 27D/liter x Σ5t : Σ5t = 225 (t=9)			D 60,750
	Total			D 1,019,000

(2) Community Initiative

Item	Content		Cost
Training for farmers	Lecturer; DEW OJT for Cereal Bank Management D 200 × 5 days		D 1,000
Repair of store	door	D 3,500	
	corrugate	D 1,650	
	cement	D 200	D 5,350
Gasoline（Petrol） for DEW	100 × D 27 / × 10year		D 27,000
	Total		D 33,350

12. Introduction of Labour Saving Devices for Women
(1) Policy-led

Item	Content		Cost
Machine	・3 threshing and milling machines in the north bank D 60,000 × 3machines = D180,000 ・3 rice polishing machines in the south bank D 60,000 × 6machines = D180,000		D 360,000
Cabin	5m × 6m = 30m^2 unit cost D1,423/m^2 D 1,423/m^2 × 30m^2 = D42,690 D 42,690 × 6 machines		D256,140
Training on Management	Lecturer; SMS	D 300	
	Per-diem D 100 x 50 people	D 5,000	
	Targeting 10 neighbor villages expecting people from the installed village to participate one of them D 5,300 x 6 machines x 10 villages		D 318,000
Labour Cost Cabin Settlement	D 100 x 30 people･days x 6 cabins		D 18,000
Labour Cost for Management	(2machines/4th year + 4machines/5th year + 6machines/6th year + 6 machines/7th year + 6 machines/8th year + 6 machines/9th year + 6 machines/10th year) = 36 machines･years D 100 x 100 people･days x 36 cabins･years		D 360,000
Deposit for Future Repair	(D100x 3days for collecting + D 50 x 50 people) x 36 machines･years x 10 villages		D 1,008,000
Gasoline (Petrol) for DEW or VEW	90 liter x 36machines･years x D 27 / liter		D 87,480
		Total	D 2,407,620

(2) Community Initiative

Item	Content	Cost
Training for Managers	Lecturer; DEW or VEW Lecture on Accounting (2days) and Operation (3days) D 200 × 5 days	D 1,000
Training for farmers	Lecturer; DEW or VEW D 200 × 2 days	D 400
Machine	Threshing and milling machine or Rice polishing machine	D 60,000
Mill House	5m × 6m = 30m^2 unit cost D1,423/m^2 D 1,423/m^2 × 30m^2	D 42,690
Deposit for Repair	Collecting Task Fee : D 300 × 10 years	D 3,000
Gasoline (Petrol) for DEW or VEW	100 × D 27 / × 10 years	D 27,000
	Total	D 131,090

13. Resource Mapping for Extension Workers
(1) Policy-led

Item	Content		Cost
Training on Resource Mapping Development	Lecture; Expert from outside $50 × 5 days × 2times × D 28/ $	D 14,000	
	Per-Diem for VEW D 200 × 14 Wards × 2 people × 5 days × 2 times	D 56,000	D 70,000
Management	Researching Fee for VEW (Training Attendants + 2 other = 30) D 50 × 100 days × 30 people		D 150,000

Item	Content	Cost
Stationery	D 100 × 5 sets × 30 people	D 15,000
Materials	Paper, Paint D 200 × 300 villages	D 60,000
Gasoline(Petrol) for VEW	10 × 20 days × 30 people × D 27 /	D 162,000
	Total	D 457,000

14. Training on Livestock Management and Disease Control
(1) Policy-led

Item	Content	Cost
Training on Livestock	Lecturer; Livestock Specialist $ 50 × 10 days × 2 times $ 1,000 × D 28 / $	D 28,000
Lecture on Veterinary	Lecturer; Veterinary $ 50 × 10 days $ 500 × D 28 / $	D 14,000
Training for Livestock-Related people	Per-Diem + Accommodation D 200 × 20 people × (10 × 2 + 10) days	D 120,000
Stationery	D 100 × 20 people	D 2,000
	Total	D 164,000

15. Coordination Skill Development at Divisional Level
(1) Policy-led

Item	Content	Cost
Computer	Computer	-
Gasoline (Petrol) for Research Staffs	1,000 × D 27 / × 10 years	D 270,000
	Total	D 270,000

16. Agriculture and Marketing Database
(1) Policy-led

Item	Content		Cost
Training on Marketing Database Development	Lecturer; Marketing Expert $ 50 × 10 days × D 28 / $	D 14,000	
	Per-Diem + Accommodation D 200 × 10 days × 20 people	D 40,000	D 54,000
Stationery	D 100 × 30 people		D 3,000
Gasoline (Petrol) for Research Staffs	1,000 × D 27 / × 10 years		D 270,000
	Total		D 327,000

