

ANNEX VI THE PILOT PROJECT

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ANNEX VI THE PILOT PROJECT

VI.6.2 Processes of Selecting the Project Sites and the Components

6.2.1 Formulation of PP Components in Ntarama Sector

(1) Process

The study tour was carried out on 19th January 2007 to advanced rice farming at Nyaburiba marshland in Ruhuha Sector and to watershed management project implemented by local population supported by ISAR at Murama in Nyamata Sector. Participants included the representatives of Umudugudu, 3 Cells and Ntarama Sector. Based on lessons learnt from the study tour, workshop at each Cell was organized by the Study Team to review implementation of QP and to explain results from the series of discussion with Bugesera District concerning the PP components especially marshland and hilly terrain agricultural development. After that candidate sites of marshland development and construction of farm pond with hilly terrain development were identified and current problems and needs faced by local population were discussed.

Based on the results of workshop at each Cell, joint workshop with the representatives of 3 Cells and Ntarama Sector was held on 5th February 2007 at Sector office so as to discuss the project components for IGA and improvement of life style based on the needs of local population.

Through the implementation of the QP, it was found that Umudugudu is functions as the smallest administrative unit under the Cell and its organization needs to be strengthened in line with the national policy. It was informed Umudugudu has formulated his own performance contract in 2007. In order to promote grass root community development, this organ is essential and it will be necessary to involve Umudugudu in making plan and implementing PP as a core and driving force of community development. At present there are 22 imidugudu in Ntarama Sector as the table below shows

Table VI.6.2.1 Number of Imidugudu at each Cell in Ntarama Sector

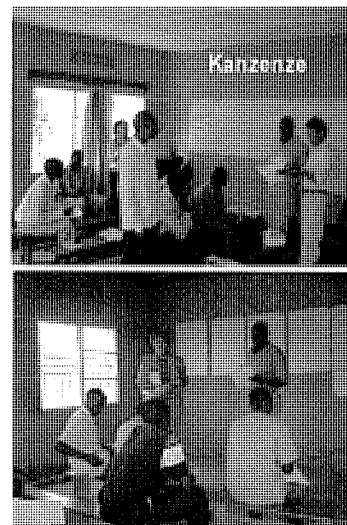
Cyugaro Cell			Kanzenze Cell			Kibungo Cell		
Name of Umudugudu		Nos. of HH	Name of Umudugudu		Nos. of HH	Name of Umudugudu		Nos. of HH
1	Gatoro	77	1	Cyeru	141	1	Kagoma I	} 206
2	Kayenzi	96	2	Gasagara	110	2	Kagoma II	
3	Kidudu	71	3	Kabaha	126	3	Kiganwa	148
4	Kingabo	54	4	Kabeza	126	4	Nganwa	136
5	Rubomborana	82	5	Karumuna	110	5	Nyarunazi	76
6	Rugarama	79	6	Kurugenge	110	6	Ruhengeri	93
7	Rugunga	103	7	Nyamabuye	128	7	Rusekera	103
	Sub-Total	562	8	Rwangara	110		Sub-Total	762
				Sub-Total	961	22	Total	2,285

(2) Results of Cell level workshops with imidugudu representatives

Workshop at each cell was respectively held at Cyugaro, Kanzenze and Kibungo. After reporting the discussion results with Bugesera District for selection of the sites and project components, review of

QP implementation and Umudugudu's organ, problems and needs analysis of local population and related activities were discussed. The comments arisen from the workshop are summarized as below.

- 1) It was strongly requested among participants that construction of farm ponds for hilly terrain development should be implemented per each Umudugudu.
- 2) Marshland development for introduction of rice farming was also strongly requested. It was agreed priority of the sites for development will be given by each Cell, then based on said priority, joint site survey for the 1st priority site will be executed by the Study Team and representatives of Cell and Sector.
- 3) Earthworks for land reclamation of marshland as well as construction of farm ponds were requested to be managed by Cell and Sector and to be implemented by each Umudugudu. Umudugudu will select the strong persons to be hired as laborers.
- 4) As for QP, need for continuous monitoring was confirmed and construction of additional rainwater storage and public use facilities (to be provided for 3 to 4 households or school) were requested.
- 5) Based on the above- requested items, it was agreed components of PP will be decided at joint workshop with Sector and 3 Cells representatives.



Date and participants at each Cell workshop are shown on the table below.

Cell	Date	Participants	Marshlanad Name
Cyugaro	22 nd January '07 10:00 — 15:30	20 persons, Kayenzi Umudugudu was absent.	Kabagore, Ruchahabi I, II, Akantaro, Akanyaru
Kanzenze	26 th January '07 10:00 — 14:30	19 persons, Gasagara, Karumuna Umudugudu were absent	Muzi, Kurugenge, Karumuna, Nyamugerere, Gasagara, Nyamabuye
Kibungo	30 th January '07 10:00 — 15:30	23 persons, Nyarunazi Umudugudu was absent	Akanyaru, Nyabarongo

(3) Results of Workshop in Ntarama Sector

Based on the results at each Cell workshop, project components for PP were proposed at each Cell in the presence of 31 representatives from Sector and Cells. From the series of Cell workshops, access to clean water, shortage of firewood were raised as serious problems at Cell level, so that the Study Team proposed not only follow-up of QP but also construction of public rainwater storage (target is 3 to 4 households in Umudugudu), simple purified water device for marshland water, solar cooker, bio-gas system using cow dung were proposed to be introduced. Each Cell agreed on the above-mentioned components, as they would reduce problems faced by the community. Discussion results are shown on the table below. The results will be brought back to each Cell and final proposal will be decided within a week from the discussion.

Table VI.6.2.2 Project Components Proposed by each Cell and further Schedule

Project	Cyugaro Cell	Kanzenze Cell	Kibungo Cell
Marshland development for rice production	Cyato –Gatoro	Muzi-Cyeru	Nyirabahanga
Hilly Terrain development for construct. of farm pond	14, 2places/Umudugudu	16, 2places/Umudugudu	8, 1 place/7 Umudugudu & 2places/ Umudugudu
IGA & Improvement of life style	<ul style="list-style-type: none"> • Modern Goat/Chicken • Rearing • Introduction of new variety of Banana • Bee Keeping • Vegetable Planting (Cabbage, Carrot, Egg-plant, etc.) 	<ul style="list-style-type: none"> • Modern Goat, rabbit, chicken rearing • Bee Keeping • Fruits Planting (Pineapple, Moringa, Japanese plum, etc.) • Vegetables (carrot, cabbage, green pepper, chilly, etc.) • Handicraft (basket, carpentry, etc.) 	<ul style="list-style-type: none"> • Bee Keeping • Vegetables (eggplant, potato, etc.) • Fruits Planting (pineapple, orange, etc.) • Handicraft • Modern Goat rearing
Proposed by Study Team	Follow up of 4 QP, Construction of Public Rainwater storage, Solar Cooker, Water purified device for marshland water, simple bio-gas device		
Site Survey	February 7, 10:00	February 13, 9:00	February 13, 14:00
Submission of candidate participants list for projects	-ditto-	-ditto-	-ditto-

(4) Draft Final PP Components

Consideration the above process, project components for PP are proposed as follows:

1) Marshland development for rice production

The project will be implemented at one place at each Cell. Proposed sites selected by each Cell are shown in the table below. Marshlands are under control and management by Bugesera District.

Table VI.6.2.3 Proposed Paddy Field Construction Sites by Cells

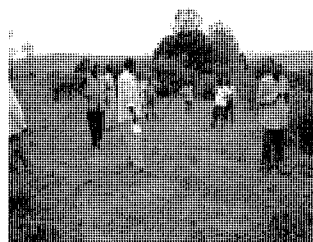
Cell	Marshland Name	Summary
Cyugaro	(i) Cyato-Gatoro Marshland	Maximum water level occurs in April (about 80 cm), then lowers about 40 cm in May and dries up in June. After that water level is gradually increasing from December (10 cm). Marshland is located at Akanyaru river basin that is tributary of Akagera river. Water level fluctuates every year because of influence of Akanyaru river water level.
Kanzenze	(ii) Muzi-Cyeru Marshland	Maximum water level occurs in April and May (about 40 cm), then lowers about 20 cm in June and dries up in July. Marshland is located at Akagera river basin and water level fluctuates every year. The area is introduced the shallow well irrigation system in QP and tomato, sweet potato, chilli are planted at some places.
Kibungo	(iii) Nyirabahanga Marshland	The area is located at Akanyaru river basin that is tributary of Akagera but there is no flood damages. Tomato and sweet potato are planted at some places.

**2) Farm Pond Construction for Hilly Terrain development**

The number of farm ponds proposed by each Umudugudu is shown as follows; Joint survey between Cell, Umudugudu and the Study Team was carried out.

Table VI.6.2.4 Number of farm pond proposed by each Umudugudu

Cell	Umudugudu	Proposed Nos	Remarks
Cyugaro	7	14	2 places/Umudugudu
Kanzenze	8	16	ditto
Kibungo	7	14	Ditto
Total	22	44	



3) IGA and Improvement of Life Style

Project components for IGA and Improvement of life style proposed by each Cell are summarized below. Due to the bird flu problem, modern chicken rearing was canceled and all participants were agreed on. In addition, 3 proposals should be canceled for the following reasons.

- i) Introduction of milling machine for maize should be canceled to avoid confrontation with existing private ones,
- ii) Aquaculture will be deleted from the list because of no hatchery in and around the project area,

Cultivation of cassava and maize are being promoted by other donors.

Table VI.6.2.5 Project Components of IGA and Improvement of life style proposed by Cells

Component	Cyugaro	Kanzenze	Kibungo
Proposed by Umudugudu (order of priority)	1) Modern goat rearing 2) Rearing of chicken 3) Introduction of improved Banana stems (poyo) 4) Vegetable planting (tomato, carrot, onion, egg plant)	1) Maize milling 2) Chicken rearing 3) Bee keeping 4) Modern Goat rearing 5) Fruit trees planting 6) Vegetable planting 7) Rabbit rearing 8) Pineapple planting 9) Inland fishery 10) Cassava, maize planting	1) Vegetable planting (tomato, carrot, cabbage) 2) Pineapple Planting 3) Modern goat rearing 4) Bee keeping
Proposed by the Study Team	i) Simple water purified device for marshland water, ii) Introduction of solar cooker, iii) Introduction of bio-gas system, iv) construction of public rainwater facility		

6.2.2 Preparation of PP components for the Nyaburiba Lowland

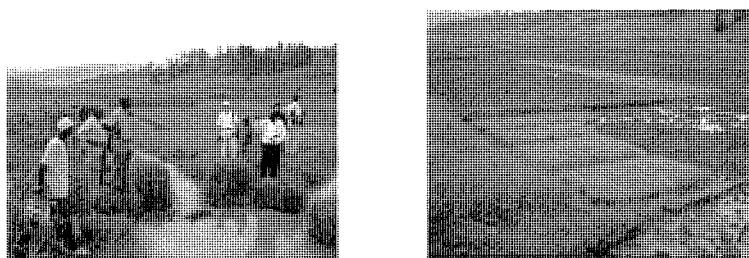
(1) Current Rice Farming in ex Ngenda Area and Candidate Site for PP Implementation

Major rice belt in ex-Ngenda area consists of six marshlands (see right table).

Rice cooperative is already organized in each marshland which accounted for approx., 4400 members (as of Dec., 2006). According to the board members of the Abahujumugambi Cooperative Union (Six cooperatives), it was turned out that there were two types of marshlands where allowed only single

cropping and double cropping in stable condition of hydrological water regime. Among the six marshlands, Nyaburiba marshland was proved that rice double cropping was steadily possible by using spring water for irrigation source throughout the year. The table below shows the evaluation results on the six marshlands in terms of natural and socio-economic conditions. According to the evaluation results, Nyaburiba lowland was selected as the first priority for PP implementing site due to relatively stable hydrological regime.

No	Marshland in ex-Ngenda District
1	Ruvubu
2	Gatare
3	Kiruhura
4	Nyaburiba
5	Kibaza
6	Rwabikwano



General Information of the Marshlands in ex-Ngenda District

No	Marshland name	Cooperative Name	No. of Association	No. of members	Irrigated area (ha)	water resource	Flood damages	Current farming situation/plactice
1	Gatare	Twizamure	18	494	33	Spring water+Water Reservoir (RSSP)	No	Double cropping Soil conservation problem
2	Kibaza	Inkingiyubuhinzi	19	280	30	Spring water	No	Double cropping since 2004 but not enough water
3	Nyaburiba	Dufatanye	12	515	52	Spring	No	Double cropping is practiced because of stable perennial
4	Ruvubu	Girubumwe	21	847	117	Water reservoir	No	Shortage of water (Partially double cropping: 50 % of whole plots)
5	Rwabikwano	Terimbere	12	1,048	104	Water reservoir shared with Gatare	No	2007 is the 1st cropping year because of no water before
6	Rwintare	Twibumbabahinzi	13	623	72	water Reservoir (RSSP)	Partially yes	Double cropping since 2002
Total			95	4443*	408			

Source: Abahujumugambi Cooperative union, December 31, 2005

Not Figure with * is the latest information as of December, 2006

(2) Components of Rice Pilot Project

Rice production in the target area is based on transplanting method under irrigation. The six marshlands are differ in terms of hydrological conditions, thus prevailing farming practice is also subject to its condition. The production constraints of the whole rice farming system in ex-Ngenda District are divided into five issues as follow.

Issues	Current Situation
Degeneration of Rice Variety	<ul style="list-style-type: none"> There is no certified seed multiplication system in ex-Ngenda, thus rice farmer use his/her harvest as seeds source. Contamination by off-type in paddy field causes degeneration of rice varieties. There is no value-added marketable rice varieties in the area.
Component Technology in Appropriate Rice Cultivation System	<ul style="list-style-type: none"> It is necessary to make the prevailing component technologies appropriate such as seed rate, nursery management, leveling work, fertilizer application, water management, pest/disease control, and systematic weeding operation.
Post Harvest Technology	<ul style="list-style-type: none"> Threshing and winnowing operations are done in inefficient way by manpower and no concrete drying yard. The existing three rice milling machines do not meet a capacity required for current production and generate much broken rice in milling process.
Introduction of High Valued Rice	<ul style="list-style-type: none"> Long grain rice is highly demand in Rwanda and traded with high market

Varieties and Marketing Development	price. However, no resistant varieties adaptable to the area are introduced, and the local rice farmer has no option except for short grain varieties which are easy to cultivate at present.
Supply of Inputs	<ul style="list-style-type: none"> No agent dealing with agricultural inputs exists locally, thus Cooperative union directly purchase fertilizer from Kigali on irregular basis. Therefore, supplying of necessary fertilizer is delayed and is not able to apply on time.

Source: Interview Results to the board members of the Cooperative Union by JICA Study Team, 2006

Among the five issues, lack of promising seeds supplying system emerges out as the fundamental problem, thus the rice farmer is compelled to secure seeds from his/her harvest, and which causes a severe degeneration of rice varieties through contamination of off-type varieties from planting to post-harvest processes. Degeneration of rice varieties stands at the most upper position of the rice farming system in the ex-Ngenda area. Accordingly, establishing the promising seed supply system is proposed as a first priority in this rice pilot project. Other issues in the above table are verified through implementation of the said pilot project together with the 2nd issue of “Component Technology in Appropriate Rice Cultivation System”, the 3rd issue of “Post harvest technology” including threshing, winnowing and drying processes, the fourth issue of “Introduction of High Valued Rice Varieties and Marketing Development” by obtaining the six varieties from ISAR free.

(3) Meeting with Relevant Stakeholders for PP Components

This pilot project is aimed at supplying promising paddy rice seeds and improving rice cultivation technology, thus participation of RADA and ISAR under MINAGRI umbrella is essential for PP. The former is in charge of development of paddy rice cultivar by agro-ecosystem, while the latter is in charge of multiplication of promising rice varieties for dissemination. On the other hand, the target group is Dufatanye Cooperatives (513 members).

The table below shows the chronological records of discussions with relevant stakeholders for preparation of rice pilot project so far.

Stakeholder	Date	Target Group	Discussion
Abahujumugambi Cooperative Union	7-18-06	Cooperative Board	Collecting information/data about cooperatives union, rice farming system and rice mill factory.
Nyaburiba Cooperative	11-30-06, 12-14-06 1-26-07	President and Board members	Collection of data/information about rice farming system, production constraints on rice farming, briefing of PP concept, confirmation of their needs
ISAR Butare Research Center	11-24-06 1-24-07	Chief Rice Researcher	Collection of Information/Data about promising rice variety and NERICA rice, briefing of PP concept, requesting of paddy rice seeds including NERICA rice with technical support to PP
RADA	1-4-07	Director General and Rice Expert	Briefing of PP concept and requesting of their support to PP

Source: Meeting Record between Stakeholders concerned and JICA Study Team, 2006-7

At the meeting with ISAR and Dufatanye cooperative board members, RADA rice expert was accompanied, and holding workshop for discussing of PP framework on February 8, 2007 was agreed with Dufatanye Cooperative board members (See AnnexIV.2). RADA and ISAR were requested to be actively involved in the PP and both organs confirmed to participate in PP as supporting organs during

workshops and overall implementation.

(4) Workshop to discuss Pilot Project Components for Nyaburiba Rice Pilot Project

The workshop was held at Ruhuha Cell Office on February 8, 2007 under participation of 45 members including Dufatanye cooperative board members, Ruhuha Sector and Cell offices, ISAR, RADA, JICA Study Team and JICA Rwanda Office. The overall outline of the Workshop results is shown hereinafter.

1) Objectives

It is aimed at confirming the overall components and tentative implementing framework of Pilot Project for rice seed multiplication with the Cooperative board members focusing on Dufatanye Cooperatives.

2) Workshop Program

The workshop was aimed at grasping a profile of farmer's organization (Dufatanye cooperative), production constraints of rice farming, landscape of overall Nyaburiba marshland, and needs of farming implements by item (See below Table). Most of the workshop held so far was usually delayed one to two hours. However, in this workshop all participants from the said cooperative already sat down on time, suggesting that the cooperatives organ appeared to be functioned steadily. The workshop was successfully completed under active participation of the cooperative board members.

i) Workshop Program

Agenda	Responsible	Content
Self introduction	Facilitator	Name, Organization, Position
Opening Remark	JICA Study Team	Background of PP on Rice Seed Multiplication
Briefing of JICA PP Components and Responsibility of Relevant Stakeholders (Draft)	JICA Study Team	Contents of Possible Components by JICA PP, Implementation Period,, Responsibility of Relevant Stakeholders
Mapping of Nyaburiba Lowland	JICA Study Team	Drawing of the Nyaburiba Lowland by the Cooperative Board Member
Institutional Analysis of Cooperatives	Facilitator	Analysis of Cooperatives Profile and Production Scale on Rice
Analysis of Production Constraints on Rice Production	RADA Rice Expert	Analysis of current production constraints on rice production from acquisition of inputs to milling and marketing processes
Confirmation of Quantity for Farming Implements by the Target Farmers	JICA Study Team	Selection of target farmers for PP participation over upper, middle and lower stream of the Nyaburiba Lowland, Confirmation of the number of needed farming implements requested by the Cooperatives
Closing Remark	JICA Study Team	

3) Confirmation on Division of Work among the PP Stakeholders

Possible components of the rice pilot project and responsibility of each stakeholder are as follow.

i) Possible Components supported by JICA Study Team (Draft)

Possible Items	Specification and major supporting activity
1) Certified paddy seeds	1) Tree planting on escarpment of both wings in the paddy fields
2) Chemical Fertilizer	2) Soil conservation work
3) Agro-Chemicals	3) Dredging of Irrigation Cannel
4) Pedal type thresher	4) Technical guidance of seed production
5) Winnower	5) Three ha of seed multiplication farm
6) Rotary Weeder	6) One drying yard (30m x 30m squares)
7) T-shape leveler	
8) Manual type sprayer	
Implementation Period of JICA PP	May, 2007 ~ October, 2008

ii) Responsibility of Relevant Stakeholders for PP Implementation (Draft)

Stakeholders	Responsibility
JICA-ISAR-RARDA	Supplying of inputs, technical guidance for seed multiplication, civil engineering work for production base
Dufatanye Cooperatives	Seed production of promising cultivars, Purchasing of the said seeds and sale to other farmers group under guidance made by the JICA side
Ruhuha Sector Office	Monitoring and Evaluation of PP

4) Overall Image of Paddy Rice Field in Nyaburiba Lowland

The overall image of paddy field in the Nyaburiba Lowland was drawn by focusing on access road, irrigation cannel line, location of water gates, location of springs, and general soil fertility gradient on the drawing.

5) Profile of Dufatanye Cooperatives

Table below shows the results of institutional analysis of Dufatanye Cooperative made by the Cooperative members.