17. Training and Promotion of Mixed Farming
(1) Policy-led

Item	Content		Cost
Training for Extension Staffs	Lecturer; Expert on Mixed Farming $ 50 × 5 days × D 28 / $	D 7,000	
	Per-diem + Accommodation For all DEC staffs (23 people) D 200 × 23 persons × 5 days	D 23,000	D 30,000
Stationery	D 100 × 23 people		D2,300
Gasoline(Diesel) for DEC staffs	30 × 23 people × D 25 / × 10 years		D 172,500
		Total	D 204,800

18. Organization Management Skill Training
19. Entrepreneurial Skill Training
(1) Policy-led

Item	Content			Cost
Training on Organization	Lecturer: Expert on organization $ 50 × 2 days × D 28 / $	D 2,800	D 10,800	
	Per-Diem + Accommodation For SMS, DEW D 200 × 2 days × 5 people	D 2,000		
	Lecturer; SMS, DEW D 300 × 2 days × 5 plots ×10 years	D 30,000	D 430,000	
	Per-Diem + Accommodation For VEW, farmers D 200 × 2 days × 20people × 5 plots ×10years	D 400,000		D 440,800
Training on Business Skill	Lecturer; Expert on Business Skill $ 50 × 2 days × D 28 / $	D 2,800	D 9,600	
	Per-Diem + Accommodation For SMS, DEW D 200 × 2 days× 5 people	D 2,000		
	Lecturer; SMS, DEW D 300 × 3 days × 5 plots ×10years	D 45,000	D 645,000	
	Per-Diem For VEW, farmers D 200 × 3 days × 20people × 5 plots ×10years	D 600,000		D 654,600
Participatory Development Expert	Lecturer; Expert on Participatory Development $ 50 × 4 days × D 28 / $		D 5,600	
	Per-Diem + Accommodation For SMS, DEW D 200 × 4 days × 5people		D 4,000	D 9,600
Stationery	D 100 × 10sets × 14 Wards			D 14,000
			Total	D 1,119,000

(2) Community Initiative

Item	Content	Cost
Training on Organization	Lecturer; DEW Training to Community Representatives D 200 × 3 days × 5 times	D 3,000
Training on Business Skill	Lecturer; DEW Training to Community Representatives D 200 × 3 days × 5 times	D 3,000
Participatory Development Expert	Training to Community Representatives D 200 × 3 days × 5 times	D 3,000
Stationery	D 100 × 50 people	D 5,000
	Total	D 14,000

Appendix 7.2 Benefit and Cost of Each Project

Programmes and Projects \ Year		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total (Fiscal Value)	Total (Net Present Value@ 15.0%)
A. Livelihood Improvement Programme	Cost	3,088,240	1,732,540	1,806,690	1,732,240	2,167,690	924,990	698,790	550,590	492,390	174,240	13,368,400	9,518,743
	Benefit	61,200	1,885,225	2,448,050	3,010,875	3,475,700	3,729,700	2,702,700	2,943,200	3,183,700	3,424,200	26,864,550	13,661,904
	Net benefit	**-3,027,040**	**152,685**	**641,360**	**1,278,635**	**1,308,010**	**2,804,710**	**2,003,910**	**2,392,610**	**2,691,310**	**3,249,960**	**13,496,150**	**4,143,160**
1. Farming Practice Improvement Project	Cost	988,600	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	1,474,600	1,246,266
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-988,600**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-54,000**	**-1,474,600**	**-1,246,266**
2. Seed Replacement Project	Cost	209,600	209,600	209,600	209,600	209,600	209,600	209,600	209,600	209,600	0	1,886,400	1,150,143
	Benefit	0	98,000	196,000	294,000	294,000	294,000	294,000	294,000	294,000	294,000	2,352,000	1,158,309
	Net benefit	**-209,600**	**-111,600**	**-13,600**	**84,400**	**84,400**	**84,400**	**84,400**	**84,400**	**84,400**	**294,000**	**465,600**	**8,166**
3. Strengtheing Rice Growers Association	Cost	69,720	120,240	120,240	120,240	120,240	120,240	120,240	120,240	120,240	120,240	1,151,880	643,455
	Benefit	61,200	122,400	122,400	122,400	122,400	122,400	122,400	122,400	122,400	122,400	1,162,800	645,242
	Net benefit	**-8,520**	**2,160**	**2,160**	**2,160**	**2,160**	**2,160**	**2,160**	**2,160**	**2,160**	**2,160**	**10,920**	**1,787**
4. Promotion of NERICA	Cost	338,800	238,600	238,600								816,000	726,694
	Benefit	0	233,000	466,000	699,000	932,000	1,165,000	1,398,000	1,631,000	1,864,000	2,097,000	10,485,000	4,549,651
	Net benefit	**-338,800**	**-5,600**	**227,400**	**699,000**	**932,000**	**1,165,000**	**1,398,000**	**1,631,000**	**1,864,000**	**2,097,000**	**9,669,000**	**3,822,957**
5. Study on Pre and Post Harvest of Rice Production	Cost		0	0	0	918,000	168,000	0	0	0	0	1,086,000	608,395
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**0**	**0**	**0**	**0**	**-918,000**	**-168,000**	**0**	**0**	**0**	**0**	**-1,086,000**	**-608,395**
6. Compost Farming Project	Cost	15,120	14,350	18,850	23,350	27,850	32,350	36,850	41,350	45,850	0	255,920	135,676
	Benefit	0	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	337,500	146,448
	Net benefit	**-15,120**	**-6,850**	**-3,850**	**-850**	**2,150**	**5,150**	**8,150**	**11,150**	**14,150**	**67,500**	**81,580**	**10,772**
7. Fodder Production around Household Project	Cost	8,150	15,100	22,050	29,000	35,950	0	0	0	0	0	110,250	77,576
	Benefit	0	13,500	27,000	40,500	54,000	67,500	0	0	0	0	202,500	123,219
	Net benefit	**-8,150**	**-1,600**	**4,950**	**11,500**	**18,050**	**67,500**	**0**	**0**	**0**	**0**	**92,250**	**45,643**
8. Improvement of small ruminant production	Cost	901,550	461,250	461,250	461,250	461,250	0	0	0	0	0	2,746,550	2,218,409
	Benefit	0	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	0	0	0	0	6,000,000	4,022,586
	Net benefit	**-901,550**	**738,750**	**738,750**	**738,750**	**738,750**	**1,200,000**	**0**	**0**	**0**	**0**	**3,253,450**	**1,804,177**
9.Women Animal Traction	Cost	556,700	619,400	682,100	834,800	340,800	340,800	278,100	125,400	62,700	0	3,840,800	2,712,130
	Benefit	0	210,825	421,650	632,475	843,300	843,300	843,300	843,300	843,300	843,300	6,324,750	3,016,450
	Net benefit	**-556,700**	**-408,575**	**-260,450**	**-202,325**	**502,500**	**502,500**	**565,200**	**717,900**	**780,600**	**843,300**	**2,483,950**	**304,320**
B. Improvement of Living Condition Programme	Cost	188,450	109,400	127,350	543,540	642,350	741,160	441,730	459,680	477,630	333,830	4,065,120	2,087,831
	Benefit	20,000	75,700	131,400	187,100	467,800	748,500	1,029,200	1,084,900	1,140,600	1,196,300	6,081,500	2,513,541
	Net benefit	**-168,450**	**-33,700**	**4,050**	**-356,440**	**-174,550**	**7,340**	**587,470**	**625,220**	**662,970**	**862,470**	**2,016,380**	**425,709**
10.Small Scale Food Processing/Preservation	Cost	54,850	38,450	45,050	51,650	58,250	64,850	71,450	78,050	84,650	91,250	638,500	335,699
	Benefit	20,000	40,000	60,000	80,000	100,000	120,000	140,000	160,000	180,000	200,000	1,100,000	505,960
	Net benefit	**-34,850**	**1,550**	**14,950**	**28,350**	**41,750**	**55,150**	**68,550**	**81,950**	**95,350**	**108,750**	**461,500**	**170,260**
11.Cereal Bank Management	Cost	133,600	70,950	82,300	93,650	105,000	116,350	127,700	139,050	150,400	0	1,019,000	593,632
	Benefit	0	35,700	71,400	107,100	142,800	178,500	214,200	249,900	285,600	321,300	1,606,500	697,092
	Net benefit	**-133,600**	**-35,250**	**-10,900**	**13,450**	**37,800**	**62,150**	**86,500**	**110,850**	**135,200**	**321,300**	**587,500**	**103,461**
12.Introduction of Labour Saving Devices for Women	Cost	0	0	0	398,240	479,100	559,960	242,580	242,580	242,580	242,580	2,407,620	1,158,500
	Benefit	0	0	0	0	225,000	450,000	675,000	675,000	675,000	675,000	3,375,000	1,310,488
	Net benefit	**0**	**0**	**0**	**-398,240**	**-254,100**	**-109,960**	**432,420**	**432,420**	**432,420**	**432,420**	**967,380**	**151,988**
C. Technical support Services Strengthening Programme	Cost	781,550	71,250	71,250	71,250	71,250	71,250	71,250	71,250	71,250	71,250	1,422,800	1,121,525
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-781,550**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-71,250**	**-1,422,800**	**-1,121,525**
13.Resource Mapping for Extension Workers	Cost	457,000	0	0	0	0	0	0	0	0	0	457,000	457,000
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-457,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-457,000**	**-457,000**
14.Training on Livestock Management and Disease Control	Cost	164,000	0	0	0	0	0	0	0	0	0	164,000	164,000
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-164,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-164,000**	**-164,000**
15.Coordination Skill Development at Divisional Level	Cost	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	270,000	155,833
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-270,000**	**-155,833**
16.Agriculture and Marketing Database	Cost	84,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	327,000	212,833
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-84,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-27,000**	**-327,000**	**-212,833**
17. Training and Promotion of Mixed Farming	Cost	49,550	17,250	17,250	17,250	17,250	17,250	17,250	17,250	17,250	17,250	204,800	131,860
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-49,550**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-17,250**	**-204,800**	**-131,860**
D. Capacity Building Programme for Community	Cost	138,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	1,119,000	658,525
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-138,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-1,119,000**	**-658,525**
18.Organisation Management Skill Training 19.Entrepreneurial Skill Training	Cost	138,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	108,900	1,119,000	658,525
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-138,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-108,900**	**-1,119,000**	**-658,525**
Projects Promoting Staff (D 8,000/month × 2 people)	Cost	192,000	192,000	192,000	192,000	192,000	192,000	192,000	192,000	192,000	192,000	1,920,000	1,108,144
	Benefit	0	0	0	0	0	0	0	0	0	0	0	0
	Net benefit	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-192,000**	**-1,920,000**	**-1,108,144**
Total (Fiscal Value)	Cost	4,197,140	2,022,090	2,114,190	2,455,930	2,990,190	1,846,300	1,320,670	1,190,420	1,150,170	688,220	19,975,320	13,386,625
	Benefit	81,200	1,960,925	2,579,450	3,197,975	3,943,500	4,478,200	3,731,900	4,028,100	4,324,300	4,620,500	32,946,050	16,175,444
	Net benefit	**-4,115,940**	**-61,165**	**465,260**	**742,045**	**953,310**	**2,631,900**	**2,411,230**	**2,837,680**	**3,174,130**	**3,932,280**	**12,970,730**	**2,788,819**
Total (Net Present Value @15.0%)	Cost	4,197,140	1,758,339	1,598,631	1,614,814	1,709,651	917,937	570,962	447,523	375,993	195,635	13,386,625	
	Benefit	81,200	1,705,152	1,950,435	2,102,720	2,254,709	2,226,457	1,613,403	1,514,312	1,413,621	1,313,434	16,175,444	
	Net benefit	**-4,115,940**	**-53,187**	**351,803**	**487,907**	**545,058**	**1,308,519**	**1,042,441**	**1,066,789**	**1,037,629**	**1,117,799**	**2,788,819**	