Organization (Dufatanye Cooperatives)		
1	Total number of Members	Male: 273 Female: 240 Total: 513
2	No of Associations involved	12
3	Board members in details	President, V/president, Secretary, Treasurer, 3 advisors and 3 auditors
4	Commodities dealt with Cooperatives (Rice + others if any)	Produce and sell rice
5	Annual Cash Flow (Budget Scale)	Annual Inflow
		Annual Outflow
		Balance
6	General Assembly (Frequency, major agenda, percentage of participating rate over the total members)	Actual figure, difficult to know Balance is always positive
7	Board meeting (frequency, major agenda, etc)	4 times a year, 87%. Prepare cropping season Ways to market rice crop, well-being of coop. members, strategies to increase production such as ways and source of fertilizer supply, coop financial situation.
8	Supporting organs from donor, NGO, District, MINAGRI, if any	4 times a year and whenever deemed necessary, prepare the General Ass., draw strategies and measures to be submitted and adopted by the General Assembly INADES (training), Sector/ Cell: provide land, Vision Company(credit for fertilizer), FRAD (technical guidance: agronomist), WFP/MINAGRI: reclamation
Production (Paddy)		
9	Total Acreage of Paddy Fields cultivated in Cooperatives	Cultivated 42 ha, non reclaimed 10 ha One plot: 25mx20m
10	Average yield/ha	4,5 tones/ha
11	Total Production of Paddy	42 ha x 4.5t /ha= 189 189x2 seasons=378t/year
12	Method of Managing Production	(1) Seed

	if any regular way .	(2) Home consumption (3) Sell
13	Total amount of chemical fertilizers in details (amount+ source)	NPK: 12 kg/5 are for poor soil 10 kg/5ares for good soil Urea: 6 kg/ 5 are for poor soil 5 kg/5ares for good soil Fertilizers come from Kigali via Cooperative Union
14	Total amount of agro-chemicals in details (amount+ source)	They used to have Beam from MINAGRI for seed treatment but it is no more provided.
15	Total amount of Paddy for sale to:	Where, What volume For one crop: Production 300kg/HH Seed 30 kg Home consumption 70 kg Market 200 kg Sold to Coop., Union or Ruhuha local market
Access to Extension Service		
16	What organs support the cooperatives?	Sector Agronomist FRAD Agronomist INADES: provided some rice guidelines for the below reference corner. ISAR had established a reference corner by providing documents for the cooperatives but no rice guideline.
17	Adapted farming practice on rice cultivation	MINAGRI (RADA) offered farmer's training for rice production. For example, planting 2 seedlings per hill yields more than their practice of planting 4 or more per hill.

6) Production Constraints on Rice Farming

The table below presents the results of production constraint analysis of Dufatanye Cooperative made by the Cooperative members

No	Farm Operation	Problems
1	Acquisition of Inputs	Delay in supplying inputs No proximity place to purchase inputs
2	Water resource for irrigation including water management	Decrease during the dry season Lack of tools to dredge canals Water retained by nearby vegetable producer causing water decrease as the latter dug a shallow well for intercepting water and block water from flowing in to the canal.
3	Land Preparation	Poor reclamation at some places, thus extremely wet soil hard to be managed when planting rice Lack of proper tools such as paddling operation.
4	Management of Nursery	Poor knowledge in nursery techniques Lack of chemicals to treat seeds prior to nursery
5	Transplanting	No adapted tools on uprooting seedlings for transplanting
6	Application of Fertilizer	-Transporting manure to paddy fields as farmers carry it on their heads. - Poor hygienic conditions when collecting manure: no boot. No mask when applying chemical fertilizers - Not know which rate to apply as per soil type
7	Pest & disease control	-Poor knowledge about rice diseases -unavailable pesticides due to no agent dealing with agro-chemicals in Ruhuha Sector.
8	Weeding	Hand weeding only because of no efficient manual weeding tool
9	Bird Scaring	-Big problem for farmers since expensive laborers
10	Harvesting (Reaping rice plants)	Lack of adapted reaping tools
11	Threshing operation	Lack of threshing tools
12	Winnowing operation	No winnowing tools
13	Drying paddy	No plastic sheeting and drying yard
14	Milling paddy	A fully equipped milling device is needed
15	Marketing	No good market because of poor quality of produced rice Price 160~200 RwF/Kg

Source: Record of the Nyaburiba Workshop organized by JICA Study Team, Feb., 2007

VI.6.3 Implementation Plan

6.3.1 Implementing Plan and Project Cost

Proposal for project components and these scales in PP

Taking into due consideration of the results from consultation with the concerned local agencies, project components and these scales in PP have proposed by the Study Team as shown in the table below. As for the construction of the farm pond and paddy field, the design and structure are simple wherever possible so as to be easily imitated by local population in future. As mentioned in paragraph 6.1, it is essential for agricultural and rural development in Bugesera District to operate projects by community with self-help and to expand projects from spot to area. From this viewpoint, study tours from the other Sectors are planned and collaboration with NGOs, advanced farmers and ISAR, RADA, RARDA are to be involved affirmatively. Summary of the Nyaburiba marshland and construction plan for pilot farm for rice production and farm pond for hilly terrain development are respectively shown on Figure 6.3.1, 6.3.2 and 6.3.3

Table VI.6.3.1 Project Components and these Scales

Project Components	Scale of the project	Outcomes to be expected, etc.
Multiplication and distribution of improved seeds for rice production	Multiplication & distribution of improved rice seeds in existing farm, 3ha	Increase of food production, prevention of soil erosion, improvement of farming and post harvesting practices
Land reclamation for rice production	3ha in total at 3 cells in Ntarama Sector	Increase of food production, improvement of farming and post harvesting practices
Small-scale farm pond constructions for hilly terrain agricultural develop.	Construction of 22 farm ponds (1 pond/Umudugudu)	IGA, improvement of life style, soil conservation, collaboration in Umuganda
IGA & Improvement of life style		IGA & Improvement of life style
Vegetables plantation	1,000m ² in each cells in total 3,000m ² for 3 cells.	Collaboration with advanced farmers
Fruit trees plantation	-ditto-	-ditto-
Rabbit rearing	30 numbers in kanzenze cell	Utilization of NGO
Modern goats rearing	12 heads in cell, total in 36	Collaboration with ISAR Kamara
Bee Keeping	Kanzenze & Kibungo cell, (2Associations)	Collaboration with ARDI
Pineapples planting	Kanzenze & Kibungo cells 1ha per each, total in 2ha	Advanced farmers in Ngoma District
Fruits banana planting (Poyo)	1 ha at Cyugaro cell	Advanced farmers in Kanzenze, Mwogo
Public rainwater storages	44 sites at Umudugudu	Collaboration with KIST
Solar cookers	5units at each cell, total in 15units	-ditto- for demonstration use
Simple bio-gas	-ditto-	-ditto- for demonstration use
Purified water device for marshland water	-ditto-	-ditto- for demonstration use
Follow-up for QP	Monitoring & evaluation, Repairing facilities	IGA & Improvement of life style
Study Tour	Study tour from outside, ex-districts Mutual study tours	Enlightenment, extension

Cost Estimation

Project cost is estimated at i) hard components, ii) soft components, and iii) provision of equipment and materials, respectively. The project cost amounts to 300,000 US\$ and summary is shown in the table below.

Table VI.6.3.2 Project Cost for the PP

Project Components	Quantity	Cost (US\$)
Multiplication and distribution of improved seeds for rice production in Nyaburiba marshland	3ha	37,329
Land reclamation for rice production at marshlands in Ntarama Sector	3ha	73,724
Small-scale construction of farm ponds for hilly terrain agricultural development	22places	53,324
IGA & Improvement of life style project	Lot	47,472
Sub-total		211,849
Workshop	Lot	8,119
Local labor	Lot	32,450
Follow-up of QP	Lot	3,800
Study Tour	Lot	3,330
Tools	Lot	12,046
Sub-total		59,745
Total		271,594

Cost Estimation of the Project

Breakdown of the cost estimation for the QP consists of the six expenditure categories (a. materials for cowshed, b. construction cost for cowshed, c. drug and equipment for animal health, d. procurement cost for the 18 crossbred, e. training of the 18 model farmers, and f. cost for following up activities). Total cost amounted to 2,310,000 yen, equivalent to 19,890 USD (1.0 USD = 116 ¥). Thus a unit cost of heifer amounted to 128,000 ¥, equivalent to 1,105 USD.

Improved Rice Seed Multiplication and Dissemination Project

Breakdown of the cost estimation for the PP consists of the six expenditure categories (a. inputs cost such as seeds, fertilizer and chemicals, b. farming implements, c. Salary of local employees such as agronomists, d. baseline survey, e. workshop, and f. training for study tour). Total cost amounted to 3,90,000 yen, equivalent to 37,000 USD (1.0 USD = 106 ¥). Thus a unit cost of one hectare amounted to 1,300,000 ¥, equivalent to 12,300 USD.

Marshland Agricultural Development

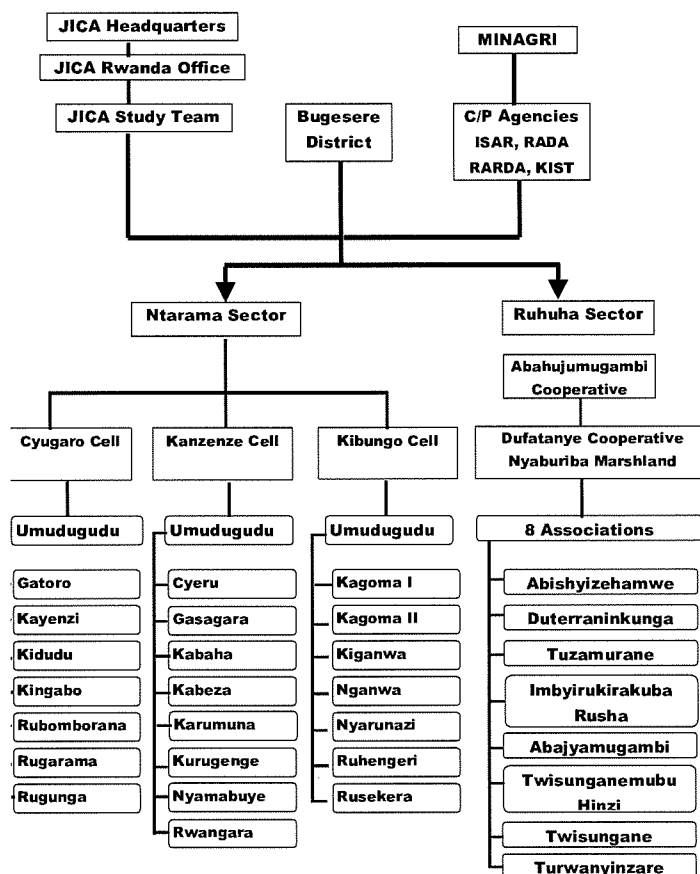
Breakdown of the cost estimation for the PP consists of the six expenditure categories (a. inputs cost such as seeds, fertilizer and chemicals, b. farming implements, c. Salary of local employees such as agronomists, d. workshop, and e. training for study tour). Total cost amounted to 1,020,000 yen, equivalent to 9,600 USD (1.0 USD = 106 ¥). Thus a unit cost of one hectare amounted to 1,020,000 ¥, equivalent to 9,600 USD.

Table VI.6.3.3 The contents of each component as to Pilot Project

No.	Project Component & Site	Kind, Size, etc.	Constructio n Cost	Workshop Cost	Local Consultant Cost	Study Tour Cost	Tools Cost	Total Cost
			US\$	US\$	US\$	US\$	US\$	US\$
I.	Marshland Agricultural Development		111,053	3,150	18,650			132,853
	BREAK DOWN							
1	Seed Multiplication Project for Rice Production	3 ha in total	37,329	1,575	6,850			45,754
	- Nyaburiba Valley in Ruhuha sector							
2	Pilot Farm for promotion of Rice Production	1ha for each targeted area	73,724	1,575	11,800			87,099
	- Cyato-Gatoro marshland (Cyugaro)		24,408					
	- Muzi-Cyeru marshland (Kanzenze)		24,408					
	- Nyirabahanaga marshland (Kibungo)		24,908					
II.	Hilly Terrain Agricultural Development		53,324	2,844	10,500			66,668
	BREAK DOWN							
1	Construction of 22 Small-Scale Farm Ponds							
	- Umudugudu(s) in Cyugaro Cell	7 Umudugudu	16,967	936				
	- Umudugudu(s) in Kanzenze Cell	8 Umudugudu	19,390	936				
	- Umudugudu(s) in Kibungo Cell	7 Umudugudu	16,967	972				
III.	Promotion of IGA and Improvement of Living Condition		47,472	2,125	3,300	369		53,266
	BREAK DOWN							
1	Introduction of cashable crops		616	425				
2	Introduction of fruit tree		1,566					
3	Rabbit Rearing		434					
4	Goat Rearing		1,494					
5	Apiculture (Bee Keeping)		2,870					
6	Pineapple cultivation		4,273	425		369		
7	Introduction of fruit banana (Poyo kind)		2,309	425				
8	Construction of public rainwater storage at Umudugudu level		26,052	850	3,300			
9	Introduction of solar stove cooking device		3,273					
10	Introduction of biogas device		1,555					
11	Introduction of water purification device		3,030					
IV.	Follow-up of QP				3,800	218		4,018
	BREAK DOWN							
1	Modern cow				1,200			
2	Rainwater storage				1,400			
3	Shallow well irrigation				600	109		
4	Road side irrigation				600	109		
V.	Study tour					2,743		2,743
	BREAK DOWN							
1	Seed Multiplication Project for Rice Production	3 ha in total				709		
2	Pilot Farm for promotion of Rice Production	1ha for each targeted area				369		
3	Hilly Terrain Agricultural Development	22 Farm Ponds				109		
4	From Other region to QP, PP site					1,556		
VI.	Tools						12,046	12,046
	Total		211,849	8,119	36,250	3,330	12,046	271,594

Organization for the PP Implementation

Earthworks for land reclamation of the 3 marshlands and construction of the farm ponds in Ntarama Sector implemented by local population from Umudugudu by hiring some labour force. Representatives of Ntarama Sector and 3 Cells have a responsibility to mobilize and to manage local population and representatives of cooperative have also carry out earthworks in Nyaburiba marshland. The figure below indicates organizational structure of stakeholders in the PP.



Implementation Plan for PP

After formulation of the implementation plans (PDM & PO) at main project components in May 2007, implementation proper of the PP commenced from the middle of May 2007 and will be completed in October 2008 (refer to table below).

Implementation of IGA & improvement of life style were scheduled from the beginning of November 2007 as almost all of local population in Ntarama Sector were involved in the land reclamation of rice production projects and farm ponds construction as hired labor force or participated in the project implementation from the middle of May 2007. Therefore, after construction of the facilities, Implementation of the IGA and improvement of life style commenced in November 2007, when the Study Team started the study as 4th Field survey.

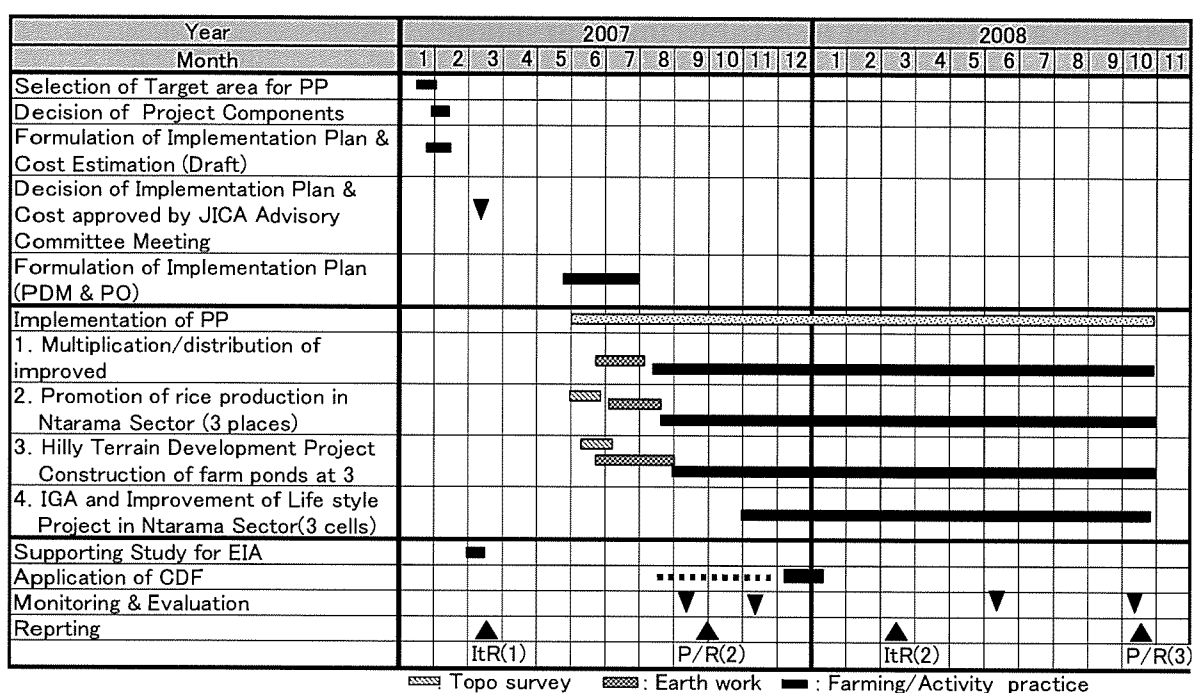


Figure VI.6.3.1 Implementation Schedule for Pilot Project

Details of schedules at each project component are respectively shown in Figures 6.3.5 to 6.3.8.

Proposed project components and cost as well as implementation plan will be explained and discussed in the advisory meeting in Japan and it will be revised based on the comments given by the advisory team. After that through the consultation with the concerned agencies, PP contents will be finalized.

VI.6.4 Improved Rice Seed Production and Dissemination Project

Workshop Program of the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: February 8th (Thursday), 2007

2. Place & Time: Ruhuha Cell Office, 9:30-13:30 PM

3. Participants

1) Dufatanye Cooperatives Board Members and President of 11 associations (27 members)

The cooperatives consist of associations with 413 members as of December, 2005.

2) Ruhuha Sector Office (Agronomist)

3) FRAD (NGO: Agronomist)

4) RADA Rice Expert (Mr. Edward)

5) JICA Rwanda Office

6) JICA Study Team

4. Objectives

This workshop is aimed at confirming the overall components and tentative implementing frame work of Pilot Project for rice seed multiplication with the Cooperative board members focusing on Dufatanye Cooperatives.

5. Workshop Program Outline

(1) Briefing of JICA Pilot Project Outline

- Scope of Work

a. What JICA Team could support

b. What JICA Team could not support

c. Scale of PP on rice seed production (3 ha)

- Time axis for PP implementation

(2) Mapping of Nyabuliba Lowland (outline of landscape and cannel line, gate site, spring, road, etc)

(3) Institutional Analysis of Cooperatives and consideration of PP implementing organization including Sector Office with RARDA-ISAR-JICA supporting organs

(3) Identification of Production Constraints from planting to Marketing on Rice Production

(4) Prioritization of Production Constraints by 1) within farm operation and 2) whole farm operation

(5) Requesting Cooperative board to select participants who has paddy field around of bridge (crossing road).

6. Workshop Program Schedule

	RADA-JICA	Program Subject	Time	Remark
1	JICA Study Team	Opening Remark	5 min	
2	All Participants	Self Introduction	15 min	Post-it, Participant List
3	JICA Study Team	1. Briefing of JICA PP Outline 1) Scope of Work - What JICA could support	30 min	-Agenda for WS, -Scope of Work(draft) -Time schedule

		-What JICA could not support -Time schedule of PP Implementation		-Implementation Organization(draft)
4	JICA Study Team RADA Cooperatives	Mapping of Nyabuliba Lowland	30 min	-Flip chart
5	RADA	Institutional Analysis	30 min	-Grasping overall outline of Dufatanye Cooperatives -Implementing organization
6	RADA	1.Identification of Production constraints	30 min	-Flip chart
7	RADA	2. Prioritization of Production Constraints	60 min	-Flip Chart
8	JICA Study Team	3. Requesting Cooperative board to select participants	15 min	Task work for the Cooperatives
9	JICA Study Team	Closing remark	10 min	Summarizing of PP outline

Remark for WS Facilitation:

Program 3: Briefing of JICA PP outline

(1) Scope of Work

-Time Schedule of PP Implementation: May, 2007 - October 2008 (about one and half year)

Plan of Operation for the PP and Project Design Matrix shall be finalized in the Workshop held on late May, 2007.

-JICA-RADA-ISAR assists the rice farmers in terms of the following items:

- 1) Input (Certified seed, chemical fertilizer, pesticide, some farming tools/implements such as thresher, winnower, rotary weeder, leveling tool made of wood, etc)
- 2) Technical Guidance on rice farming practice focusing on seed production.
- 3) Paddy fields are used as it is with dredging of irrigation canal, and soil conservation measure such as tree planting in both hill sides.

- Cooperatives Responsibility

- a. To produce certified seed under participation of the selected farmers in collaboration with ISAR-RADA-JICA supporting organs.
- b. To purchase the certified seed from the producer and sell to the other cooperatives members for disseminating of the certified varieties.

- Ruhuha Sector Office

- a. Monitoring regularly the progress of PP scheme and guide the Cooperatives including target farmers if necessary.

Program 4 Mapping of Nyabuliba Lowland Valley

Mapping operation is aimed at understanding overall landscape of Nyabuliba Lowland Valley in terms of

following points:

- a. Overall land shape of Nyabuliba Marshland with access road
- b. Site locations of Springs (Water resources) in the Nyabuliba Marshland with available period of water
- c. Site locations of cannel lines by type including the gates
- d. Soil fertility gradient if any
- e. Boundary of 11 association paddy fields in Nyabuliba Lowland Valley

Program5: Institutional Analysis of Defatanye Cooperatives

In order to grasp overall capacity of Cooperatives, institutional analysis shall be made in terms of the following points;

No	Major Index	Present Situation
Organization (Defatanye Cooperatives)		
1	Total Numbers of Members	
2	No of Associations involved	
3	Board members in details	
4	Commodities dealt with Cooperatives (Rice + others if any)	
5	Annual Cash Flow (Budget Scale)	Annual Inflow
		Annual Outflow
		Balance
6	General Assembly (Frequency, major agenda, percentage of participating rate over the total members)	
7	Board meeting (frequency, major agenda, etc)	
8	Supporting organs from donor, NGO, District, MINAGRI, if any	
Production (Paddy)		
9	Total Acreage of Paddy Fields cultivated in Cooperatives	
10	Average yield/ha	
11	Total Production of Paddy	
12	Method of Managing Production if any regular way .	
13	Total amount of chemical fertilizers in details (amount+ source)	
14	Total amount of agro-chemicals in details (amount+ source)	
15	Total amount of Paddy for sale to:	Where, What volume
Access to Extension Service		
16	What organs support the cooperatives ?	
17	Adapted farming practice on rice cultivation	

Program 6 & 7: Identification of Production Constraints

As for the following farming system on rice cultivation, discuss the production constraints as per each step.