NPV= 2,788,819
B/C = 1.21
IRR = 25.3%

A. Livelihood Improvement Programme
2. Seed Replacement Project

1. Cost

Quality seeds will be purchased at D 9,000 / ton and current farmers' seeds will be sold at D 7,000 / ton, and this price difference will be compensated by subsidies.

Training on seed replacement project together with quality seeds provision will be conducted once for one year, inviting representatives, VEWs, DEW, or SMS from all the involved village of that year.

Year	Item	Content	Cost	
1st ～ 9th Year	Training for extension	($50 x 28 D/$ + D 200 x 30 people) x 4days	D 29,600	D 209,600
	Subsidy for quality seeds	D 2,000/ton x5tons x10villages	D 100,000	
	Seeds Transportation Fee	Truck, Truck Driver, Diesel (D 3,000 + D 500 + 20 liters x 25 D/l) x2days x 10 villages	D 80,000	

2. Benefit

Yield will increase by 10%, based on the observation of Jaka Madina's production increase from 1ton/ha to 1.26ton/ha and reasoning of weather fluctuation.

Thus, average production from 1ton seeds will increase from 14.3 ton to 15.7 ton.

High production will be performed for three years after the replacement, as it is said that seeds quality can be maintained three years.

Year	Item	Content	Benefit
1st Year	Production has not attained yet	-	D 0
2nd Year	Production increase	D7,000 x (15.7 - 14.3) ton x 10 villages	D 98,000
3rd Year	Production increase	D7,000 x (15.7 - 14.3) ton x 10 villages x 2 times	D 196,000
4th ～ 10th Year	Production increase	D7,000 x (15.7 - 14.3) ton x 10 villages x 3 times	D 294,000

A. Livelihood Improvement Programme
3. Strengthening Rice Growers Association

1. Cost

There are 19 groups helped under LADEP and the same groups are the target of this project.

Trainings for SMS and DEW from each district in URD will be conducted in the first year.

Every 2 groups except for 1 group for the first year will be strengthened by SMS and DEW every year for ten years.

For strengthening, repair of facilities and training for farmers on how to use the facilities will be conducted.

SMS or DEW will visit the group 3 days at training, 20 days at repair conduction, and 20 days for monitoring.

Year	Item	Content	Cost	
1st Year	Training for SMS and DEWs	($50 x 28D/$ + D 200 x (1+4) people) x 4 days	D 9,600	D 69,720
	Training for farmers by DEWs	(D300 +D100 x 20farmers) x 3 days x 1 group	D 6,900	
	Material for repair	2.4 m^2 x 500m x 1group Cement, Sand, Gravel (D4,000 + D10,000 + D6,000) x 1group	D 20,000	
	Labour Cost for repair conducted by farmers	D 25 x 20 people x 20days	D 10,000	
	Gasoline	20 liter x (3+20+20) days x 1 groups x 27D/l	D 23,220	
2nd ～ 10th Year	Training for farmers by DEWs	(D300 +D100 x 20farmers) x 3 days x 2 group	D 13,800	D 120,240
	Material for repair	2.4 m^2 x 500m x 2group Cement, Sand, Gravel (D4,000 + D10,000 + D6,000) x 2group	D 40,000	
	Labour Cost for repair conducted by farmers	D 25 x 20 people x 20days x 2 groups	D 20,000	
	Gasoline	20 liter x (3+20+20) days x 2 groups x 27D/l	D 46,440	

2. Benefit

One group of farmers produce D 408,000 annually, assuming average yield is 1.7 ton / ha, one group cultivates 20ha, and selling price of rice is D 12,000 / ton.

When facilities get broken, farmers loose production, as floods come into their paddy field. Here, the distraction amount is assumed to be 20% of the production.

Farmers can save this amount by repairing the facility, and here it is assumed that this distraction will occur in the implemented year when facility repair and strengthening of farmers' association is conducted.

As such distraction does not occur frequently, this benefit is counted only once for one group.

Year	Item	Content	Benefit
1st Year	Production Saving	1.7 ton / ha x 20 ha x D 12,000 / ton x 15% x 1 group	D 61,200
2nd ～ 10th Year	Production Saving	1.7 ton / ha x 20 ha x D 12,000 / ton x 15% x 2 groups	D 122,400

A. Livelihood Improvement Programme
4. Promotion of NERICA

1. Cost

This project aims to continue verification project for three years.

First year, 125cc motorcycle will be installed.

Year	Item	Content	Cost	
1st Year	Consultant	Conduct V/S, Lectur for quality seed	D 168,000	D 338,650
	Imput and transportation	Plough, Seed, Fertilizer, Pick-up	D 11,400	
	Mobility for Consultant	Motorcycle, Fuel, Insurance, etc.	D 139,750	
	Casual labour	Field work	D 15,000	
	Petrol	for Extension staff	D 4,500	
2nd ～ 3rd Year	Consultant	Conduct V/S, Lectur for quality seed	D 168,000	D 238,650
	Imput and transportation	Plough, Seed, Fertilizer, Pick-up	D 11,400	
	Mobility for Consultant	Fuel, Insurance, etc.for Motorcycle	D 39,750	
	Casual labour	Field work	D 15,000	
	Petrol	for Extension staff	D 4,500	

2. Benefit

Assuming yield of upland rice will increase from 1.3ton/ha to 2.0ton/ha.(Results taken in 2004/2005 season show the yield between 1.7ton/ha and 2.5ton/ha in on-farm trials with fertilizer application, it is plausible assumption.)

0.5% of present upland field, such as for groundnut, sorghum, millet, maize or ordinary upland rice, will be newly converted to NERICA field every year.

Farmers can access tractor plough service, chemical fertilizers and quality seed. Seed will be renewed every 4 years.

Change in 1st year, 0.5% of upland converted to NERICA farm (with project)[1]

	Area Cultivated (ha)	Yield (ton/ha)	Price (D/ton)	Gross Income (D '000)	Input Increment(D '000)	Net Income (D '000)
NERICA	283	1.36 *	12,020	4,626	- 1,730	2,896
Upland rice	1,533	0.9044 *	12,020	16,665	0	16,665
Sorghum	16,566	1.00	7,480	123,912	0	123,912
Millet	12,468	1.21	7,430	112,094	0	112,094
Maize	9,021	1.50	7,520	101,753	0	101,753
Groundnut	16,707	1.29	8,100	174,571	0	174,571
total	56,578			533,188		531,891

*: converted to polished rice by the rate of 0.68

The incremental income from without project to with project, D 233,000 is an annual benefit.

[1] Data of cropping area, crop production and price of commodities are quoted from "2004/2005 National Agricultural Sample Survey –Statistical Yearbook Gambian Agriculture-".

A. Livelihood Improvement Programme
6. Compost Farming Project

1. Cost

First year, demonstration will be conducted by SMS for DEWs and VEWs at demonstration site.

Then, DEWs and VEWs will train farmers at 5 villages every year.

Farmers purchase some materials and collect animal dung, straw, soil, water, etc, and they will make 1ton of compost. Ten tons of composts can be made with the following materials, and they will continue to use compost once they started with input material at the initial year.

As trainings for farmers will be conducted three days with intervals, per-diem will not be provided.