No	Farm Operation	Present Situation	Problems	Prioritization
1	Acquisition of Inputs			
2	Water resource for irrigation including water management			
3	Land Preparation			
4	Management of Nursery			
5	Transplanting			
6	Application of Fertilizer			
7	Pest & disease control			
8	Weeding			
9	Bird Scaring			
10	Harvesting (Reaping rice plants)			
11	Threshing operation			
12	Winnowing operation			
13	Drying paddy			
14	Milling paddy			
15	Marketing			

Program 8: Selection of Target Farmers for Seed Production

Generally speaking, the target paddy field for the PP is preferred to focus on upper and lower plots centered on the crossing road and.

Workshop Report on Improved Rice Seed Multiplication and Dissemination Project**Date:** Feb 8th, 2007 **time:** from 9:30 am to 1:30 pm**Venue:** Ruhuha Cell Office**Participants:**

- 1) 27 farmers from Dufatanye board members and 11 rice farmer groups, members of Dufatanye Cooperative.
- 2) 2 Ruhuha Sector Officers and 1 Cell leader
- 3) 1 Representative of Vision Finance Company
- 4) 1 RADA rice production expert
- 5) 6 from JICA ST
- 6) 3 from JICA Office including Rwanda Representative of JICA
- 7) 2 rice production experts from ISAR

I. Introduction

Opening the workshop, participants were introduced about the workshop objective namely

- Confirm the implementation framework of the rice seed multiplication PP component.
- Determine components of the PP rice seed multiplication in Nyaburiba lowland.

The choice for such PP component was based on interview survey conducted in the area by the Study Team within their study framework on Sustainable Agricultural and Rural Development under implementation in Bugesera District since April 2006. The ST observed different varieties planted in one paddy field where farmers believe it consists of one variety. Further, rice producers in Nyaburiba lowland confirmed there is no official channel to supply good certified seeds.

2. Briefing on JICA PP Outline

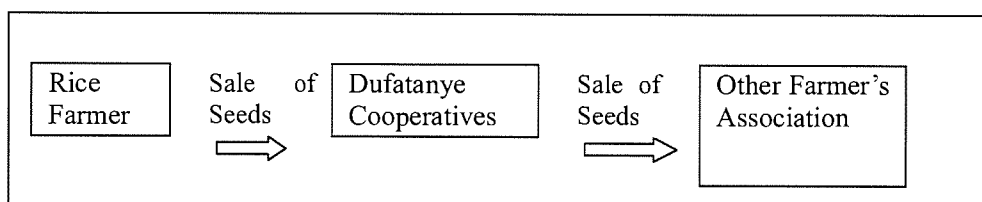
Mr Kurita specified what would be JICA share and what is expected from the PP target rice farmers in Nyaburiba as follows:

a) JICA will supply the following items:

Items	Activities
<ul style="list-style-type: none"> - Certified rice seed - Chemical fertilizers - Pesticide - Thresher(pedal) - Winnowing - Rotary weeder - T-shape leveler - Manual Sprayer - Plastic sheets 	<ul style="list-style-type: none"> - Tree planting - Soil conservation measures - Dredging of irrigation canals - Technical guidance - 3 ha for seeds multiplication - One dry yards (30m x 30m)

b) Producer side

The role of the target producers will be to disseminate seeds through the following channel.

**c) Ruhuha Sector: Monitoring the Pilot Project**

- Farmers sought to know where to procure true certified seeds.

Dr Kathir from ISAR informed participants there are six selected varieties that have already been tried out and appreciated by Rwamagana farmers. Among them three varieties including *insinzi*, *Gakire* are disease resistant varieties. Thus, ISAR is ready to assist in finding certified good varieties.

- Dr Kathir sought to know the traditional way for rice farmers to get seeds.

Participants observed they do not get good crop since they do not have specific rice seeds to cultivate. Every farmer tries to bring whatever kind of rice they come across and different varieties mix up in one paddy field. Variety mixing especially occurs during drying paddy.

- A participant asked whether their plots would be reclaimed since so far two groups namely TURWANYINZARA and ABISHYIZEHAMWE have not yet got their plots reclaimed.

Plot reclamation is beyond PP seed multiplication component since only 3 ha will be concerned with the PP

- Regarding pesticides and post harvest activities, farmers requested sprayers and dry yards that were added to the list of items to be considered. Four dry yards of 30m x 30m each were agreed on. Farmers confirmed sites for dry yards would be available near the lowland.
- A shade place also was requested by rice producers
- Dufatanye Cooperative requested support to ensure authenticity of certified seeds produced amidst other non certified varieties.

RADA will issue a certificate of certified seed, thus farmers have to carefully protect their seeds and produce seeds in 1ha of close plots. They will need to have colored and tagged bags for certified seeds.

The PP implementation time span is from May 2007 to September 2008

3. Mapping of Nyaburiba lowlands

Nyaburiba marshland has three parts and two roads cross the lowland. It was suggested seed multiplication

will be done on 1 ha of each part of the marshland. 7 water sources were identified and 8 gates. Water is not a big problem since it is available across the year although decrease of water is noticed during August (See the Attachment-2).

4. Institutional Analysis

The following are the results of institutional analysis of Dufatanye Cooperative done by participants using post-it cards.

No	Major Index	Present Situation
Organization (Defatanye Cooperatives)		
1	Total Numbers of Members	Male: 273 Female: 240 Total: 515
2	No of Associations involved	12
3	Board members in details	President, V/president, Secretary, Treasurer, 3 advisors and 3 auditors
4	Commodities dealt with Cooperatives (Rice + others if any)	Produce and sell rice
5	Annual Cash Flow (Budget Scale)	Annual Inflow
		Annual Outflow
		Balance
		Actual figure, difficult to know
6	General Assembly (Frequency, major agenda, percentage of participating rate over the total members)	4 times a year, 87%. Prepare cropping season Ways to market rice crop, well-being of coop. members, strategies to increase production such as ways and source of fertilizer supply, coop financial situation.
7	Board meeting (frequency, major agenda, etc)	4 times a year and whenever deemed necessary, prepare the General Ass., draw strategies and measures to be submitted and adopted by the General Assembly
8	Supporting organs from donor, NGO, District, MINAGRI, if any	INADES (training), Sector/ Cell: provide land, Vision Company(credit for fertilizer), FRAD (technical guidance: agronomist), WFP/MINAGRI: reclamation
Production (Paddy)		
9	Total Acreage of Paddy Fields cultivated in Cooperatives	Cultivated 42 ha, non reclaimed 10 ha One plot: 25mx20m
10	Average yield/ha	4,5 tones/ha
11	Total Production of Paddy	42 ha x 4.5t /ha= 189 189x2 seasons= 378t/year
12	Method of Managing Production if any regular way .	(1) Seed (2) Home consumption (3) Sell
13	Total amount of chemical fertilizers in details (amount+ source)	NPK: 12 kg/5 ares for poor soil 10 kg/5ares for good soil Urea: 6 kg/ 5 ares for poor soil 5 kg/5ares for good soil Fertilizers come from Kigali via Cooperative Union
14	Total amount of agro-chemicals in details (amount+ source)	They used to have Beam from MINAGRI for seed treatment but it is no more provided.
15	Total amount of Paddy for sale to:	Where, What volume For one crop: Production 300kg/HH Seed 30 kg Home consumption 70 kg Market 200 kg Sold to Coop., Union or Ruhuha local market
Access to Extension Service		
16	What organs support the cooperatives ?	Sector Agronomist FRAD Agronomist INADES: provided some rice guidelines for the below reference corner. ISAR :had established a reference corner by providing documents for the cooperatives but no rice guideline.
17	Adapted farming practice on rice	MINAGRI(RADA) offered farmer's training for rice production. For example.,

	cultivation	planting 2 seedlings per hill yields more than their practice of planting 4 or more per hill.
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5. Production constraints

The following is the results of production constraint analysis of Dufatanye Cooperative done by participants using post-it cards.

No	Farm Operation	Problems
1	Acquisition of Inputs	Delay in supplying inputs No proximity place to purchase inputs
2	Water resource for irrigation including water management	Decrease during the dry season Lack of tools to dredge canals Water retained by nearby vegetable producer causing water decrease as the latter dug a shallow well for intercepting water and block water from flowing in to the canal.
3	Land Preparation	Poor reclamation at some places, thus extremely wet soil hard to be managed when planting rice Lack of proper tools such as paddling operation.
4	Management of Nursery	Poor knowledge in nursery techniques Lack of chemicals to treat seeds prior to nursery
5	Transplanting	No adapted tools on uprooting seedlings for transplanting
6	Application of Fertilizer	-Transporting manure to paddy fields as farmers carry it on their heads. - Poor hygienic conditions when collecting manure: no boot. No mask when applying chemical fertilizers - Not know which rate to apply as per soil type
7	Pest & disease control	-Poor knowledge about rice diseases -unavailable pesticides due to no agent dealing with agro-chemicals in Ruhuha Sector.
8	Weeding	Hand weeding only because of no efficient manual weeding tool
9	Bird Scaring	-Big problem for farmers since expensive laborers
10	Harvesting (Reaping rice plants)	No adapted tools such as good sickle.
11	Threshing operation	Lack of threshing tools
12	Winnowing operation	No winnowing tools
13	Drying paddy	No plastic sheeting and drying yard
14	Milling paddy	A fully equipped milling device is needed
15	Marketing	No good market because of poor quality of produced rice Price 160~200 RwF/Kg

Concerning farming items to be supplied by JICA, Mr. Kurita requested farmers to specify the number need as per item and let know that some items will be shared among households for ex. A thresher and a sprayer among 10 households. Dufatanye Cooperative board agreed to provide such specification on Thursday 15 February 2007. This will allow JICA ST to have an idea of necessary items and plan accordingly.

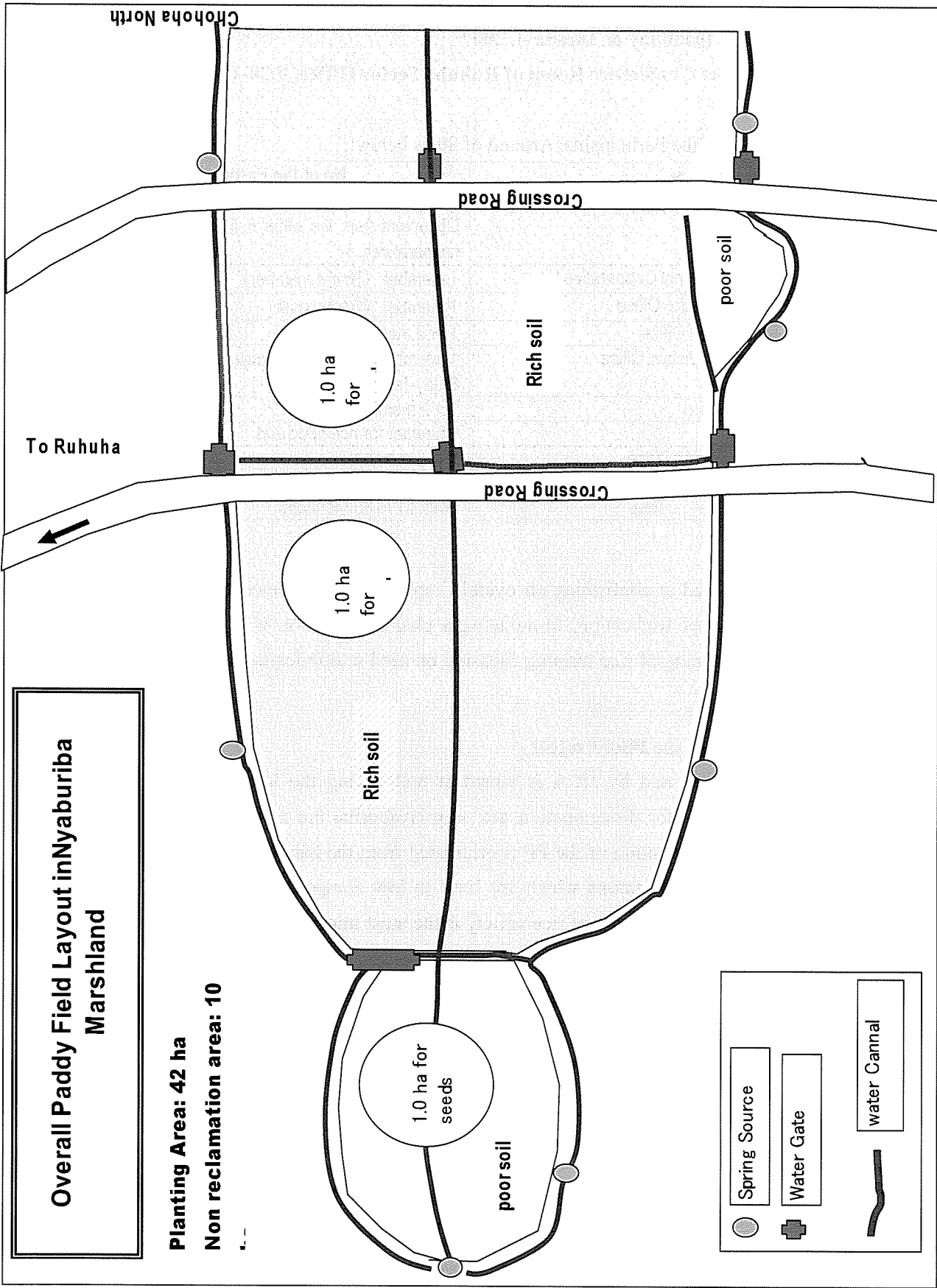
Then Cooperative members will have selected target farmers for PP seed multiplication by 20/2/2007. Further details on cost sharing and finalizing PP component implementation will be discussed in another workshop to be organized end May prior to implementation commencement.

List of participants

Place: RUHUHA CELL Office

Date: Feb 8, 2007

No	Name	Group		Title
1	Bimenyimana Elias	TWISUNGANE		Auditor
2	Bucyayunguka Jean	DUTERANINKUNGA		President
3	Ruremesha Pascal	TWISUNGANE MUHINZI		Secretary
4	Ukwizabigira Samuel	IMBYIRUKIRAKURUSHA		V/President
5	Sakindi Jean Marie Vianney	IMBYIRUKIRAKURUSHA		Auditor in Dufatanye
6	Gafaranga Claver	TWISUNGANE MUHINZI		President
7	Nsemarora	TURWANYINZARA		Councilor
8	Rwasamanzi Elie	ABAJYAMUGAMBI II		President
9	Sindayigaya Martin	DUFATANYE	8463542	Dufatanye Cooperative President
10	Musabyimana Seraphine	DUKANGUKIRAMAJYAMBERE		President
11	Ndekezi Desiré	TUZAMURANE		Auditor
12	Macumi Vénuste	ABAJYAMUGAMBI II		Secretary
13	Murwanashyaka Théoneste	TWISUNGANERUBYIRUKO		Treasurer
14	Mukarusine Athanasie	ABISHYZEHAMWE II		President
15	Harerimana Jeannette	DUFATANYE coop		Auditor
16	Ruzindana James	Ruhuha Cell	8762206	Coordinator
17	Ukwitegetse Josephine	DUFATANYE coop		Auditor
18	Nshimiyimana Frédéric	DUKANGUKIRAMAJYAMBERE		Secretary
19	Nkurikiyeyesu Thadée	TURWANYINZARA		Auditor
20	Nkurikiyumukiza Amoni	IMBYIRUKIRAKURUSHA		Auditor
21	Nsengiyumva Augustin	ABISHYZEHAMWE		Secretary
22	Sibomana Samuel	DUFATANYE coop		Treasurer
23	Munyaneza Alexis	TUZAMURANE	8403707	President
24	Nzeyimana André	DUFATANYE coop		V/President
25	Ruhumuliza Jérémie	DUTERIMBERE		President
26	Niyonteze Cyprien	ABISHYZEHAMWE	8664764	Treasurer
27	Bizimana Anastase	TWISUNGANE		President
28	Nzabihimana Vincent de Paul	Ruhuha Sector	8424628	Acting Executive Secretary
29	Semahoro Evariste	Vision Finance Company	8638565	
30	Tatsumi	JICA		Rwanda Representative
31	ODE Rie	JICA		Coordinator
32	Michio GOTO	JICA Study Team		Team Leader
33	Eiri KAKU	JICA Study Team		Coordinator
34	Z. KURITA	JICA Study Team		Farming/Extension
35	Ieizumi	JICA Study Team		Wter
36	Musiime Enock	JICA	8478201	Rural Development Consultant
37	Innocent NDIKUMANA	ISAR	8623315	Head of rice program
38	Emile RWIGIRA	JICA Study Team		Translator
39	Muvunyi Yahaya	JICA Study Team		Interpreter
40	Kathir	ISAR	8544676	Rice Expert
41	Cyubahiro Eduard	RADA	8748357	Rice production
42	Mutabazi Alfred	Ruhuha Sector	8475209	Agronomist
43	Ngarmbe Félix	Ruhuha Cell	8426935	Ex. Secretary
44	Ngarmbe Richard	Bihari Cell	8506065	Ex. Secretary



The Program for the Workshop of the Improved Rice Seed Multiplication Pilot Project in Nyaburiba Marshland

1. Date: June 25-26 (Monday & Tuesday), 2007

2. Place & Time: The Conference Room of Ruhuha Sector Office, 9:30-14:00 PM

3. Participants

- Total number of the Participants: Around of 80 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	69 members (Beneficiary Farmers: 60 + Agronomist+ Observers from the other 8 associations in the said cooperatives)
2	Abahunjugambi Cooperative Union	1 member (Board member)
3	Ruhuha Sector Office	1 member (Agronomist)
4	Rufuha Cell Office	1 or 2 members
5	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
6	ISAR/Butare	1or 2 members
7	RADA	1member for rice specialist
8	JICA Rwanda Office	1 or 2 members
9	JICA Study Team	5 members
Total		From 81 to 83 members

4. Objectives

The workshop is aimed at confirming an overall implementing framework of the Pilot Project for the Improved Rice Seed Multiplication, formulating a plan of operation with the beneficiary farmers and giving a technical training of rice farming focusing on seed multiplication in order to launch the said PP smoothly.

4-1. Overall Outline of the Pilot Project

This pilot project supported by JICA is aimed at multiplying the improved rice seeds on the three promising rice varieties for dissemination not only Nyaburiba but also other rice farming area in the ex-Ngenda district. Formulation of the PP is originated from the background that the rice farming in the said area faces several constraints which are limit to low competition in the rice market. Among the constraints observed, degeneration of rice variety is the most important problem in rice farming system of the area.

The main actors for the PP are the three associations whose paddy fields are located over the upper, middle and lower streams consisting of the 20 members with 1 ha per each site of the Nyaburiba marsh land, and where is confined to the paddy fields managed by the Corinyaburiba Cooperatives.

4-2. Components of other Pilot Project in Ntarama Sector

JICA will carry out the following Pilot Projects in Ntarama Sector/Bugesera District from this June, 2007.

	PP Components	Specification
1	Rice Introduction PP	1ha of Paddy field development and introduction of rice
2	Hilly Terrain Agriculture development PP	Construction of 22 Farm ponds with small scale as per each Umudugudu over the three Cells
3	Income generation Activity PP	1 Introduction of Cash crop like vegetables
		2 Rearing of Rabbit

PP Components		Specification	
		3	Bee Keeping
		4	Introduction of Banana (fresh fruit and cooking cultivars)
		5	Introduction of pineapple cultivation
		6	Introduction of water purifier to secure safety water

4.3 Component of the Improved Rice Seed Multiplication Pilot Project

The components supported by *JICA* are confined to the items below:

	Components	Specification							
1	Seed multiplication farm	-3ha paddy fields : -Seed production on promising rice varieties are carried out in the 3 ha of paddy fields, located in the upper, middle and lower stream of Nyaburiba marshland.							
2	Drying yard for paddy	-One site of 30m*30m concrete drying yard for paddy with partially shed structure							
3	Inputs	Improved rice seeds from ISAR	1	Insinzi:30 kg					
			2	Gakire:30 kg					
			3	Insindagirabbigega: 30 kg					
		Chemical fertilizers	-NPK (17-17-17): 15 bags=750 kg -Urea: 5 bags=250 kg						
		Agro-chemicals	-Necessary amount for seed treatment and control						
4	Farming implements	1	Manual Winnower		12		4	Rotary weeder	60
		2	Pedal type -thresher		15		5	Plastic sheets	60
		3	Manual type sprayer (15 Lt)		12		6	T- shape leveler	30
5	Supporting Activity	1	Planting trees on escarpment of both hill sides in the paddy fields						
		2	Soil conservation work						
		3	Dredging of irrigation channel						
		4	Technical guidance of rice cultivation focusing on seed production						

5. WS Program Schedule

		Program	Time	Remark
June 25(Monday), 2007		9:30 - 14:00		
1	Ruhuha Sector	Opening Remark	5 min	
2	All Participants	Self Introduction	30 min	Participant List
3	JICA Study Team	-Briefing of JICA PP Outline: Overall PP Components and implementing framework outline	60 min	-Flip chart
4	JICA Study Team	Formulation of Plan of Operation for the PP	150 min	-Flip chart
5	JICA Study Team	Closing remark	5 min	Summarizing of PP outline
June 26(Tuesday), 2007		9:30 - 14:00		
5	RADA/JICA Study Team	Technical Training of Rice farming on Rice Seed multiplication	180 min	Cropping calendar for rice seed multiplication
6	RADA/JICA Study Team	Overall Discussion on the Pilot Project	60 min	
7	JICA Study Team	Closing Remark	5 min	

6. Remark for WS Facilitation:

Program 3: Briefing of JICA PP outline

(1) Scope of Work for JICA

- Time Schedule of PP Implementation: May, 2007 - October 2008 (about one and half year)
- First planting could be intensively supported by JICA Team but from the 2nd & 3rd planting phase, Corinyaburiba cooperatives should take initiatives for seed multiplication and JICA team is confined to mainly monitoring and evaluation activities.
- Plan of Operation for the PP shall be made in the Kick-off workshop held on June 25-26, 2007 under participatory approach.
- JICA-RADA-ISAR assist the target seed production farmers in terms of the following items:
 - 1) Input (Certified seed, chemical fertilizer, pesticide, some farming tools/implements such as thresher, winnower, rotary weeder, T-shape wooden made leveling tool, etc)
 - 2) Technical Guidance on rice seed multiplication practice by supplying technical guideline and carrying out OJT.

(2) Scope of Work for Cooperatives

- Responsibility of Corinyaburiba Cooperatives

- a. To produce improved rice seeds under participatory way of the selected farmers in collaboration with ISAR, RADA, and JICA joint team.
- b. To purchase the improved seed from the seed production farmers and sell to the upper Cooperative Union for further marketing of the improved rice seeds for dissemination purpose.
- c. For dissemination of the promising rice seeds, necessary action to acquire a certification to the produced rice seeds is positively made in collaboration with RADA and JICA.

-Responsibility of the Beneficiary farmers in Corinyaburiba Cooperatives

- a. In order to apply a cost- sharing-system to the said PP, the beneficiary farmers are subject to the obligation of certain amount of the produce supplying to the Corinyaburiba Cooperatives, and the amount should be agreed upon among the relevant stakeholders.

- Responsibility of Abahujumugambi Cooperative Union

- a. Marketing of the promising rice seeds to other cooperatives in the ex-Ngenda area in collaboration with RADA and JICA.

(3) Scope of Work for Ruhuha Sector Office

- a. Monitoring regularly progress of the PP scheme and guide the Cooperatives including target farmers if necessary.

(4) Recording of Water level in the Irrigation Canal

JICA will install water gauges in the irrigation channel for recording water level in order to estimate water discharge through a year. Recorder for water gauge should be assigned later from the corresponding association members, i.e., upper, middle and lower stream.

(5) Assignment of the 3 promising rice varieties in the 3 sites of seeds farm

Among the three associations relevant to each site of the seed farms, the said three rice cultivars should be assigned to each site.

(6) Distribution of Input, management of the delivered farming implements

The method to distribute necessary amount of fertilizer with chemicals and to manage the farming implements should be determined among the target group in Corinyaburiba Cooperatives.

(7) Construction of the drying yard (900 m²) in the Nyaburiba Marshland

A candidate site for construction of the drying yard should be determined by the Corinyaburiba Cooperatives and inform the candidate site to JICA Study Team. Then, the JICA Study Team will carry out a site survey and take a necessary action so as to initiate construction work.

With regard to land ownership on the construction site, a right to use it should be owned by Corinyaburiba Cooperatives and not individual. If land is belong to individual, it should be cleared by making agreement between Corinyaburiba Cooperative and individual land owner through written agreement.

(8) Acquisition of Certification for the Rice Seeds Produced

In order to acquire the certification for the improved rice seeds produced by the Corinyaburiba Cooperatives, the produced seeds should meet the quality standard stipulated by the Seed Unit of

1) Criteria

a. Put a label specifying the following points in the seed production plot.

1	Variety name,
2	area planted,
3	sowing date,
4	Seed categories reference No of the producer and plot

b. Isolation of the seed production plot from other rice variety

	Category of Seeds	Distance from other variety
1	Basic seeds	10 m
2	Certified seeds	5 m

c. Planting density

1	No of seedlings/hill	One seedling/hill
2	Planting density	30 cm between line 15 cm between hills

2) Procedure to apply seed production to the Seed Unit of RADA

Proper official channel for applying legal seed producers is summarized as below table.

No	Step	Outline
1	Application for Seed multiplication	An official letter to Director General of RADA should be submitted for registration of seed producers.
2	Declaration of crops to be multiplied	Submit the information about multiplication plots and cropping calendar to the department in charge of seed quality control by filling the form.
3	Inspection of the seed	Inspector(seed quality control) from RADA visits the seed

No	Step	Outline
	multiplication plots	multiplication plots more than 3 times during growing period in order to inspect the said plots based on stipulated regulation.
4	Declare production	After harvesting and processing the seeds, the producer informs the quality control department/RADA.
5	Take seed sample for lab test	Seed samples should be submitted to Lab for quality analysis according to instruction.
6	Seed quality test in Lab	Grain moisture, seed originality, percentage of germination, percentage of disease seeds
7	Issue of Certification	A certificate is issued if the seeds meet the standard

Source: the Seed Unit of RADA, 2007.

(9) Amount of Input distribution per each beneficiary farmer for the Guideline of Seed Multiplication

Precondition: Amount for distribution is based on the 5 ares (500 m²) as per each beneficiary.

No	Inputs	Amount per each beneficiary farmer		Total amount	
1	Improved Seeds	1500 gm/beneficiary x 60 members		Insinzi	30 kg
				Gakire	30 kg
				Insindagirabigega	30 kg
2	NPK(17-17-17)	Nursery bed of 20 m ²	250 gm	15 kg	735 kg=15 bags
		Paddy Field as basal	12.0 kg	720 kg	
3	Urea	1st Top dressing	2.0 kg	120 kg	240 kg = 5 bags
		2nd Top dressing	2.0 kg	120 kg	
4	Kitazine (agro-chemical for seed treatment	Seed treatment for each 30 kg of the rice varieties should be done in each association before distribution to each beneficiary.		1 Lt	

(10) Amount of Farming Implements introduced to Corinyaburiba Cooperatives

Sharing framework as to the farming implements among the 60 beneficiaries of the three associations in Corinyaburiba is as follows:

No	Farming Implements	No of the Beneficiaries being shared	Total Numbers of Implements distributed
1	T-shape wooden made leveler	Two beneficiaries per one tool	30 sets
2	Rotary Weeder	One rotary seeder per beneficiary	60 sets
3	Manual Winnowing	Three sets per one association involved in the seed multiplication PP	12 sets
4	Pedal type thresher	Five sets per one association involved in the seed multiplication PP	15 sets
5	Manual sprayer(15 Lt)	Four sets per one association involved in the seed multiplication PP	12 sets
6.	Plastic Sheets	One sheets/beneficiary	60 sheets

**Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland
RADA-JICA
Workshop Report**

I. Participants

Farmers from the three associations comprising Corinyaburiba: The three associations are:

Abishyizehamwe

Tuzamurane

Twisungane

Ruhuha Sector: Executive Secretary

Sector Agronomist

Nyaburiba marshland Agronomist

Bugesera District: Agronomist

Corinyaburiba Board of Directors

Representatives of JICA Rwanda Office

JICA Study Team and RADA Rice Expert

II. Opening remarks

The Executive Secretary of Ruhuha Sector encouraged participants to take benefits of the training as to be able to help local rice farmers by replacing the poor variety with an improved rice variety. He appreciated the project as different experts namely from JICA, RADA and ISAR are involved to ensure good quality of seeds. JICA support is to be appreciated since they will provide farm inputs and implements that are highly needed by rice farmers.

III. The 2 day workshop agenda**1. PP IMPLEMENTATION FRAMEWORK**

To start, the facilitator reminded last February workshop outcomes namely the outlines of Nyaburiba marshland, structural analysis of Corinyaburiba, rice farming constraints faced by rice producers in Nyaburiba marshland among which degeneration of rice varieties and confirmation of cost sharing between JICA Study Team and beneficiaries including farm inputs and farm implements to be provided by JICA Study Team.

1.1. Overall Outline of the Pilot Project

This pilot project supported by JICA is aimed at multiplying the improved rice seeds on the three promising rice varieties for dissemination not only Nyaburiba but also other rice farming area in the ex-Ngenda District. Formulation of the PP is originated from the background that the rice farming in the said area faces several constraints which are limit to low competition in the rice market

*Responsibilities of the main stakeholders in PP***a) Scope of Work for JICA**

First planting will have to be intensively supported by JICA Team but from the 2nd & 3rd planting phase, Corinyaburiba cooperatives should take initiatives for seed multiplication and JICA team is confined to

mainly monitoring and evaluation activities. The responsibilities of -JICA-RADA-ISAR is to assist the target seed production farmers in terms of the following items:

- Input (Certified seed, chemical fertilizer, pesticide, some farming tools/implements such as thresher, winnower, rotary weeder, T-shape wooden made leveling tool, etc)
- Technical Guidance on rice seed multiplication practice by supplying technical guideline and carrying out OJT.

b) Scope of Work for Cooperatives

- *Responsibility of Corinyaburiba Cooperatives*

- To produce improved rice seeds under participatory way of the selected farmers in collaboration with ISAR, RADA, and JICA joint team.
- To purchase the improved seed from the seed production farmers and sell to the upper Cooperative Union for further marketing of the improved rice seeds for dissemination purpose.
- For dissemination of the promising rice seeds, necessary action to acquire a certification to the produced rice seeds is positively made in collaboration with RADA and JICA.

Participants were reminded components of the PP project in Nyaburiba marshland as they were previously discussed during the February workshop. In addition the RADA expert explained required criteria and procedures to be registered as a seed producer and to obtain seed quality certificate.

As for the components supported by **JICA**, the amount of input distribution per each beneficiary farmer and amount of farming implements were confirmed with participants. As follow:

Amount of input per 5 ares as per each beneficiary

No	Inputs	Amount per each beneficiary farmer		Total amount	
1	Improved Seeds	1500 gm/beneficiary x 60 members		Insinzi	30 kg
				Gakire	30 kg
				Insindagirabigega	30 kg
2	NPK(17-17-17)	Nursery bed of 20 m ²	250 gm	15 kg	750 kg=15 bags
		Paddy Field as basal	12.0 kg	720 kg	
3	Urea	1st Top dressing	2.0 kg	120 kg	240 kg = 5 bags
		2nd Top dressing	2.0 kg	120 kg	
4	Kitazine (agro-chemical for seed treatment	Seed treatment for each 30 kg of the rice varieties should be done in each association before distribution to each beneficiary.		2 Lt	

Sharing framework of the farming implements among 60 beneficiaries of the three associations, members of CORINYABURIBA

No	Farming Implements	No of the Beneficiaries being shared	Total Numbers of Implements distributed
1	T-shape wooden made leveler	Two beneficiaries per one tool	30 sets
2	Rotary Weeder	One rotary seeder per beneficiary	60 sets

3	Manual Winnowing	Three sets per one association involved in the seed multiplication PP	12 sets
4	Pedal type thresher	Five sets per one association involved in the seed multiplication PP	15 sets
5	Manual sprayer(15 Lt)	Four sets per one association involved in the seed multiplication PP	12 sets
6.	Plastic Sheets	One sheets/beneficiary	60 sheets

2. PP IMPLEMENTATION SCHEDULE

The time schedule of PP implementation is from May, 2007 to October 2008 (about one and half year). Participants confirmed the following schedule for the first activities. The time schedule of subsequent activities will be fixed as long as the PP implementation will be progressing.

Activities		Date	Remarks
1	Application to become seed producer	June 27 th	A letter to be prepared and submitted by CORINYABURIBA President
2	Nursery beds	Up to June 27 th	
3	Soil sampling	June 29 th and July 2 nd	
4	Seed delivering	July 3 rd	
5	Seed treatments	July 3 rd up to July 5 th	
6	Sowing in nursery	July 5 th	
7	Decide where to construct the dry yard:	by July 5 th .	
8	Land preparation and leveling operation	From July 6 th to July 20 th	
9	Transplanting	July 21 st	
10	Fertilizing	To be determined	4 times
11	Disease and pest control		From pre- germination to harvesting.
12	Threshing and winnowing		After harvesting and drying paddy

Plan of operation for supporting activities

Activities	Details	Inputs/tools	To be provided by
1. Tree planting	Mango	Seeds	JICA
	Papaya	Nurseries	JICA
	Macadamia	Watering cans	JICA
	Oranges	Nursery bags	JICA
	Pennisetum	Pics, rake	JICA
		Shovels, hoes, machetes	Beneficiaries
		Fertilizers	JICA
2. Erosion control works	Top survey and measurement	Moringa	JICA
		Chemicals	JICA
		Wheelbarrow	JICA
		Wood, ropes, Manpower	Beneficiaries
			*Beneficiaries
	Digging ditches	Tools: same as above	

* The President of CORINYABURIBA confirmed that members can carry out some activities (nursery) but there is a need for a technical guidance from supporting groups.

Discussion from day 1

- 1) *Rice seed distribution* and seed treatment were recommended to be done the same day to avoid deterioration risks.
- 2) It was strongly recommended to treat the three varieties separately on the respective parts of the

marshland: *Insinzi* at the upper side, *Gakire* in the middle and *Insindagirabigega* at the lower part.

3) *Tree planting*

A concern was raised whether those trees would not contribute to the dry up of the marshland. Trees will be planted on both sides of the marshland not in the marshland. The Nyaburiba agronomist explained trees provide manure and control erosion that could damage irrigation canals.

RADA Expert: marshland development goes hand in hand with erosion control and trees contribute to rainfalls. He recommended to plant useful trees such as fruit trees and exotic trees: *Macadamia*, *lecena*, *Moringa*. He informed that required distance from the marshland to plant the trees is 20 m.

When to plant trees?

By the first rains in October

4) **Erosion control ditches** should be reclaimed during August- September and October.

5) Payment compensation to beneficiaries who will have to reclaim erosion control ditches in the field belonging to other people. Concern whether landowners will not refuse to have their fields reclaimed with ditches.

All participants agreed that nobody will refuse as they will instead benefits to have erosion control devices in their field to conform with the national policy.;

Regarding perdiem/payment to reclaim erosion control devices, JICA side explained beneficiaries need to organize within Umuganda or other group framework to dig erosion control devices as their contribution to the project, JICA side will provide technical guidance. Participants insisted on payment as other projects like PAPSTA used to pay beneficiaries as laborers. Finally it was recommended to approach authorities so that they can mobilize the population to reclaim ditches on both sides of the marshland through community works (Umuganda).

6) **Management of farm implements:** a discussion was engaged about who to be responsible for farming tools, whether they should be kept at CORINYABURIBA or to implementing associations or individuals. It was confirmed tools should be delivered to CORINYABURIBA and CORINYABURIBA ensures distribution among associations and the association President assigns one member of the board to be responsible for the management of tools.

7) Distribution of the three varieties to the three implementing associations.

It was agreed to multiply *Insinzi* at the upper part, *Gakire* in middle and *Insindagirabigega* at the lower part of the marshland.

End of day 1

3. TECHNICAL GUIDELINES FOR RICE CULTIVATION FOCUSING ON IMPROVED RICE SEED MULTIPLICATION.

The RADA expert provided technical training on rice seed production.

He started reviewing with participants constraints to rice production in Nyaburiba

- Damages of irrigation canals leading to water problem in the marshland.
- Degeneration of rice variety
- Weak seedlings

- Pest & Disease
- Non cooperative attitudes of farmers

1) **Water** issue remains a big problem especially during July, August and September. When water is retained by farmers at the upper part of the marshland those at the lower side lack water during the dry season and at planting period.

2) **Degeneration of rice variety** yields to high percentage of broken rice. Rice broken over 15% is not accepted at the market. Rice variety degeneration should not exceed 2% for seed production.

3) **Weak seedlings:** When transplanting aged seedlings, there is decrease of production as planted seedlings are weak. A seedling which exceeds 1 month does not tiller and has weak rooting.

4) **Pest & Disease: Pyricuraliosis** is the most severe disease and significantly decrease production. It is due to untreated seeds prior to germination.

5) **Non cooperative attitudes of farmers:** Rice cultivation should be carried out in cooperatives since rice farmers share many things in common: chemical spray and fertilizer application have to be carried out at the same time for example. Farmers' cooperation allows preventing together pest & diseases, to clean canals, share water and monitoring of rice cultivation is easy.

3.1 Benefits of selected varieties

All the three varieties namely *insinzi*, *Gakire* and *insindagirabigega* have long grains and long grain varieties have an added value on global market.

Gakire: high price. It came from Ivory Coast in 2001. It was producing 2t/ha on hilly terrain and its production in the valley was expected to 8t/ha. Good variety is selected based on the following:

- Yield potential
- Resistance against diseases
- Market
- Where the seed will be produced.

Facagoro was cultivated since it has long grain and was preferred at the market but it is being replaced by INSINZI, GAKIRE and INSINDAGIRABIGEKA as Facagoro is no longer resistant against blast disease.

Nerica: New rice for Africa produced on hilly terrain. It is produced in Bugarama

3.2 Introduced farm implements

1) **Manual rotary weeder:** but to use it you have to respect lines while transplanting. The Agronomist should count the days when using rotary weeder and when weeding with hands to compare.

2) **Threshing machines:** the national standards consist of providing 1 tool per 15ha and the cooperative will get 15 tools per 42 ha. Participants were shown machines from Uganda, Senegal and Japan and JICA Study Team will supply such farm implements during the implementation of rice seed production project. He urged participants to well manage farm implements since some farmers have the bad habit to leave rice farming tools in the marshland after harvesting or to use rice winnower for other crops such as maize or sorghum.

3.2 Rice cropping guidelines

Rice grow stages: germination (vegetative), tillering and Panicle formation stages

For proper tillering, the rice seedling should have already tillers. Transplanting occurs when seedling has two leaves or a length of 20 cm. When rice plant has already heading, it does not grow anymore; a premature heading is a sign of disease

1) Seed treatment prior to germination

Seeds should be prepared before germination. To test germination capacity, 100 grains are put in a wet piece of cloth and after three days, germinated seeds are counted. When seeds have germinated at 80% they are good seeds. Soaking seeds for 24 hours and then seeds spend other 24 hours prior to sowing in nursery beds. Some seeds have dormancy and do not germinate within the required time. Sometimes this problem can be dealt with by increasing temperature.

2) Planting

Rice is cultivated in hot area in good clay soil allowing water infiltration. In Rwanda, planting season are as follows:

Season A: June/July

Season B: January

The seedling is planted at 2-3 cm depth and one seedling per one hill is applied. Spacing between lines is 30 cm, between one hill and another: 15cm

3) Weeding: 3 times

1st early tillering, 2nd young panicle formation, 3rd heading

Canals need to be cleaned at least every month, uprooting off –types and cleaning around the plot especially to prevent from pests. Combating a fly known as *Diopsis* through spraying chemicals. The operation should be done at the same time for all the three groups.

For rice seed production, it would be better to produce rice seeds in a plot where other crops have been harvested to avoid any possible contamination.

4) Fertilizers: NPK allows rapid growth of rice plant. 12 Kg /5 ares thus, 240 kg/ha

Urea: to be applied at the beginning of tillering stage. Urea allows fast tillering. It is better to apply it after weeding operation in that case weeds do not consume mineral nutrients provided by urea. At early panicle formation, urea is added in paddy plot for the rice to get big

5) Importance of water management

Nursery: no water shallow, just manual irrigation from the canal other wise seeds may get rotten

Transplanting: Shallow water level otherwise seedlings may be smashed away.

Water level is kept in plot after *tillering*.

If water exceeds the required water level rice gets rotten.

Yellow ripening: full stop of water and drain out all plots to prepare harvesting operation.

In case of uneven water distribution, rice does not mature at the same time. Land leveling is of paramount importance.

6) Harvesing

- Rice is harvested at 24% moisture. Seed rice should be dried up to 14%
- Proper storage facilities
- Rice can be stored by using cocoons (from Israel)

The facilitator requested seed producer to be as honest as possible in order to produce certified seed

Discussion from day 2

1) Key discussion on water management issue

Water level in August and September constitutes a major problem for rice farmers: there is a need for proper management of water, a draft of water management rules have already been drafted, further discussions are necessary to finalize them in the Cooperative. The rules will help to equally share scarce water during the dry season or transplanting period. RADA expert observed that in desert countries, water is considered as the most important farm input.

2) How can water be kept in the plot whereas it is recommended to reclaim paddy fields including slope?

When the plot is leveled, irrigation water is kept even level by using a T-shape leveler. The same amount of fertilizers is applied as well.

3) Can you explain about rice vaccination through cutting roots?

It depends on how old is the seedling. The seedling is required to be transplanted between 15 days and 25 days. At that time you can cut the old roots and allow younger roots to grow properly. In doing so, this prevents some diseases the seedling could carry in transplanting. But at the 30th day, the rice plant has started tillering and it is not good to cut roots.

4) There are seeds with low capacity germination which do not germinate within 24h

It is true that some variety has dormancy and sometimes this problem can be solved by spreading the seeds thinly over concrete floor for few days as heat treatment.

5) Regarding criteria for quality seed certificate:

The multiplication plots should be kept 5 to 10 m away from other variety plots: Are we going to cultivate other types of crops in neighboring plots or leave them unused ?

Farmers can use the whole plot but 5m to 10m distance adjoining to seed multiplication field should be used for food grains by using the same variety as the one planted for seed multiplication.

6) Most of the plots are believed to be 5 ares but some plots may be beyond of 5 ares, which may affect fertilizer dosage.

It is recommended to measure plot dimension again for seed multiplication within PP framework

7) Some participants having concern about **one seedling per hill system**

The sector Agronomist informed participants the system was applied in Kibaza, and they have to go and see how it works. Farmers is faced with pests such as mice and advice to clean **alleys and the main channel**.

4. OVERALL DISCUSSION ON PILOT PROJECT

Discussed and confirmed

1) Application for registration

CORINYABURIBA has to apply to be registered as seed producer by writing to RADA Director General: Corinyaburiba President, Mr Martin SINDAYIGAYA will write such letter not later than June 27, 2007. RADA/JICA will from time to time visit the multiplication field to train the participant farmers via OJT how to eliminate off-types.

2) TOR agronomist

JICA side proposed 3 agronomists to be assigned to each seed producer association

After discussion whether one agronomist would be enough or not, it was confirmed 2 agronomists should be employed. One specifically for seed production and the 2nd for overall rice cultivation in Nyaburiba marshland and other supporting activities namely tree planting and erosion control devices on both sides of the marshland.