Year	Item	Content	Cost	
1st Year	Training for DEWs and VEWs	(D 300 + D 100 x 10 people) x 3 days x 1demonstration site	D 3,900	D 15,120
	Training for farmers by DEW and VEWs	D 200 x 3 days x 5 villages	D 3,000	
	Material at (1+5) villages	Urea 1kg, Vinegar 5l, Sugar 2.5kg, etc. D7 + D125 + D35 (+D33) =D200 x (1+5) villages	D 1,200	
	Gasoline for (1+5) villages	10liter x (1 site + 5 villages) x 27D/l	D 1,620	
	Labour Cost at (1+5) villages	D10 x 30people x 3days x (1 site + 5 villages)	D 5,400	
2nd ～ 9th Year	Training for farmers by DEW and VEWs	D 200 x 3 days x 5 villages	D 3,000	D 9,850
	Material at 5 villages	Urea 1kg, Vinegar 5l, Sugar 2.5kg, etc. D7 + D125 + D35 (+D33) =D200 x (1+5) villages	D 1,000	
	Gasoline for 5 villages	10liter x 5 villages x 27D/l	D 1,350	
	Labour Cost at 5 villages	D10 x 30people x 3days x 5villages	D 4,500	
■ part will increase by this amount every year				

2. Benefit

All the results are based on the assumption that there are 30 farmers will be involved in this project in one village.

Benefit will be observed in the following year, as the production takes time after planting.

Farmers at trained villages use compost and increase their income.

It can be assumed that a farmer will use about 30kg to his/her garden, whose plot size can be regarded as about $30m^2$, and increase income by D 50 in average by selling the increased production.

Year	Item	Content	Benefit
1st Year	Production has not completed yet	-	D 0
2nd～10th Year	Additional production increase at trained villages	D 50 x 30 people x 5 villages	D 7,500
■ part will increase by this amount every year			

A. Livelihood Improvement Programme
7. Fodder Production around Household Project

1. Cost

SMS, DEWs and VEWs will train how to produce fodder around households at 5 villages every year.

Ten households in every village will produce both Laucaena and Legumes around their households.

Villagers who got training will continue fodder production once trained.

Year	Item	Content	Cost	
1st ～ 5th Year	Training for fodder production	(D200 + D100 x 10 people)	D 1,200	D 8,150
	Laucaena seeds for 5 villages	D67/kg x 1kg x 10 people x 5 villages	D 3,350	
	Legumes seeds for 5 villages	D45/kg x 1kg x 10 people x 5 villages	D 2,250	
	Gasoline for 5 villages	10liter x 5 villages x 27D/l	D 1,350	
■ part will increase by this amount every year				

2. Benefit

As fodder is nutrient, Laucaena and Legumes can be assumed to work as supplements for small ruminants.

Thus, mortality rate will reduce by providing fodders and here it is assumed to be 1%.

Assuming there are 150 small ruminants every village, 1.5 out of them can survive and be sold.

One small ruminant costs D 1,800.

The effect is observed from the following year after provision.

Year	Item	Content	Benefit
1st Year	The effect is not observed yet	-	D 0
2nd Year	Value of survived small ruminants	D1,800 x 1.5heads x5villages	D 13,500
3rd～6th Year	Value of survived small ruminants	D1,800 x 1.5heads x5villages	D 13,500
■ part will increase by this amount every year			

A. Livelihood Improvement Programme
8. Improvement of small ruminant production Project

1. Cost

The project will target all the URD but the facilities will be installed in Sandu District.

The project will be implemented for 5 years.

It is assumed that there are 40,000 small ruminants in URD.

In the first year, all the facilities will be constructed, including feed gardens, small houses, freezers, refrigerators, gas tanks, and coolers.

Vaccination will be conducted for 30 days by 15 people for all the small ruminants in URD.

For five years, vaccines and essential materials for vaccination will be invested.

Year	Item	Content	Cost	
1st Year	Preparation of intensive feed gardens	2,500 m^2 , 2 plots ; D 19,000 each	D 38,000	D 440,300
	Construction of small ruminant houses	60 m^2 ,2 plots ; D 70,000 each	D 140,000	
	Freezer	2 sets ; D 50,000 each	D 100,000	
	Refrigerator	6 sets ; D 24,000 each	D 144,000	
	Gas Tank for Refrigerator	12 tanks ; D 900 each	D 10,800	
	Cooler	15 sets ; D 500 each	D 7,500	
1st ～ 5th Year	Medicine for PPR	40,000 doses	D 122,000	D 461,250
	Medicine for Pateurellosis	40,000 doses	D 122,000	
	Labour Cost for Vaccination	D 300 x 30 days x 15 people	D 135,000	
	Gas for Refrigerator	60 kg x D 700 / kg	D 42,000	
	Gasoline (Diesel)	800 liter x D 25 / liter	D 20,000	
	Gasoline (Petrol)	750 liter x D 27 / liter	D 20,250	

2. Benefit

The mortality rate of small ruminants is currently 20% and it will be able to decrease to 5% with vaccination, based on information from the DLO. Thus, additional 6,000 heads out of 40,000 can survive.