Specific assignment of the 1st Agronomist: Mr Claude

- Ensure quality seed and criteria to obtain seed quality certificate.
- Monitoring work for the 60 beneficiaries and provide a fortnight report
- Technical instructions
- Report to Sector Office/ JICA Study Team.
- The first agronomist: Jean Claude has already been recruited he will start office from July 2nd

CORINYABURIBA will look for the second agronomist candidate of which CV shall be submitted to JICA Study Team for consideration.

3) Reporting: A for discussion on reporting system to different stakeholders, it was confirmed the report would be submitted by the agronomist to JICA study Team which multiply it and distribute to other different stakeholders. For information to the beneficiaries, it was suggested to construct a bulletin board at dry yard near the marshland.

4) Study tours

Two study tours are envisaged. One in Rwamagana, the other in Butare ISAR. Such study tours will respectively be carried out in August and November on dates to be confirmed.

5) Soil sample

Soil sampling shall be conducted in the three parts of Nyaburiba marshlands on June 29th and July 2nd. Three group leaders were requested to be around on those dates to guide the team. Sampling will involve digging some small pits to see the soil profile of cross section, thus few laborers will be needed to help the team. In total nine soil pits will be dug, or three per each part marshland part.

Concluding JICA Study Team thanked participants for attending the 2 days workshop and hoped that together they will make the PP project a success.

The Report of the Study Tour for CODERVAM in Nyagatare, Eastern Province

1. Introduction

On September 6, 2007 a study tour was conducted in Nyagatare , Eastern Province at CODERVAM. The Cooperative is located in Cyabayaga Sector. Participated

60 rice seed growers and leaders of groups farming rice in Nyaburiba marshland together with the Board of CORINYABURIBA as well as representatives of Ruhuha and Nyarugenge Sectors where Nyaburiba marshland is located.

Departure time from Ruhuha was 5 am. We arrived in Nyagatare at CODERVAM at 11:08am. We were welcomed by the Board of CODERVAM chaired by the Vice-President Mr Mboneza Elie. He started welcoming guests and introduced Board members of CODERVAM.

2. CODERVAM Profile

Uhoraningoga François: Director of CODERVAM

Munyengaju Viateur: Secretary

Nsengiyumva Ezechiel: Mobiliser

After the welcoming remark, on behalf of guests Mr. Asindayigaya Martin introduced the tour party members. Then they followed a sharing of ideas and COVERDAM leaders explained about the cooperative background.

CODERVAM stands for Coopérative de Développement Rizicole des Vallées de Mutara. It was created in 1987 on Canadian Support who financed reclamation of the marshland and rice milling facilities. The Cooperative got a legal status in 1988. It has 886 members and produces rice in 400 ha paddy fields in Muvumba marshland in the following three Sectors such as Nteko, Mukama and Cyabayaga.

3. Coop Structures.

General Assembly

Board of Directors

Auditing Committee

Technical Committee: Director, Accountant, 2 Cashiers, Messenger, Operator, 2 store keepers, Agronomist
CODERVAM employs in total 16 paid staff. Their monthly remuneration totals 1.000.000 Rwf. As to allow smooth operation of the Cooperative, members have been made groups. The groups have been subdivided into sub groups of 5 to 15 members. Those subgroups are made of farmers with close plots and sharing the same irrigation canal.

After discussion held in CODERVAM meeting room, we visited the Cooperative rice milling plant and we observed how rice is milled. In that implant we were received by the implant staff (operator) and together with the CODERVAM Director we made the round of the rice milling plant. We were shown the store where rice is

put before being gathered on the drying yard in the halls. After, it is brought in the milling plant. When rice reaches the milling plant, it is received and weighed by store keeper and give to another store keeper in charge of receiving rice to be milled. At each stage, entry and reception slips are delivered.

After the milling operation, rice is received by the milling plant store keeper. We observed that their rice is well milled since it is not a mixture of varieties.

Then we visited paddy fields in the marshland and observed some facilities such as irrigation and drainage canals. We were explained water used in those paddy fields comes from Umuvumba river that has been diverted into canals. We also learnt about varieties planted as follow:

a. Kigoli, b. Yun, c. Markasi, d. Umutara, e. Madagascar

Rice is produced in the 400 ha by the 886 members. Plot size of one farmer ranges fromf 0.6 to 3.0 ha. As for paddy field reclamation, we realized they were still at the low level since they planted seedling in the unleveled plots and farmers pointed out its due to hired laborers who extensively cultivated without leveling. We were explained that they planted one seedling per hill but we observed in the marshland where they still planted many seedlings per hill and with 30 kg seeds rate per ha

As regards organic fertilizer, they showed us how rice sprouts after harvesting (ibiceri ceri) produce organic fertilizer by mounding them at a certain place.

Concerning chemical fertilizers

- NPK 2 kg per are (200 kg/ha)
- Urea 1 kg per are (100 kg/ha)

4. Irrigation

No water problem and they put water in the plots after transplantation and they dry out water at the maturation stage.

5. Production

They produce 5.5 -7.0 tons per ha and harvests are collected at the drying yard and then weighed. We were informed the farmers themselves determined the paddy price. The study tour ended at 1: 00 pm and we returned home from the marshland.

6. What we appreciate from the Study Tour

(1) Cooperative structures are complete and operational.

Coop consists of the following board members and meeting:

-General Assembly

-Board of Directors

-Auditing Committee

-Technical Committee: Director, Accountant, 2 Cashiers, Messenger, Operator, 2 store keepers, Agronomist

(2) Good financial management system with Accountant

(3) Paid staff in the Technical Committee

(4) Members are assisted to get inputs through loan system and they get inputs on time

(5) Improved seed multiplication and they use them in paddy production

(6) Harvested rice is collected at the same place, processed and marketed

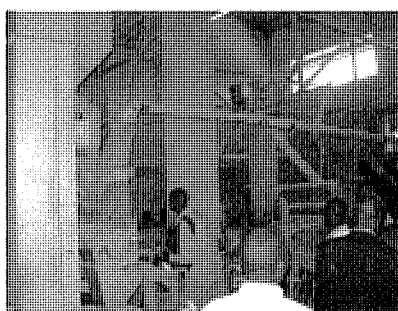
(7) They have a store for harvested production and the store keeper assigned.

(8) All cooperatives members are involved in cooperative activities and Cooperative

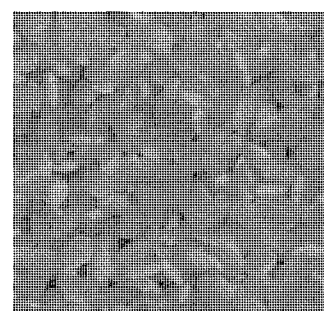
leaders plan for other members. This should be followed in Corinyaburiba as well.



Welcome speech by Vice director



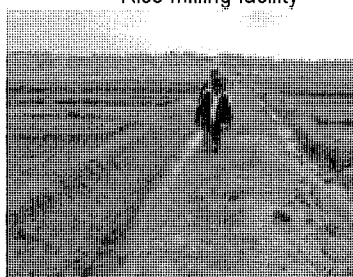
Rice milling facility



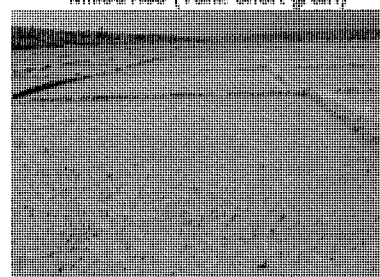
Milled rice (Yunk short grain)



Sowing rice bag by machine



Independent canals of irrigation and drainage



Standard lot based on 1 are (100 m²)

Figure VI.6.4.1 Study Tour: CODERVAM Rice Cooperative in Nyagatare, Eastaen Province

Report of the Study Tour to BUGARAMA, Western Provice

DATE: 28-29 July 2008

CORINYABURIBA leaders undertook a study tour in Bugarama, Rusizi District, Western Province. We departed from Ruhuha at 28 July, at 4:00 am and arrived in Bugarama at 12:00 o: clock. The cooperative's leaders were conducted by the Executive Secretary of Ruhuha Sector, Mr RUSINGIZANDEKWE Antoine together with the CORINYABURIBA Leader, Mr SINDAYIGAYA Martin. In total we were 16 people.

We were welcomed by the Director of CPRB (Cooperative de Production Rizicole de Bugarama)¹

He started introducing the rice cooperative that operates in 3 Sectors namely Bugarama, Muganza and

¹ Rice Production Cooperative of Bugarama

Nyakabuye. He said that rice cultivation started in Bugarama between 1940 and 1950 and rice was mixed with pyrethrum at that time. Today, paddy is cultivated on a surface area of 1405 ha. There are 7 agronomists. Farmers produce paddy, mill it and sell it. Production is estimated at 7T/ha. So far, they have got a big rice milling plant belonging to the Cooperative (CPRB) obtained through the MINAGRI loan (36.000.000 Rwf and 2 small implants. The Cooperative does not have any milling machines, they are owned by cooperatives and private operators. Before they used to get their paddy milled at Kabuye (Kigali) and at Gikonko (Butare). That big machine was obtained in 2005 and the machine is called zacckariya Z x25 and it does mill 1,200kg/hour.

The quality of the machine: it does separate grains from stones, and it separates paddy according to its quality.

No1: The first quality with full grain (4/4)

No2: Good but slightly broken rice (3/4)

No3: With broken rice at (2/4)

No4: Many broken rice and not fully matured rice (1/4)

The rice milling plant is made of a chain of machines and each machine has been assigned with its own function.

Speaking on the behalf of guests, the Executive Secretary of Ruhuha Sector said the purpose of their visit was threefold: Observe progress of rice farming in Bugarama and learn from Bugarama paddy farmers Observe their modern rice milling plant and promote good relationships among cooperatives. Antoine said that usually we hear that Bugarama rice has a value add on and has a good taste; therefore we want to know why; whether it is a good tasteful variety; whether it is due to improved farming practices or a good milling plant that add on value to Bugarama rice. He requested study tour participants to learn and pass on knowledge to others in order to take benefit from this study tour.

After a briefing on cooperative functioning, we were led to the rice milling plant and were explained about the milling functioning. The rice milling plant employs 7 among whom the chief who are in charge of the machine operation and maintenance.

The problem noted on this milling plant concerns its spare parts which are hard to be found but now there are some spare parts that come from Burundi.

The rice milling plant is made of 6 parts:

1. *Entrance part* (made of the sieve; this is the entrance trail of rice
2. Elevator
3. (Cleaning machine)
4. *Decortiqueuse* made of 3 machines
 - a. *Decortiqueuse*
 - b. Separator of milled rice and non milled rice.
 - c. *Removal Arrachage* of son de riz of 2 qualities (1st quality in powder and the 2nd

5. *Machine* that removes stones from rice)*Quality sorting machine*

No 1: 4/4

No2: 3/4

No 3: 2/4

No4: 1/4

The rice milling plant has also a big storage of non milled rice (200t) and that of the milled paddy, the seed storage, the storage of inputs (fertilizers and pesticides) managed by private operators (caritas), private operators purchase those inputs from Kigali and sell them to farmers.

4 varieties are cultivated

1. Watt 54: *Insindagirabigega* (80% of the whole paddy produced), it produces 8 T/ha and spacing while transplanting is 25cmx25cm. Milled rice is sold at 580F/Kg and non milled rice is sold at 250 Frw/kg. It is harvested after 5 months and half.
2. Siffara from Tanzania harvested after 6 months, this variety produces 4.5 T/ha, the milled rice is sold at 650 RwF.
3. Nerica 9: 6t/ha spacing 20 cm x cm 20 . It is harvested after 3 months, short grain. The non milled rice is sold at 350 RwF, the milled rice is sold at 1000 Rwf/Kg
4. Basumati: Long grain. Spacing is cm 20xcm20 since it does not tiller a lot. Production is 4-5/ha. It is harvested after 3 months. Milled rice is sold at 1100 Rwf/Kg, it is cultivated by few people since it is bought by few people as it is expensive. If produced by many farmers, it would decrease value and would be sold at low price and there would be a loss on farmers' side since it does not give as much production as NERICA, but farming expenses are few since it is harvested after few months. Seed rate is 40 kg-100kg/ha. 3 seedlings /hill.

Fertilizers used are:

1. DAP. 1 kg/are= 100kg/ha applied 20 days following transplantation (20 dat)
2. Urea: 1st top-dressing 50 kg/ha 40 d.a.t
2nd top-dressing 50 kg/ha at booting stage

One Kg of DAP cost 430 RwF, Urea is 360 RwF/Kg. Weeding is done 3-4 times. Off-types are removed to improve production.

Pesticides used are: Sumicombe: insecticide

Dimethoate

Beam and Kitazine

To conclude the study tour, the Executive Secretary thanked them the way we were welcomed. Bugarama people were also happy that we were accompanied by local leaders. They said that they usually receive various guests but it was the first time their visitors were accompanied by authorities (Executive Secretary). This shows good collaboration between CORINYABURIBA and local authorities.

The Study Tour ended at 3:pm We arrived at Ruhuha on July 29th in the morning

Ruhuha July 31st 2008, by Gashongore Isaie, agronomist.

As of August, 2008

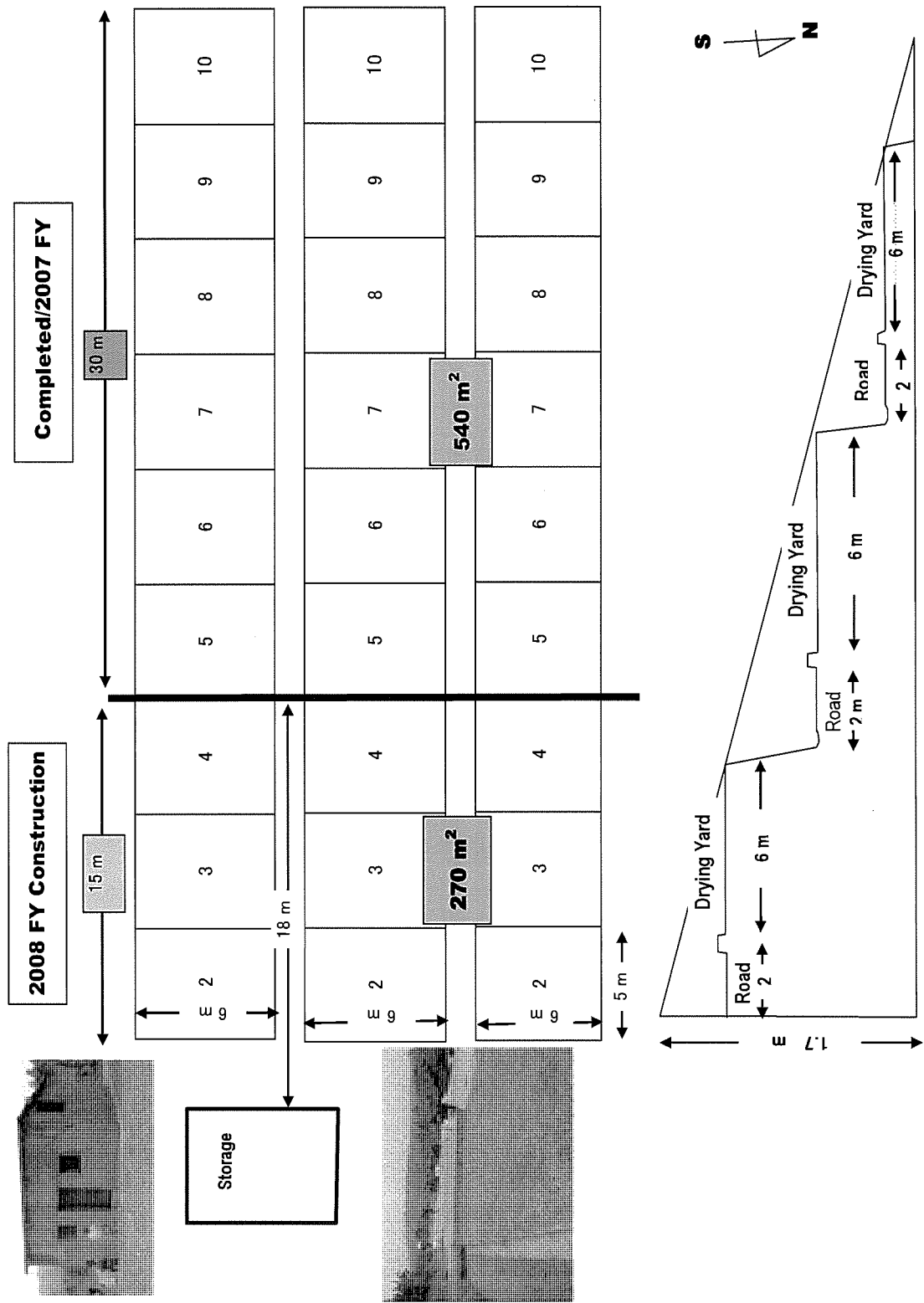


Figure 6.5.1 Construction of Concrete Drying Yard for Paddy and Storage

The Program for the Midterm Workshop on the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: February 4th (Monday), 2008

2. Place & Time: Ngenda Vocational Training Center, 9:00-13:00

3. Participants

- Total number of the Participants: Around of 80 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	76members (Participants for the Pilot Project and Corinyaburiba Board members)
2	Ruhuha Sector Office	1 member (Agronomist)
3	Nyarugenge Sector Office	1 member (agronomist)
4	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
5	RADA	1member for rice specialist
6	JICA Study Team	4 members
Total		Around 85members

4. Objectives

The workshop is aimed at evaluating the first cropping of JICA-RADA improved rice seed multiplication and dissemination Pilot Project among the participants and feeding the lesson learnt back to the second rice cropping for the Season B.

5. WS Program

	Program	Time	Remark
February 4th (Monday), 2008 9:00 - 13:00			
1	Ruhuha Sector	Opening Remark	5 min
2	All Participants	Self Introduction	15 min
3	JICA Study Team	-Briefing of Workshop	5 min
4	Agronomists employed by JICA Study Team	-Review of overall farming activity and the feedback practices to the 2nd Rice Cropping for Season B.	120 min
5	Overall discussion	-Rice Farming Practice	60 min
6	JICA Study Team	Closing remark	5 min
			Summarizing of PP outline

REPORT OF THE WORKSHOP ON MIDTERM EVALUATION OF IMPROVED RICE SEEDS MULTIPLICATION AND DISSEMINATION PROJECT IN NYABURIBA MARSHLAND

1. Date and Time: 04 February 2008 (9:00- 13:30)

2. Place: Conference Room in Ruhuha Sector Office; Starting time: 09.26'. A.M

3. Participants

1) JICA study Team memers

Mr Kurita/Agricultural Extension, Mr. Matsuda/Coordinator, Miho Ueta/JOCV

2) District Office: Mr. Eric/District Agronomist

3) Ruhuha Sector/In charge of social affairs in Ruhuha sector.

4) Agronomists recruited by the JICA Study Team

Mr. Kabera J. Paul, JICA Agronomist in Muzi Cyeru Marshland

Mr. Hakizimana B. JICA Agronomist in Muzi Cyeru Marshland

Mr. Claude JICA Agronomist in Nyaburiba Marshland

Mr. Isaïe: JICA Agronomist in Nyaburiba Marshland

5) CORINYABURIBA Coop: 63 members.

4. Opening Remark

Opening remarks was addressed by the sector representative in charge of social affairs, Ruhuha Sector, and who wished the beneficiary farmers to appreciate always their donors like JICA which could ameliorate their life condition. He said also to the beneficiary farmers to keep properly the projects on Improved rice seed multiplication and dissemination in Nyaburiba Marshland.

Following him, Mr. Claude, JICA employed agronomist introduced some guests and remarked all the beneficiary farmers to be more attentive and asked some questions if any followed by the self-introduction of all participants.

5. Briefing of Workshop

After self-introduction, Mr Eric briefed the program of the workshop, and then Mr. Kurita explained the purpose of the workshop about the implementing schedule; he said that JICA Project would be phased out in this October 2008, and the JICA study team would focus on the monitoring work from the 2nd rice planting by showing the assignment schedule of each experts of JICA study Team.

6. Review of Overall farming activities and Q&A

Mr. Isaïe (Agronomist) presented the progress of the 1st rice cultivation by showing the power point in terms of the site location of the pilot project, the main objectives of the pilot project, landscape in Nyaburiba Marshland, and continued to explain sowing of the improved rice seeds on nursery beds and reminded the roguing operation during the nursery stage. He reminded again that on July 6, 2007 they did levelling work by using the T-shape tool for preparing nursery beds. He confirmed the beneficiary farmers if they remembered the planting space practiced between rows and hills, and the beneficiary farmers answered it about 30cm between lines and 15 cm between hills. He continued to explain some photos on the power point slides about a transplanting ceremony on August, 1, 2007 which had around 80 participants (beneficiary farmers, RADA, Ruhuha sector, JICA and NGOs). He explained the cultural

practice they did during the 1st rice cultivation such as basal dressing (NPK 240Kg/ha), weeding, spraying agro-chemicals against *Diopsis Macrophthalma* which is very dangerous and recommend to control all plots. The next, he showed the participants the slide of registration of seed grower to RADA/AFSR (in charge of multiplication of seeds). He continued to talk about the results of the baseline survey carried out in August-September 2007, and the construction of the concrete drying yard with storage in Nyaburiba, and about the study tour to CODERVAM/Nyagatare (participated by the 83 Coop members including Ruhuha/Nyarugenge sectors, Cell, District, and JICA study Team).

Mr. GASHONGORE continued to brief about the results of the yield survey for the 1st crop in 2007 focusing on concept of yield components like the number of panicles/m² x number of spikelets /panicle x 1000 grain wt x percentage of full grains.