As the vaccination is effective especially for juveniles, it can be assumed that 6,000 juvenile small ruminants can survive and be sold to the market at D 200 / head.

The effect will be observed from the following year.

Year	Item	Content	Benefit
1st Year	Effects cannot be observed yet	-	D 0
2nd ～ 6th Year	Income increase by selling survived animals	D 200 x 6,000 heads	D 1,200,000

A. Livelihood Improvement Programme
9. Women Animal Traction Project

1. Cost

This is the project cost for the first 5 villages starting in 2006.

The input from the project is only 6 years for each village.

From 2007 up to 2010, every year new 5 villages will participate in this project.

The total number of target village will be 20.

The project cost by year as a whole is as follows;

Year	Item	Content	Cost	
1st Year	Training	D200 x 4 days x 5 villages	D 4,000	D 556,700
	Seeder	D7,500 x 6sets x 5villages	D 225,000	
	Sinehoe	D4,500 x 6sets x 5villages	D 135,000	
	Donkey	D1,500 x 6heads x 5villages	D 45,000	
	Transport of implements etc.	Rent for Truck, Driver, Gasoline (D 3,000 + D 500 + 30liters x 25D/l) x 4days x 5villages	D 85,000	
	Fertiliser	D340 x 0.7ha x 30people x 5villages	D 35,700	
	Petrol for extension workers	200litre x 27 D/litre x 5villages	D 27,000	
2nd ～ 3rd Year	Fertiliser	D340 x 0.7ha x 30persons x 5villages	D 35,700	D 62,700
	Petrol for extension workers	200litre x 27 D/litre x 5villages	D 27,000	
4th Year	Spare parts for implements	D3,000 x 6sets x 5villages	D 90,000	D 152,700
	Fertiliser	D340 x 0.7ha x 30persons x 5villages	D 35,700	
	Petrol for extension workers	200litre x 27 D/litre x 5villages	D 27,000	
5th ～ 6th Year	Fertiliser	D340 x 0.7ha x 30persons x 5villages	D 35,700	D 62,700
	Petrol for extension workers	200litre x 27 D/litre x 5villages	D 27,000	

2. Benefit

Incremental income (Net benefit of with - Net benefit of without) can be assumed to be 1405.5D/person [2]

This is the project benefit only for the first 5 villages. The benefit stream as a whole is as follows;

Year	Item	Content	Benefit
1st Year	No production has attained yet.		D 0
2nd ～ 5th Year	Incremental income	D1405.5 x 30persons x 5villages	D 210,825
6th ～ 10th Year	Income increase	D1405.5 x 30persons x 5villages x4times	D 843,300
■ part will increase by this amount every year			

B. Improvement of Living Condition Programme
10. Small Scale Food Processing / Preservation

1. Cost

First year, training for DEWs and VEWs will be conducted for five days.

Then, DEWs and VEWs train the farmers at 5 villages, following another 5 villages from the following year.

Farmers are assumed to continue using the method once they started.

Year	Item	Content	Cost	
1st Year	Training for DEW and VEW by experts	($ 50 x 28D/$ + D200 × (4+12) people) x 5 days	D 23,000	D 23,000
1st ～ 10th Year	Training for farmers by DEW and VEW	(D300 + D100 x 10people) x2days x 5 villages	D 13,000	D 31,850
	Kitchen Utensils	(Pan, Stove etc. Firing Place, Folk or Spoon) (D300 + D2,000 + D25x2) x5 villages	D 11,750	
	Stationery	D100 x 1set x 5villages	D 500	
	Labour Cost	D10 x 2days x 10people x 5 villages	D 1,000	
	Materials	(Salt, Charcoal, 100Bottles) (D50 + D300 + D5x100) x 5villages	D 4,250	
	Gasoline	10liter x 27D/l x 5 villages	D 1,350	
■ part will increase by this amount every year.				

2. Benefit

It is based on the assumption that farmers sell a bottle of processed food at D 50 per bottle, based on the observation that farmers at verification sites could sell the processed products at D 50 per bottle (e.g. Kossemar).

It can be assumed that farmers consume 20% of processed food and sell the rest 80%.

Year	Item	Content	Benefit
1st ～ 10th Year	Income increase at trained village by selling the product	D50 x 80 bottles x5 villages	D 20,000
■ part will increase by this amount every year.			

B. Improvement of Living Condition Programme
11. Cereal Bank Project

1. Cost

First year, demonstration is conducted by expert for DEWs and VEWs at demonstration site.

Then, DEWs and VEWs train the farmers at 5 villages every year.

Storage repair together with bank management training will be conducted 5 villages every year.

Farmers continue to use the repaired storage.

Year	Item	Content	Cost	
1st Year	Training for DEW and VEW by experts	($ 50 + D200 × 30 people) x 10 days	D 74,000	D 74,000
1st ～ 9th Year	Training for farmers by DEW and VEW	(D300 + D100 x 10people) x5 villages	D 6,500	D 59,600
	Repairment of storages	Door D 3,500 + Corrugaete D 1,650 + Cement D 200 D 5,350 x5 storage	D 26,750	
	Labour Cost for Repairment	D100 x 30days x 5 villages	D 15,000	
	Labour Cost for Bank Management	D100 x 20 man · days x5 villages	D 10,000	
	Gasoline for 15 villages	10liter x 27D/l x 5 villages	D 1,350	
■ part will increase by this amount every year.				

2. Benefit

Farmers will bring the product to the repaired storage when its price is low (D 430 / 50 kg), sell them when its price is high (D 770 / 50kg) and gain the benefit of D 340 / 50kg[3] at maximum.

As it is difficult to obtain maximum benefit every time, here it is assumed to obtain half of the above benefit.

One storage can save 60packets of 50kg packet.

2

	ha	Yield	Production	Bags	Home Consumption	Seed Net	Sale	Benefit	Feriliser	Cost	**Net benefit**
W/ project	0.75	720	540	10.8	2	2.1	6.7	2,714	255	255	2,459
W/O project	0.5	600	300	6	2	1.4	2.6	1,053	0	0	1,053

3

	High Price	Low Price	Price Difference
Sorghum	D 750 / 50kg	D 430 / 50kg	D 320 / 50kg
Maize, Millet	D 790 / 50kg	D 430 / 50kg	D 360 / 50kg
Average	D 770 / 50kg	D 430 / 50kg	D 340 / 50kg

As some of farmers may keep packets in some other places, the rate of storage operation is assumed to be 70%.
If necessary farmers can borrow money from the cereal bank, whose activity is pursued by the same storage, assuming renting money can be attained from bank management fee.

Year	Item	Content	Benefit
1st Year	Benefit is not observed yet	-	D 0
2nd ～10th Year	Benefit from price difference	(D 340 x 50 %) x (60 packets x 70 %) x 5 villages	D 35,700
■ part will increase by this amount every year.			

B. Improvement of Living Condition Programme
12. Introduction of Labour Saving Devices for Women

1. Cost

The project will start from the forth year of the Master Plan initiation.
From 4th to 6th years, one milling machine to one of the north bank villages and one rice polishing machine to one of the south bank villages will be installed.
Training on management of machines will be conducted at installed village 10 times, inviting villagers from neighboring 10 villages. Villages at installed village will join one of these trainings.
People who want to use the installed machines have to pay deposit for future repair, and collecting is assumed to take three days per one village.
This deposit will be used not only for repair but also for renewal purchase of the machine after depreciation.

Year	Item	Content	Cost	
4th ～ 6th Year	Training on Management	(D300 + D100 × 50 people) x 2 villages x 10times	D 106,000	D 398,240
	Milling Machine and Polishing	D 60,000 x 2 machines	D 120,000	
	Cabin for Machine	5m x 6m ; D 42,690 each	D 85,380	
	Labour Cost for cabin settlement	D100 x 30people･days x 2cabins	D 6,000	
	Labour Cost for management	D100 x 100people･days x 2cabins	D 20,000	
	Deposit for future repair	(D100 x 3days for collecting + D 50 X 50 people) x 2 machines x 10 villages	D 56,000	
	Gasoline	30liter x 3times x 27D/l x 2 machines	D 4,860	
7th ～ 10th Year	Labour Cost for management	D100 x 100people･days x 6cabins	D 60,000	D 242,580
	Deposit for future repair	(D100 x 3days for collecting + D 50 X 50 people) x 6 machines x 10 villages	D 168,000	
	Gasoline	30liter x 3times x 27D/l x 6 machines	D 14,580	
■ part will increase by this amount every year.				

2. Benefit

People can save time for milling and can use that time for other economic activities.
People from neighboring villages come to use the installed machines and number of such villages is 10.
Assuming people mill or polish almost every other day, one person will be able to save about 3hours a day and it is almost equivalent to about D5/day.
Although 50people from each village come to use the machine, it is assume that 25% of them can get alternative economic activities.

Year	Item	Content	Benefit
4th Year	Income increase	D5/days x 180days x 50people x 25% x 10villages x 2machines	D 225,000
5th ～ 7th Year	Additional Income increase	D5/days x 180days x 50people x 25% x 10villages x 2machines	D 225,000
8th ～ 10th Year	Income increase	D5/days x 180days x 50people x 25% x 10villages x 6machines	D 675,000
■ part will increase by this amount every year until 7th year.			