After explanation, Mr Martin asked a question to him exactly a yield per each variety because Mayor inquired him about the question and asked him to collect the full information about yield of the three varieties in Nyaburiba Marshland. According to yield and its variety characteristic survey, Mr. Paul asked if they had a program to study about three varieties milling rate, and taste for collecting information about preference of these varieties in accordance with market needs.

Then, Mr. Gashongore continued to explain about harvesting ceremony on January 8, 2008 which was aired on the Rwanda Television including New Times news paper, and the yield result of the 1st rice crop. Then Mr. Martin, Coop President told to the participants that CORINYABURIBA was the first Coop in the Eastern Province which had an award given by H.E the President of the Republic of Rwanda because of achievement of the highest yield in the Eastern Province, and moreover he announced the beneficiary farmers that the Coop had now an agronomist in charge of fertilizers sale because Corinyaburiba Coop would be a sole dealer on fertilizers in Ruhuha Sector.

Mr. Gashongore continued to talk about the summary of farming practices on rice cultivation and the difference between conventional practices and JICA's recommended practices. Then he explained about the monitoring results of 1st rice cultivation, and how to use the 2nd top dressing (urea) including application time based on the figure. He stressed the proper farming practice by using transplanting rope and stick including proper NPK application method without loss.

After tea break, Mr. Claude, JICA recruited agronomist explained how to use fertilizers and carry out a proper water management in plot to plot fields, then briefed the time to harvest rice based on color change of panicles in plot and post harvest technology such as threshing, winnowing and O&M of agricultural tools. In the last briefing, method of seed treatment from soaking to incubation process was presented based on the figure in the hand out material.

7. Overall Discussion

Question 1:

Due to scarcity of irrigation water, water control is difficult as below.

- 1) Keeping water depth as instructed 3 cm depth
- 2) Eroded soil inflowing into Nyaburiba Marshland is problem.
- 3) A second concrete drying yard is possible to be constructed in the upper site?

Answers

- 1) Nyaburiba marshland has spring water sources but water canals are unlined canals. Only the way is to make the canals cleaning from source to paddy plots with construction of water gates. According to Mr Kurita, the JICA Study would be phased out on this coming October, 2008 and no more budget to coop with soil erosion issues. He suggested the Coop member to sound out RADA and RSSP's intension by submission of rehabilitation plan of the irrigation canals. Mr. Kurita further explained that at the kick off workshop held on June 25-26, 2007, JICA Study Team accepted to do dredging of canal in combined with weeding instead of renovation of whole irrigation canals in the Nyaburiba Marshland as the Coop intended.
- 2) As for the soil erosion problems, Mr. Kurita answered by asking the beneficiary farmers how was the best way to coop with the problem and said that JICA Study Team would assist tree seeds and reminded that the cooperative accepted to raise tree nursery management without payment at the kick off work shop. As an alternative option, the JICA Study team was ready to support the plastic bags to the Coop which should contribute to raising nursery for protection of soil erosion on slope in Nyaburiba Marshland. Mr. Martin replied that the Coop would write a letter to District Mayor by explaining about JICA Study Team accepting to do but not do yet. Mr. Kurita further told that JICA Study Team accepted to do the soil conservation measure partially of the marshland as pointing the overall marshland map.
- 3) Concerning to the concrete drying yard at the upper site, Mr. Kurita said that the 2nd drying yard could be constructed in the upper site if necessary but the beneficiary farmers should acquires a necessary land for construction under the Coop's responsibility. But Mr. Martin (Corinyaburiba Leader) said that it was not good to make a decision at the moment and need to think over this plan more for making a decision.

Question 2:

- 4) Some materials accepted by JICA are not yet given; I want to know if JICA will give?
- 5) We requested to the JICA study tours two times and the first one was not intended to CODERVAM, and we want to know when is the 2nd study tour.

Answers

- 4) Mr. Kurita answered that these materials would be delivered in the next field survey, 2008.
- 5) Concerning to the study tour organized by JICA Study Team, Mr. Martin explained that the Coop planned two times study tours but Mr. Martin as a leader asked to JICA study team to do one study tour to CODERVAM instead of two times.

As closing remark, Mr. Kurita thanked to the all participants and thanked to the beneficiary farmers for their hard working to achieve high yield and expressed his wihs that the 2nd crop would achieve more yield. He told to the beneficiary farmers to continue rice farming in combined with vegetables cultivation on hilly slope so as to get more benefit. He stressed that the 2nd rice planting would be managed properly in collaboration with the agronomists (Claude, Isaïe and Eric from District).

Further, the Sector Representative gave a speech that the vision of Rwanda country should work hard, which meant CORINYABURIBA had to work hard and improve their living of standard. And he said

thanked to JICA Study Team for assisting Nyaburiba Marshland in Ruhuha Sector and welcomed back again for the JICA next phase.

The Workshop Program for the Final Evaluation on the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: September 4th (Thursday), 2008

2. Place & Time: Ikirezi Café, Ruhuha Sector, 9:00-13:30

3. Participants

- Total number of the Participants: Around 85 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	76members (Participants for the Pilot Project and Corinyaburiba Board members)
2	Ruhuha Sector Office	1 member (Agronomist)
3	Nyarugenge Sector Office	1 member (agronomist)
4	Bihari Cell ES	1 member
5	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
6	RADA	1 member for rice specialist
7	AFSR	1 member/Inspector
8	JICA Study Team	3 members
	Total	Around 85members

4. Objectives

The workshop is aimed at evaluating the two cropping of JICA-RADA improved rice seed multiplication and dissemination Pilot Project among the participants and feeding the monitoring results back to the third rice cropping for the Season A.

5. WS Program

		Program	Time	Remark
September 4th (Thursday), 2008: 9:00 - 13:30				
1	Ruhuha Sector	Opening Remark	5 min	
2	All Participants	Self Introduction	15 min	Participant List
3	JICA Study Team	-Briefing of Workshop Program	5 min	
4	Agronomists employed by JICA Study Team	-Review of overall farming activity and the feedback practices to the 2nd Rice Cropping for Season B.	60min	PPT with Technical Guideline and handout paper
5	AFSR Staff	-How to improve seed quality?	45 min	Lecture and discussion
6	Overall discussion	- Farming Practice - Post JICA Scheme	60 min	
7	JICA Study Team	Closing remark	5 min	Summarizing of PP outline
8	Lunch			

Key Farming Practice on Rice Production guided by JICA

Key Practice		Local Method	JICA Method
1	Seed	Using Self Produced Seed	Basic Seeds from ISAR
2	Seed Rate/ha	300 kg/ha for nursery	20 kg/ha for nursery
3	Seed Treatment	Only Seeds Soaking with Water for 24 hours.	Seed disinfection with fungicide-Kitazin for 48 hours and hastening of germination for 48 - 72 hours
4	Planting Density	20 cm between rows x 15 cm between hills: 33.3 plants/m ²	30 cm between rows x 15 cm between hills: 22.2 plants/m ²
5	No of seedlings/hill	7 - 10 seedlings / hill	Only one seedling /hill
6	Fertilizer	1) NPK 250 kg/ha: 30 days after transplanting 2) Urea 200 kg/ha at booting stage Total Nitrogen = 135 kg/ha	1) NPK 240 kg/ha: Just after transplanting 2) Urea 82 kg/ha -1st 42 kg Top dressing: 30 days after Transplanting. -2nd 42 kg Top dressing: At Reduction Division stage Total Nitrogen = 79 kg/ha
7	Pest & Disease	No chemical Control	Cypermethrin for pest control Beauveria for fungi control
8	Roguing (Remove Off-type)	No operation	7 — 8 times from nursery to harvesting period.
9	Threshing	Traditional method to beat rice bundle on log or banana stem on plastic sheet	Using manual type thresher machine with plastic sheet
10	Winnowing	Using “Urutaro”(traditional tool)	Using manual winnowing machine
11	Drying paddy	No drying yard	Drying paddy on the concrete drying yard by monitoring grain moisture content so as to be 13 % with a moisture meter.
12	Yield (t/ha)	3 - 4 t/ha	8.7 t/ha in B season (Jan-Jul/08)

Ibyavuye mu isuzuma ry'umugararo

Ubwoko	Site	Uburebure		uko ihundo ripima (gm)	Ibigize umugararo						Umugararo o kuri /ha (kg) ibitsike21	Umugararo wose kuri buri site (kg)	umub. w'amhundo ku kobo	Ubuso (m ²)
		Cm	±SD		Umubare w'utwobo Hills/m ²	umub. w'amhundo	Umub. W'intete ku ihundo	imiciri100 O ipima (gm)	% y'intete zeze	Umugararo kuriha(kg)				
Intsinzi/SB	ruguru	50.7	5.9	4.3	18.4	13.1	192.0	23.8	68.4	5,860.2	7,530	8,150	290.8	10,379
Intsinzi/SA	ruguru	47.4	4.7	3.3	17.3	12.6	166.3	24.0	70.4	5,514.0	6,395	5,740	218.0	
Gakire/SB	Hagati	46.2	7.9	3.9	19.6	14.2	181.3	23.4	74.8	7,394.5	7,297	8,800	315.2	11,522
Gakire/SB	Epfo	55.1	5.7	3.4	17.8	13.2	174.7	21.7	75.0	5,942.7	8,142	9,300	293.0	9,872
Gakire/SA	Epfo	50.5	1.6	3.9	19.5	12.0	207.0	22.8	83.5	5,756.0	6,181	8,755	234.0	9,872

Source: JICA Study Team, Jul., 2008, Remark: SA refers to Season A (July-Dec/2007), SB refers to Season B (Jan-Jun/2008)

Applied Practices and Further Improvement for Rice Farming with Seed

Quality Improvement

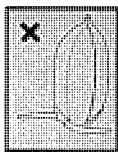
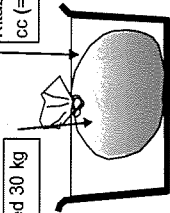
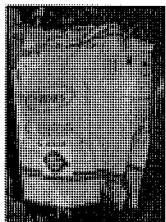


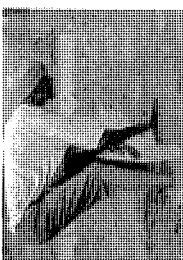
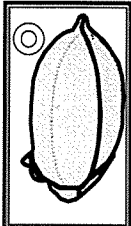
No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
1	Soaking seeds with chemicals	-Seeds were soaked with Kitazine solution for 48 hours, then seeds bag was removed from solution and put it under shade place with moist condition for 48 - 72 hours to get pre-germination prior to sowing on nursery bed.	Need to be improved	- The seeds more than 3 months after harvest: : After 48 hours soaking with Kitazine solution, hasten germination by keeping seed bag under wet condition for 48 - 72 hours depending on varieties. Required time for incubation depends on variety, thus you have to check every 3 hours after 48 hours incubation and sow seeds when it is good shape. - Paddy Seed just after harvested: Check pre-germinated seed condition after 3 days incubation under wet condition followed by 48 hours soaking with kitazin solution.
2	Seed Rate/ha	-15 - 20 kg/ha	To be continued	
3	Uprooting seedlings	-Some farmer uproots seedlings gently not to damage root, and others do just like uprooting weeds associated with damage of roots. -Damaging roots causes transplanting injury and delay of tillering.	Need to be improved.	- Uproot seedlings with soil by using hoe and wash seedling root gently one by one without damage.
4	Transplanting and planting density	- 26 days- seedling was transplanted due to delay of emergence. - Tillering and No of panicles are suppressed when transplanting depth is beyond 3cm. -Proposed planting density is	Need to be improved	-Emergence should be uniformed by sowing the good shape pre-germinated seeds such as 20-25 days seedlings. -Transplant seedlings not beyond 3cm depth. -Transplant seedlings in 30 cm by 15 cm space by using rice planting rope.

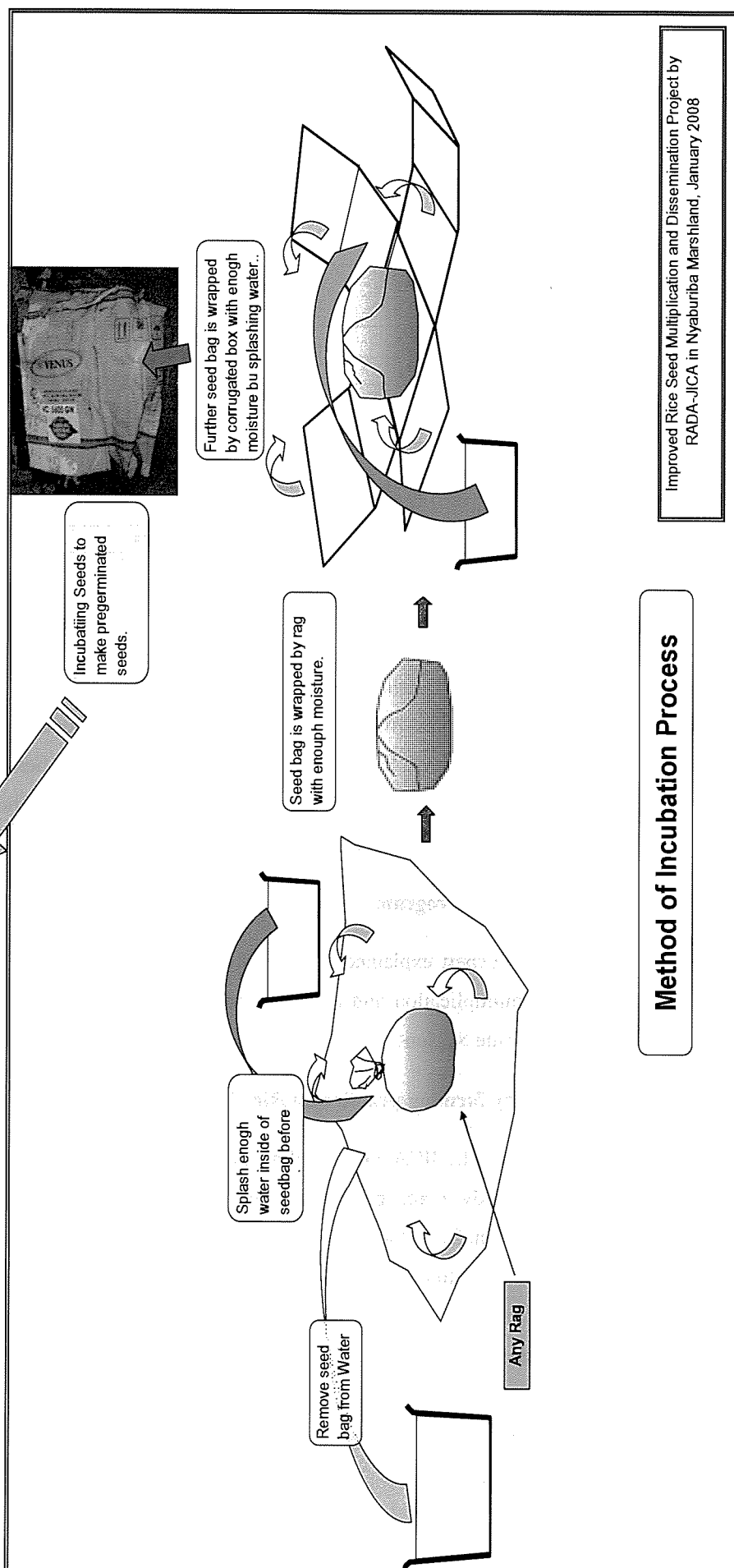
No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
		22. 2 hills/m ² but the three sites (upper, middle, lower) resulted in less than that of density.		
5	Basal dressing of NPK	-Surface application of fertilizer was applied just after transplanting. -Flow irrigation was observed just after application of basal dressing and which caused loss of fertilizer elements.	Need to be improved	- Apply fertilizer in shallow water depth and mix fertilizer by using rotary weeder so as to improve fertilizer effect.
6	Water management	- Traditional way drains water in the morning and irrigate in the evening.	Need to be improved	Try to manage below method as possible as you can. 1) After transplanting: Keep water at 3 - 4cm depth 2) Rooting -Tillering stage: Keep water 1 - 2 cm depth 3)Tillering - Reduction Division stage: Intermittent Irrigation 4) Heading stage: Keep 1-2 cm depth 5) Ripening stage: Intermittent irrigation 6) Matured stage: Drain water. (manual)
7	Top dressing-1	- Urea was applied 36 days after transplanting. - Water was drained prior to applying urea and keep 3 days without water. - Fertilizer is not dissolved and runoff is happened when irrigation is made.	Need to be improved.	<u>-Apply Urea in shallow water depth and then mix fertilizer by using rotary weeder.</u>
8	Top dressing-2	- Urea was applied 76 days after transplanting at panicle formation. - Same as 1st top dressing and runoff occurs when irrigation is made.	Need to be improved	-Apply Urea in shallow water depth and then mix fertilizer by using a rotary weeder. - Effective stage is to apply Urea at reduction division stage.
9	Roguing Operation and Weeding	-Roguing operation amounted to 7 times from nursery to matured stage.- -Removing infected plants at matured stage - Weeding is done every two weeks.	Need to be improved	- Roguing is very important practice to keep seed quality. - At first, total roguing operation was planed to be 5 times by growth stage, but the participants made 7 times of roguing operation from time to time in order to avoid contamination of different variety. - <u>Removing infected plants is essential to keep high quality of seeds and should practice at each growth stage.</u>
10	How to judge a time of	-Time to harvest rice plant was not properly judged, and	Need to be	-Shattering habit of Gakire and Intsinze increase when over matured.

No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
	harvest	shattering loss was increased at harvesting operation, especially Gakire variety because of over matured.	improved	-Insidagirabigega is less shattering habit. - <u>Harvesting time should be judged when 80 to 85% of all panicles in the field show yellowing (matured) based on 30 days after heading.</u>
11	Threshing and Winnowing	Thresher and Winnowing machines provided by JICA were used in combined with plastic sheets and <i>Urutaro</i> .	To be continued	-Only pay attention to operation and maintenance of all farming implements.
12	Drying of paddy	Dry paddy for two days under sunlight in the drying yard so as to be 13 % grain moisture content, and then paddy is bagged.	To be continued	-Thickness of paddy in the drying yard should be 3 cm under sunlight and you have to stir every one hour to avoid unevenness of grain moisture content.
13	Operation and Maintenance of Farming implements	-Some breakage occurred due to defect of the supplied farming implements. -Proper maintenance for the said implements was not done by cleaning and oiling.	Need to be improved	- After KIST repaired farming implements, 5 farming implements were exposed during the heavy rainy season. -Operation and maintenance system should be strictly arranged by Corinyaburiba Coop. For example, farming implements (rotary weeder, thresher, winnowing machines) should be cleaned and oiled after use.

Source: JICA Study Team, January 2008

Method of Seed Treatments:

Hours of Treatment (Hrs)		2 Days												1 Day												4 or 5th Day	Remark																																			
Variety		48 hours												48 Hours												Check every 3 hours																																				
1 Gakire	0 4 8 12 16 20 24 28 32 36 40 44 48	Soaking Seeds with Kitazin Solution Clean Water 30 Lts + Kitazine 300 cc (=ml) Seed 30 kg												Incubation with well moist condition												Over growth Suitable shape												Sowing on Nursery Beds 400 m ² Bed for 1 ha.																								
2 Insindagirabigega																																																														
3 Intsinzi																																																														



Report for the Final Evaluation Workshop on the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: September 4th (Thursday), 2008

2. Place & Time: Ikirezi Café, Ruhuha Sector, 9:00-13:30

3. Participants

- Total number of the Participants: Around 85 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	76members (Participants for the Pilot Project and Corinyaburiba Board members)
2	Ruhuha Sector Office	1 member (Agronomist)
3	Nyarugenge Sector Office	1 member (agronomist)
4	Bihari Cell ES	1 member
5	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
6	RADA	1 member for rice specialist
7	AFSR	1 member/Inspector
8	JICA Study Team	3 members
	Total	Around 85members

4. Agenda

(1) Opening remarks

Opening the workshop, the Coordinator of Ruhuha Cell appreciated JICA Study support and let know to the participants that the CORINYABURIBA has received the first good performance award at the level of Bugesera District because of the back up of the JICA Pilot Project. Then the CORINYABURIBA President introduced the group Leaders and there was a self introduction of all participants including the Pilot project beneficiaries, the RADA and AFSR representatives and the JICA Study Team representatives.

(2) Briefing of Workshop Program

The JICA Study team expert explained the workshop aimed at evaluating the two cropping of JICA-RADA improved rice seed multiplication and dissemination Project and feeding the monitoring results back to the third rice cropping for the Season A.

(3) Presentation of key farming practice on Rice Production guided by JICA.

In a comprehensive way, the JICA local employed agronomist went through all modern rice farming practices introduced by JICA Study Team, procedures for registration of CORINYABURIBA as a seed grower and showed the cost and benefit of the two cropping of the rice seed production. The faming techniques were coupled with the study tour to broaden knowledge of CORINYABURIBA members. Particularly on 28-29 July 2008, 16 members of CORINYABURIBA cooperative and Ruhuha Sector head and Cell visited CPRB (Bugarama rice cooperative) in Bugarama, Western Province. Results on rice crop surveys in 2008 were presented as well.

The agronomist presented achievements of CORINYABURIBA Coop from July 07-July/08 including institutional capacity building.

- CORINYABURIBA Coop was registered as a cooperative in July 2007

- CORINYABURIBA Coop started Rice milling since March 2008
- A drying yard was constructed for Nyaburiba, storage and modern farming implements
- CORINYABURIBA Coop has established a Coop office since May 2008
- Purchase of stationary and office furniture
- A permanent accountant was hired
- CORINYABURIBA Coop started estate business by renting offices since May, 2008
- CORINYABURIBA Coop got a prize from the Ministry of Labor on May, 2008
- CORINYABURIBA cooperative has been authorized as the 2nd seed producer cooperative in the Country.

(4) Representative of AFSR

The representative of AFSR discussed seed production requirement with beneficiaries by the simple question ‘*why have become seed producers*’? The answer was that we produced 4 t/ha and now produced 8t/ha. We used to plant 12 seedlings/hill and now we plant 1 seedling/hill. From this answer the Representative concluded the beneficiaries do not understand well the whole process of how to be a seed producer and therefore training should be organized for them.

Beneficiaries were explained they have become seed producers because they have been registered by RADA and AFSR only works with people who have got a registration letter from RADA.

During the envisaged training, AFSR will explain to farmers the process all categories of seeds go through: from the foundation seeds to the certified seeds. She added that there is a third category of seed of declared quality but that have not been tested.

Usually, the seed has a higher price compared to cooking rice for consumption but the question is to know whether the produced seed has a market? Another issue to be considered is calculation of investment cost in order to determine the selling price. This will help understand the cost-effectiveness of your business.

She urged beneficiaries to work hard and understand what they are doing since they do not produce for JICA.

- ☆ Beneficiaries pointed out that they invest a lot in seed production (time, energy, money) but they do not get much profit since they sell the seed at the same price as the consumer products.

The representative of AFSR emphasized on the quality and purity of the produced seeds

- Cleaning of the multiplication fields
- Fertilizers as required
- Proper drainage
- Strict follow-up of farming activities
- A large field for multiplication activities
- Good analysis of market prospect

She urged them to keep in mind all the farming practices received from the JICA ST in order to have a profit.

In addition multiplication material should absolutely come from RADA and what CORINYABURIBA Coop has now produced will be used for food consuming since multiplication material was not provided by RADA nor ISAR

- Weeding is a must since weeds can make the seeds inappropriate.

- Control of disease
- It is recommended to rotate varieties as a disease control strategy
- Good varieties and adaptable to agro-ecological environment in the region
- The plot selection which is nearby water source and if possible testing the soil.
- When buying the seed, it should buy the basic seed not the certified seed.

(5) Key word by the representative of RADA

He showed that CORINYABURIBA Coop activities fit within the country 2020 vision since they contribute to poverty reduction. Rice production 2006-2016 is one of the tangible programs aimed at self-sufficiency food production and export. And among key elements for good production

- seeds
- fertilizers
- techniques

Participants were informed about the current new system of fertilizer distribution. In the new scheme, the businessman signs a distribution agreement with the government with fixed prices. For the case of Bugesera, the Trader who was awarded the market for Eastern Province is Nkubiri then the cooperative will be supplied from him at a fixed price.

- He urged beneficiaries to eagerly follow the training organized by AFSR in order to constantly ensure the seed quality. He thanked JICA for the progress they made to CORINYABURIBA Coop.

Some of the questions raised by the beneficiaries: The 3 varieties were good at the start-up but now, some are not performing well and they were wondering which varieties to replace them with, the farmers wanted to know the current update productive seed varieties?

The representative of RADA told them to let them know whenever there is a problem since there are other many varieties available by ISAR that are appropriate to Bugesera, RADA would come to try them. For example, during the next cropping season (January 2009) RADA would come and try another variety.

(6) JICA Study Team Expert

He discussed with participants about the Post Bugesera Development Study. He informed beneficiaries about the possible technical cooperation scheme after the development study. JICA HDQ is to send 2 consultants (agriculture and water use) to prepare it and JICA Study Team has suggested to JICA HDQ 2 programs including **strengthening of improved rice seed multiplication and dissemination and supporting of Hillside Agricultural Development**. The project may start from the next fiscal year 2009.

Q. As we have been recommended to use manure, we would like to be introduced with the cow distribution project as it was the case in Ntarama Sector.

This could be some of the ideas to give to the 2 consultants that will carry out the survey.

Q. It would be better to consider erosion control on both sides of the marshland, a component that was not done during the study team pilot project.

Q. CORINYABURIBA Coop also requested to be trained in auditing and AFSR promised it will consider it.

Then the JICA Study Team expert did an overall evaluation of the Pilot Project: with the question what was good, what was fair and what was not good about the project

95 % of beneficiaries responded that the project was good given the rice production that came from 4t/ha and reached 8t/ha, the new modern farming implements they received and new techniques they had through implementation of the project.

Those who responded fair was because the project had promised to carry out erosion control activities but this activity was not done

(7) Reward

Three models farmers were given a reward consisting of 1 hoe per each owing to their good performance in cleaning path, embankment and ensuring overall cleaning of the plot.

(8) Conclusion

- The JICA agronomist reminded that quality in seed production is a must
- Preparing nursery together is a must
- Use fertilizers is a must

The Sector agronomist thanked JICA Study Team that combined the Study with the practice. He wishes Nyaburiba should be a model marshland” *Igishanga ndatwa*”

Erosion control should be done on both sides of the marshland. He urged CORINYABURIBA President and the group leaders to plant trees. The marshland has to be made productive.

The JICA Study Team Expert informed beneficiaries that on September 25th, 2008 he would leave for good and

As of Aug28-07

The Result of Soil Analysis for the Marshland's Paddy Rice

No	Site		pH		%		N (%)	NH4+-N mg/100 g	ppm		meq/100gm					%				Soil Texture
			(H2O)	(KCl)	C	OM			P. ass	P. Total	Ca	Mg	K	Al	CEC	Clay	Silt	Sand		
No.1	Nyaburiba	Rich	6.6	5.7	1.50	2.59	0.52	0.98	3.05	745.68	4.20	3.88	0.07	ng	10.33	24.34	28.04	47.62	CL	
No.2	Nyaburiba	Upper	6.7	5.9	1.92	3.31	0.61	1.73	2.29	714.28	6.40	1.08	0.09	ng	12.57	27.15	25.81	47.04	LIC	
No.3	Nyaburiba	poor	6.1	5.5	2.47	4.26	0.87	1.72	3.81	635.79	3.40	3.68	0.05	ng	14.08	44.97	12.94	42.09	SC	
No.4	Nyaburiba	Rich	6.4	5.8	2.45	4.22	0.61	1.67	1.52	659.34	4.70	1.80	0.06	ng	13.84	34.28	21.57	44.15	LIC	
No.5	Nyaburiba	Middle	6.4	6.3	2.98	5.14	0.59	1.67	0.32	651.49	9.39	2.22	0.07	ng	24.26	33.63	25.36	41.01	LIC	
No.6	Nyaburiba	poor	6.2	5.1	3.89	6.71	0.88	1.66	0.32	747.47	10.00	0.48	0.09	ng	21.41	36.33	27.45	36.22	LIC	
No.7	Nyaburiba	Rich	6.5	6.0	2.67	4.60	1.20	1.76	0.76	667.19	9.60	2.88	0.08	ng	21.90	29.97	28.71	41.32	LIC	
No.8	Nyaburiba	Lower	6.6	6.4	3.24	5.59	1.87	1.66	0.76	651.49	8.68	1.58	0.06	ng	21.41	32.08	24.80	43.12	LIC	
No.9	Nyaburiba	poor	6.2	5.8	2.60	4.48	0.42	1.66	0.38	518.05	8.80	1.30	0.06	ng	16.75	39.93	14.20	45.87	LIC	
No.10	Muzi Cyeru	South	6.0	5.3	3.62	6.24	0.39	2.39	3.81	881.29	9.39	2.69	0.53	ng	25.20	39.30	32.74	27.96	LIC	
No.11	Muzi Cyeru	Middle	6.2	5.2	3.76	6.48	0.80	1.73	6.86	819.57	16.28	4.19	1.07	ng	34.53	45.40	33.85	20.75	HC	
No.12	Muzi Cyeru	North	6.9	6.1	3.12	5.38	0.66	1.82	9.14	588.69	19.57	3.69	2.40	ng	36.92	41.92	33.90	24.18	LIC	

Source: JICA Study Team. August, 2007. Soils were analyzed by ISAR, Butare.

Extremely Low Level

Mg/K Ratio > 20 ⇒ K Deficiency

Low Level

Baseline Survey

The baseline survey is aimed at extracting basic information and index necessary for analyzing project impacts on the said pilot project in terms of potentiality of agriculture and rural development, and constraints in the rice farming of Nyaburiba Marshland.

1) Method

The baseline survey consists of survey items in the seven survey categories as below.

Outline of Questionnaire

	Categories	Major Survey Items
1	General	Family aspect, decision making, meal, land tenure
2	Income	Income (July-06 to June-07) by crop and by season, permanent crop, livestock, off farm
3	Expenditure	Expenditure (July-06 to June-06) by agricultural input, hired labor, food items, non-food items, others
4	Association Activities	General, land tenure, income, expenditure
5	Traditional supporting system	Umuganda, Ubudehe, Ibibina, kugurizanya
6	Rice Farming in Nyaburiba Marshland	Cropping pattern & variety, plot size, nursery bed, land preparation, transplanting, fertilizers, water management, weeding, harvesting, threshing & drying, transporting method, yield, pest & disease, and marketing of paddy
7	Others	Fetching water, collecting firewood, spare time, soil fertility, health, drought coping strategy

Number of households for sampling (See below Table) was five households per each association and the interview survey was carried out by a local consultant with local extension workers under guidance of JICA study team.

Numbers of Sampled Beneficiaries

	Site of Associations	Total No of Households	Sampling Beneficiaries	Ratio
1	Upper	20	5	25%
2	Middle	20	5	25%
3	Lower	20	5	35 %

2) Analytical Results

The result of the baseline survey on the beneficiary farmers of Improved Rice Seeds multiplication and Dissemination Project was as follow.

(a) General

a) Family

Below Table showed the characteristics of the 15 households interviewed.

Age of household head ranged from 23 to 58 years, on average of 39.5 years. Their schooling years were 3.4 years on average, and ranging from 0 to 8 years with 3 beneficiaries without education. Typical household consists of 5.9 members on average, ranging from 4 to 9 per household, and the family members engaged in farming activity resulted in 1 - 5 per household, on average of 2.6 persons. Although 1-2 family size was observed in the quick projects such as widow family, but a minimum were 4 members in Nyaburiba.

Concerning decision-maker on house economy among the family members, no clear tendency was observed but farming activity was entirely controlled by household-head, and or council system of married couple. Meanwhile household food security appears to be controlled by woman.

General Characteristics of the Households

No	Site	MF code	Age	Sex	Marital status	Schooling years	Family size	Family members engaged in farming	Decision-maker	
									Farming	Food
1	Upper	Nze-And	47	M	Married	3	9	3	Husband	Wife
2		Sim-Jda	25	M	Single	5	4	4	Self	Mother
3		Uwi-Cec	28	F	Married	3	4	2	Husband	Husband
4		Kan-Jos	48	F	Widow	2	5	1	Self	Self
5		Muj-Mat	32	M	Married	0	5	2	Husband	Wife
6	Middle	Dus-Via	27	M	Married	6	4	2	Husband	Wife
7		Tuy-Val	33	M	Married	8	5	2	H & W*	H & W
8		Nza-Pas	58	M	Married	2	5	2	H & W	H & W
9		Muk-Ode	46	F	Married	5	7	5	Husband	Husband
10		Nyi-Bet	36	F	Single	4	7	3	Self	Mother
11	Lower	Gaf-Gas	51	M	Married	6	8	3	Husband	Wife
12		Hab-Fid	40	M	Married	0	6	2	H & W	H & W
13		Bim-Eli	55	M	Married	5	6	3	H & W	Husband
14		Muk-Ast	44	F	Married	0	7	2	H & W	H & W
15		Ukw-Jos	23	F	Single	2	7	3	Self	Mother
Average			39.5			3.4	5.9	2.6		

Source: Interview Results by JICA Study Team, 2007, H & W*: Husband & Wife

b) Meal and Food

Frequency of taking meals per household per day was mostly two times consisting of lunch and dinner. Typical composition of food diet among the sampled households consisted of beans, rice and cassava are top three crops, and then sweet potatoes, banana and maize were followed. In case of the four quick projects conducted in Ntarama Sector, rice was not ingested but it occupies an important food diet among the three food crops in Nyaburiba. On the other hand, most typical household usually ingests around 3 - 4 kinds of crops.

c) Land Tenure System

Farm plot size was around 1 - 4 ha per household declared by interviewees. As no metrology concept existed in rural community, it was difficult to grasp via interview survey. The number of parcels was around 1 - 4 plots per household on average of 2 plots. No landless farmers in the sampling households existed but borrowing and lending of farm plot is very common in the Marshland. Their farm plots are located over marshland and hilly terrain, and the latter belongs to individual owner but the former reverts to the Government, and which gave usufruct to Corinyaburiba Cooperatives (corporate body) for cultivation and coop members are assigned to paddy field for rice production. Also, lease period is usually one to three cropping seasons.

(b) Income

Annual income of the farm households consistd of crop, livestock and off-farm activity as follow.

a) Cultivated Cop and Cropping Pattern

Prevailing crops in the Nyaburiba area consist of the eight crops such as sorghum, haricot bean, rice, cassava, maize, groundnut and vegetables (onion, cabbage, eggplant and tomato). Among the said crops, the seven crops except for cassava were dealt with as cash crops

Cultivated Crops and Cash Crops by Season among the Sampling Households

Seasonal crop		Season A		Season B		Season C	
		Household planting	Household Selling	Household Planting	Household selling	Household planting	Household selling
1	Sorghum	-	-	11	5	-	-
2	Beans	14	3	9	3	-	-
3	Rice	15	15	15	15	-	-
4	Cassava	4	0	-	-	-	-
5	Sweet potato	7	2	5	1	-	-
6	Maize	5	0	1	1	-	-
7	Groundnut	-	-	1	1	-	-
8	Vegetables	-	-	-	-	4	4
Total		45	20	42	26	4	4

Source: Interview Survey Results by JICA Study Team, 2007

The typical cropping pattern prevailing in the Nyaburiba Marshland is shown in right figure. In the marshland, rice double cropping is prevailing while hilly slope is cultivated with upland crop and vegetables. Short matured crop are planted twice in a year based on bimodal rainfall pattern, meanwhile, long matured crops like cassava and sorghum once in a year.

Dry season crops are vegetables by applying bucket irrigation from the water canals along to hill bottom, where spring water flows year round. The dominant soils in the hilly terrain consists of sandy soils which are easily eroded during the rainy season, causing soil erosion problems such as siltation in canals and paddy fields associated with flood.

b) Season A

Income sources in the season A is overwhelmingly generated by rice, consisting of 85.2 %, and then haricot bean 3.4 %, and sweet potato 1.0 %, respectively. An average income was 91,020 Rwf/household, comprising of 86,900 Rwf by rice, 16,000 Rwf by haricot bean and 6,900 Rwf by sweet potato. Rice plays an important cash crop among the all sampling households and contributes to an income of 22,500 - 200,000 Rwf/household. Three households cultivated beans and two for sweet potatoes.

c) Season B

Income source in the season B is also dominantly depending on rice crop, occupying 78.9 % of the total income, and followed by sorghum 9.2%, haricot bean 8.9 %, sweet potato 1.4 %, groundnut 1.1 % and maize 0.5%, respectively. An average income was 71,820 Rwf /household, consisting of 56,653 Rwf by rice, 19,900 Rwf by haricot bean, 15,000 Rwf by sweet potato, 12,000 Rwf by groundnut and 5,000 Rwf by maize. Meanwhile, an average income over the 15 sampling households resulted in 71,820 Rwf/household, comprising of 56,652 Rwf for rice, 19,900 Rwf for sorghum, 32,000 Rwf for haricot bean, 15,000 Rwf for sweet potato, 12,000 Rwf for groundnut, and 5,000 Rwf for maize, respectively. Income generated from rice resulted in 225,000 - 114,000 Rwf/household and less than that of the season A in amount of 30,000 Rwf. This factor should be

Monthly Mean Precipitation in Ruhuha

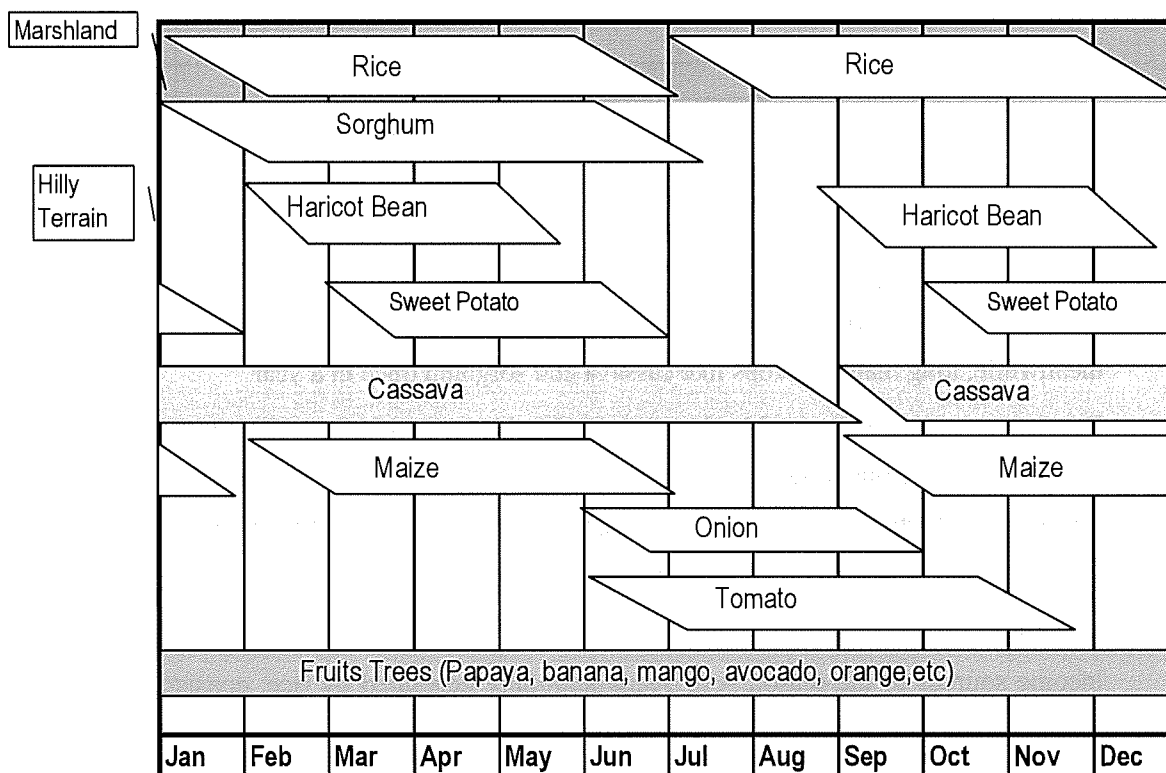
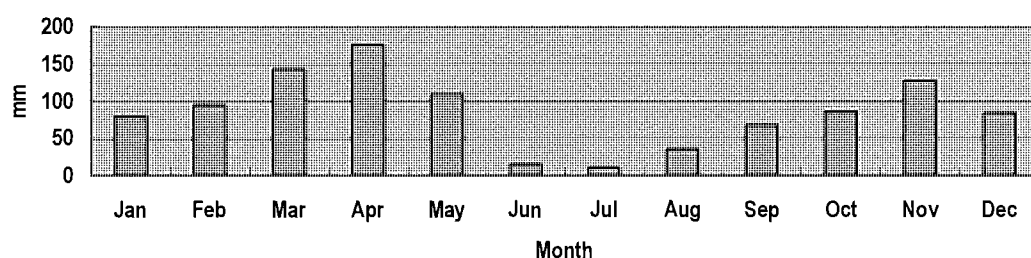


Figure 6.5.1 Cropping Pattern in Nyaburiba Marshland

Normal Seasonal Calendar in Rwanda

Season B (long rains)						Season A (short rains)					
Plantings			Harvesting			Planting		Harvesting			
Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
				Planting		Harvesting					
				Season C (marshlands)							

Source: WFP news, April 28, 2006

necessary to be analyzed.

d) Season C

Income source in the season C depends on vegetables production during the dry season consisting of tomato by one household, and onion by 4 households. The number of vegetable grower was relatively small but an income per household resulted in 115,000 Rwf on average, consisting of 150,000 Rwf/household by tomato and 77,500 Rwf /household by onion, which was more than

that of rice income in the season B. Henceforth, an income for rice farmers has a big potential to increase if vegetable cultivation is combined with rice production but it needs more detail survey for the crop management because of a labor intensive cultivation

e) Total seasonal crop income

Income of the total seasonal crop gradually decreases per order of season A, B and C. An income ratio among the three cropping seasons resulted in 47 %, 37.1 % and 15.8 %, respectively, and an averaged income was 193,507 Frw/household.

f) Income of Permanent Crops

Cooking banana was a promising income source occupying 74 % in the permanent crops, and followed by fruit banana, 13.7 %. Other crops such as mango, avocado and orange amounted to 12.3 % of the income. A number of the farm households engaged in permanent crops was relatively small such as one to three households, and which resulted in 21,875 Rwf/household on average. Henceforth, introduction of banana crop appears to be a big potential so as to improve a living condition.

g) Livestock Income

Major domestic animals are goat, poultry, cattle, sheep, and bee keeping, and livestock households consisted of 12 household by goat, 3 households by cattle, 6 households by poultry, 2 households by sheep and one beekeeper. Thus goat was dominant livestock followed by poultry. Total income by livestock resulted in 74,500 Rwf, but cattle income contributed to 68.3 % of them. Cattle keeper was only three households, meanwhile goat sale generated 24,000 Rwf/household occupying 26.1 %, and poultry 7,500 Rwf/household, accounting for 3.7 %. Henceforth, rearing of cattle and poultry appears to be big potential by feeding rice straw and rice bran as byproduct from rice farming.

h) Off-farm Income

Income source by off-farm activity consists of carpentry work, sale of banana beer, dairy work, contribution and other business. The numbers of the sampling farmers getting off-farm income accounted for 9 households, equivalent to 60 % and 4 out of 9 processed banana beer and 3 by contribution and other business each. The rest got income from carpentry work and casual work, respectively. An average income resulted in 84,000 Rwf/household, consisting of 58.5 % by other business, 23.2 % by banana beer and 10.6 % by carpentry work.

i) Annual Income

An averaged income accounted for 295,114 Rwf/household. The income consisted of 71.3 % by farming, 11.1 % by livestock and 17.7 % by off-farm income. The total annual income was almost same level of the income generated by the road side irrigation project which was the highest among the 4 quick projects (QP) carried out in Ntarama Sector

(c) Expenditure

Major items of expenditure comprise the four items such as agricultural inputs, hired labor, food and

non food item. Further agricultural inputs were broken down into seeds, fertilizer, fodder crop, agrochemicals and agricultural tools and others.

a) Agricultural inputs

An average of expenditure for agricultural inputs amounted to 41,655 Rwf/household. Chemical fertilizer occupied nearly 50.4 %, and then 31.9 % by seeds, 9.4 % by agricultural tools, 7.3 % by agro-chemicals, and 7 % by fodder crop, respectively. Breakdown of the seeds consisted of haricot bean, maize, sorghum, vegetables, groundnut and cassava sticks; that is to say, most of the farmers used the next year's seeds for food stuff and obliged to procure seeds at planting season. Chemical fertilizer was procured by all 15 interviewees, mostly spending for rice and vegetable seeds consisting of 5,400 - 97,500 Rwf per household. The details of agricultural tools were hoe, machete, and saw which need to be renewed every 1 to 2 years.

b) Hired Labor Cost

Most of the farmers including the sampling farmers do not have a habit to record farming activity, thus estimation of hired labor cost was very difficult to extract from the interviewees. Dairy wage for employing casual labor is about 400 Rwf/day. Annual hired labor cost per household roughly ranged from 10,000 to 70,000 Rwf. This kind of expenditure seems to be mainly used for rice and sorghum, from plowing up to milling activities.

c) Food and nonfood items and

Expenditure by food consists of 19 items as below (See below box).

1.sorghum grains, 2.sweet potatoes, 3.sweet cassava tuber, 4.bitter cassava flour, 5.maize flour, 6.beans, 7.soybeans, 8.groundnut, 9.cooking banana, 10.brewing banana, 11.Irish potatoes, 12.meat, 13.rice, 14.vegetables, 15.sugar, 16.coking oil, 17.salt, 18.milk and 19.honey and others

On the other hand, non-food expenditure consisted of 20 items below (See below box)

1.domestic water, 2.kerosene, 3.firewood, 4.clothes, 5.soap, 6.lotion, 7.tooth cream, 8.shoe cream, 9.bed sheets, 10.blankets, 11.belt, 12.radio, 13.radio batteries, 14.bicycle, 15.domestic animals, 16.construction materials, 17.school fees, 18.medical fees, 19.land rental, 20.ceremonial occasion, and others

Annual total expenditure accounted for 35,400 - 552,000 Rwf per household, on average of 159,032 Rwf (equivalent to 300 USD). A ratio of expenditure by item resulted in agricultural input 26.2 %, food 18 %, and non food 56 % occupying more than 50 % of the total expenditure.

d) Balance

All sampling households except for two in deficit resulted in the black. A range of the black was 80 % more than expenditure amount on average, and 126,000 Rwf/household in surplus on average. This amount was not a significant difference from that of QP results in Ntarama Sector. But these figures extracted from the interviewees are just estimation via interview survey because of no habit of recording housekeeping.

(d) Others

a) Fetching Water

Daily domestic water consumption resulted in about 60 liters per household, and time consumed for fetching water was around one hour in a round trip with three times per week for fetching water. As for water source for domestic water, about 80 % of the interviewees get from marshland stream and the rest from tap water. No significant difference among the three seasons was observed in time consumption of fetching water.

b) Collecting Firewood

Farmers collect firewood 4 times per week. It takes around one hour as per each collection. Some households have some parcels of firewood collection in their plots. There was not any significant difference among the seasons.

c) Soil Fertility

Farmers involved in the Nyaburiba Marshland have cultivated both hilly terrain and marshland, and they have perceived decrease of soil fertility based on decline of yield on legume, grain and tuber crops in the hillside farm land. On the other hand, 57 % of the interviewees recognized declining of soil fertility and 7 % of them answered stable, and the rest, 36% replied “improving”. Coping with declining soil fertility, all interviewees are trying to apply chemical fertilizers for rice and vegetable production. As for manure, 60 % of the interviewees replied “Yes”. Further, all farmers apply irrigation practice to paddy rice and vegetable production.

d) Drought Coping Strategy

The farmers have some countermeasures to cope with draught by choosing several options in past and future. Options for the countermeasures consist of a. cultivation of wetlands, b. casual work, c. sale of livestock, d. storing some food crop, e. cultivation of cassava, banana and coffee, e. emigration, f. intake of banana, cassava, and g. saving money. Among them, the most common countermeasures chosen by the majority were cultivation of wetland and storing of food grains.

Yield and Gross Income by Rice Production

As of Aug 6, 2008

As of Aug 01, 2008												
Site	Name of the Household Head	Season	Yield				Sale Amount				Sale Amt. Increment (%)	Total (Rwf)
			Yield(kg)	Sale Price	Increase (kg)	Increase (%)	Sale (Kg) (JICA)	Increase	Increase	Sale (kg)		
Upper Site	Nzeyimana André	Local A	450							350		252,300
		Local B	460							360		
		A/JICA	640	220	190	142.2	640	290	182.9		182.9	
		B/JICA	446	250	-14	97.0	446	96	123.9		123.9	
	Simbikangwa J.Damasca	Local A	200							170		131,350
		Local B	200							190		
		A/JICA	380	220	180	190.0	230	60	135.3		135.3	
		B/JICA	372	250	172	186.0	323	133	170.0		170.0	
	Uwitonze Cécile	Local A										140,000
		Local B	180							100		
		A/JICA	350	220	350	194.4	250	150	250.0		250.0	
		B/JICA	410	250	230	227.8	340	240			340.0	
	Kangabe Josée	Local A										130,860
		Local B	180							100		
		A/JICA	363	220	183	201.7	263	163	263.0		263.0	
		B/JICA	392	250	212	217.8	292	192	292.0		292.0	
Mujyambere Mathias	Local A										232,000	
	Local B	370							300			
	A	700	220	330	189.2	600	300	200.0		200.0		
	B	420	250	50	113.5	400	100	133.3		133.3		
Middle Site	Dusabumuremyi Vianney	Local A								160		181,450
		Local B	250							150		
		A/JICA	460	220	210	184.0	360	200	225.0		225.0	
		B/JICA	409	250	159	163.6	409	259	272.7		272.7	
	Tuyisabe Valens	Local A										194,690
		Local B	230							230		
		A/JICA	327	220	97	142.2	327	97	142.2		142.2	
		B/JICA	491	250	261	213.5	491	491	213.5		213.5	
	Nzabonimana Pascal	Local A										185,420
		Local B	280							200		
		A/JICA	336	220	56	120.0	336	136	168.0		168.0	
		B/JICA	600	250	320	214.3	446	246	223.0		223.0	
	Mukandutiye Odette	Local A								150		128,900
		Local B	250-300							200		
		A/JICA	380	220	130	152.0	245	95	163.3		163.3	
		B/JICA	389	250	139	155.6	300	100	150.0		150.0	
Nyirakamana Betty	Local A										152,760	
	Local B	270							200			
	A/JICA	468	220	198	173.3	308	108	154.0		154.0		
	B/JICA	395	250	125	146.3	340	140	170.0		170.0		
Lower Site	Habimana Fidèle	Local A										188,000
		Local B	280							200		
		A/JICA	500	220	220	178.6	400	200	200.0		200.0	
		B/JICA	490	250	210	175.0	400	200	200.0		200.0	
	Bimenyimana Elias	Local A										509,000
		Local B	625							500		
		A/JICA	1100	220	475	176.0	950	450	190.0		190.0	
		B/JICA	1350	250	725	216.0	1200	700	240.0		240.0	
	Mukanyarwaya Astérie	Local A										234,130
		Local B	300							200		
		A/JICA	529	220	229	176.3	529	329	264.5		264.5	
		B/JICA	471	250	171	157.0	471	271	235.5		235.5	
	Ukwitegetse Josephine	Local A										160,100
		Local B	260							200		
		A/JICA	330	220	70	126.9	330	130	165.0		165.0	
		B/JICA	416	250	156	160.0	350	150	175.0		175.0	
Mean (%)						171.1					201.5	

Source: JICA Study Team, Aug., 2008

The Workshop Program for the Final Evaluation on the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: September 4th (Thursday), 2008

2. Place & Time: Ikirezi Café, Ruhuha Sector, 9:00-13:30

3. Participants

- Total number of the Participants: Around 85 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	76members (Participants for the Pilot Project and Corinyaburiba Board members)
2	Ruhuha Sector Office	1 member (Agronomist)
3	Nyarugenge Sector Office	1 member (agronomist)
4	Bihari Cell ES	1 member
5	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
6	RADA	1 member for rice specialist
7	AFSR	1 member/Inspector
8	JICA Study Team	3 members
	Total	Around 85members

4. Objectives

The workshop is aimed at evaluating the two cropping of JICA-RADA improved rice seed multiplication and dissemination Pilot Project among the participants and feeding the monitoring results back to the third rice cropping for the Season A.

5. WS Program

		Program	Time	Remark
September 4th (Thursday), 2008: 9:00 - 13:30				
1	Ruhuha Sector	Opening Remark	5 min	
2	All Participants	Self Introduction	15 min	Participant List
3	JICA Study Team	-Briefing of Workshop Program	5 min	
4	Agronomists employed by JICA Study Team	-Review of overall farming activity and the feedback practices to the 2nd Rice Cropping for Season B.	60min	PPT with Technical Guideline and handout paper
5	AFSR Staff	-How to improve seed quality?	45 min	Lecture and discussion
6	Overall discussion	- Farming Practice - Post JICA Scheme	60 min	
7	JICA Study Team	Closing remark	5 min	Summarizing of PP outline
8	Lunch			

Key Farming Practice on Rice Production guided by JICA

Key Practice		Local Method	JICA Method
1	Seed	Using Self Produced Seed	Basic Seeds from ISAR
2	Seed Rate/ha	300 kg/ha for nursery	20 kg/ha for nursery
3	Seed Treatment	Only Seeds Soaking with Water for 24 hours.	Seed disinfection with fungicide-Kitazin for 48 hours and hastening of germination for 48 - 72 hours
4	Planting Density	20 cm between rows x 15 cm between hills: 33.3 plants/m ²	30 cm between rows x 15 cm between hills: 22.2 plants/m ²
5	No of seedlings/hill	7 - 10 seedlings / hill	Only one seedling /hill
6	Fertilizer	1) NPK 250 kg/ha: 30 days after transplanting 2) Urea 200 kg/ha at booting stage Total Nitrogen = 135 kg/ha	1) NPK 240 kg/ha: Just after transplanting 2) Urea 82 kg/ha -1st 42 kg Top dressing: 30 days after Transplanting. -2nd 42 kg Top dressing: At Reduction Division stage Total Nitrogen = 79 kg/ha
7	Pest & Disease	No chemical Control	Cypermethrin for pest control Beam for fungi control
8	Roguing (Remove Off-type)	No operation	7 — 8 times from nursery to harvesting period.
9	Threshing	Traditional method to beat rice bundle on log or banana stem on plastic sheet	Using manual type thresher machine with plastic sheet
10	Winnowing	Using “Urutaro”(traditional tool)	Using manual winnowing machine
11	Drying paddy	No drying yard	Drying paddy on the concrete drying yard by monitoring grain moisture content so as to be 13 % with a moisture meter.
12	Yield (t/ha)	3 - 4 t/ha	8.7 t/ha in B season (Jan-Jul/08)

Ibyavuye mu isuzuma ry'umusaruro

Ubwoko	Site	Uburebure		uko ihundo ripima (gm)	Ibigize umusaruro						Umusaruro kuri /ha (kg) ibitsike21	Umusaruro wose kuri buri site (kg)	umub. w'amhundo ku kobo	Ubuso (m ²)
		Cm	±SD		Umubare w'utwobo Hills/m ²	umub. w'amhundo ku kobo	Umub. W'intete ku ihundo	imiciri1000 ipima (gm)	% y'intete zeze	Umusaruro kuriha(kg)				
Intsinzi/SB	ruguru	50.7	5.9	4.3	18.4	13.1	192.0	23.8	68.4	5,860.2	7,530	8,150	290.8	10,379
Intsinzi/SA	ruguru	47.4	4.7	3.3	17.3	12.6	166.3	24.0	70.4	5,514.0	6,395	5,740	218.0	
Gakire/SB	Hagati	46.2	7.9	3.9	19.6	14.2	181.3	23.4	74.8	7,394.5	7,297	8,800	315.2	11,522
Gakire/SB	Epfo	55.1	5.7	3.4	17.8	13.2	174.7	21.7	75.0	5,942.7	8,142	9,300	293.0	9,872
Gakire/SA	Epfo	50.5	1.6	3.9	19.5	12.0	207.0	22.8	83.5	5,756.0	6,181	8,755	234.0	9,872

Source: JICA Study Team, Jul., 2008, Remark: SA refers to Season A (July-Dec/2007), SB refers to Season B(Jan-Jun/2008)

Applied Practices and Further Improvement for Rice Farming with Seed Quality Improvement

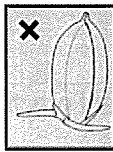
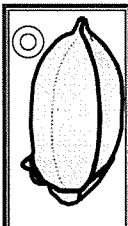
No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
1	Soaking seeds with chemicals	-Seeds were soaked with Kitazine solution for 48 hours, then seeds bag was removed from solution and put it under shade place with moist condition for 48 - 72 hours to get pre-germination prior to sowing on nursery bed.	Need to be improved	<p>-The seeds more than 3 months after harvest: : After 48 hours soaking with Kitazine solution, hasten germination by keeping seed bag under wet condition for 48 - 72 hours depending on varieties. Required time for incubation depends on variety, thus you have to check every 3 hours after 48 hours incubation and sow seeds when it is good shape.</p> <p>-Paddy Seed just after harvested: Check pre-germinated seed condition after 3 days incubation under wet condition followed by 48 hours soaking with kitazin solution.</p>
2	Seed Rate/ha	-15 - 20 kg/ha	To be continued	

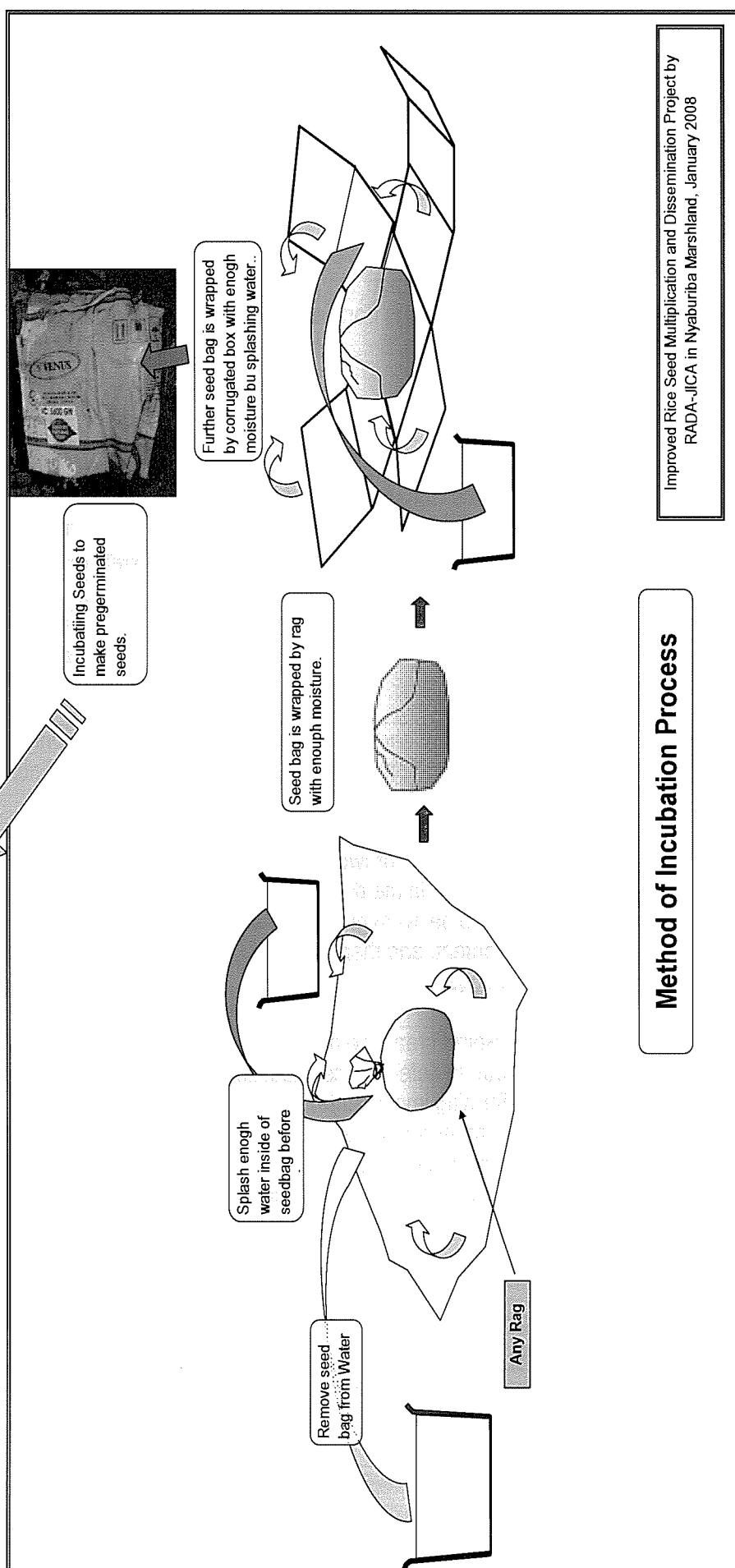
No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
3	Uprooting seedlings	-Some farmer uproots seedlings gently not to damage root, and others do just like uprooting weeds associated with damage of roots. -Damaging roots causes transplanting injury and delay of tillering.	Need to be improved.	- Uproot seedlings with soil by <u>using hoe</u> and wash seedling root gently one by one without damage.
4	Transplanting and planting density	- 26 days- seedling was transplanted due to delay of emergence. - Tillering and No of panicles are suppressed when transplanting depth is beyond 3cm. -Proposed planting density is 22. 2 hills/m ² but the three sites (upper, middle, lower) resulted in less than that of density.	Need to be improved	-Emergence should be uniformed by sowing the good shape pre-germinated seeds such as 20-25 days seedlings. -Transplant seedlings not beyond 3cm depth. -Transplant seedlings in 30 cm by 15 cm space by using rice planting rope.
5	Basal dressing of NPK	-Surface application of fertilizer was applied just after transplanting. -Flow irrigation was observed just after application of basal dressing and which caused loss of fertilizer elements.	Need to be improved	- Apply fertilizer in shallow water depth and mix fertilizer by using rotary weeder so as to improve fertilizer effect.
6	Water management	- Traditional way drains water in the morning and irrigate in the evening.	Need to be improved	Try to manage below method as possible as you can. 1) After transplanting: Keep water at 3 - 4cm depth 2) Rooting -Tillering stage: Keep water 1 - 2 cm depth 3)Tillering - Reduction Division stage: Intermittent Irrigation 4) Heading stage: Keep 1-2 cm depth 5) Ripening stage: Intermittent irrigation 6) Matured stage: Drain water. (manual)
7	Top dressing-1	- Urea was applied 36 days after transplanting. - Water was drained prior to applying urea and keep 3 days without water. - Fertilizer is not dissolved and runoff is happened when irrigation is made.	Need to be improved.	- <u>Apply Urea in shallow water depth and then mix fertilizer by using rotary weeder.</u>
8	Top dressing-2	- Urea was applied 76 days after transplanting at panicle	Need to be	-Apply Urea in shallow water depth and then mix fertilizer by using a rotary weeder.

No	Growth Stage	Monitoring Results	Diagnosis	Recommendation/Remark
		formation. - Same as 1st top dressing and runoff occurs when irrigation is made.	improved	- Effective stage is to apply Urea at reduction division stage.
9	Roguing Operation and Weeding	-Roguing operation amounted to 7 times from nursery to matured stage.- -Removing infected plants at matured stage - Weeding is done every two weeks.	Need to be improved	- Roguing is very important practice to keep seed quality. - At first, total roguing operation was planned to be 5 times by growth stage, but the participants made 7 times of roguing operation from time to time in order to avoid contamination of different variety. - <u>Removing infected plants is essential to keep high quality of seeds and should practice at each growth stage.</u>
10	How to judge a time of harvest	-Time to harvest rice plant was not properly judged, and shattering loss was increased at harvesting operation, especially Gakire variety because of over matured.	Need to be improved	-Shattering habit of Gakire and Intsinze increase when over matured. -Insidagirabigega is less shattering habit. - <u>Harvesting time should be judged when 80 to 85% of all panicles in the field show yellowing (matured) based on 30 days after heading.</u>
11	Threshing and Winnowing	Thresher and Winnowing machines provided by JICA were used in combined with plastic sheets and <i>Urutaro</i> .	To be continued	-Only pay attention to operation and maintenance of all farming implements.
12	Drying of paddy	Dry paddy for two days under sunlight in the drying yard so as to be 13 % grain moisture content, and then paddy is bagged.	To be continued	-Thickness of paddy in the drying yard should be 3 cm under sunlight and you have to stir every one hour to avoid unevenness of grain moisture content.
13	Operation and Maintenance of Farming implements	-Some breakage occurred due to defect of the supplied farming implements. -Proper maintenance for the said implements was not done by cleaning and oiling.	Need to be improved	- After KIST repaired farming implements, 5 farming implements were exposed during the heavy rainy season. -Operation and maintenance system should be strictly arranged by Corinyabunba Coop. For example, farming implements (rotary weeder, thresher, winnowing machines) should be cleaned and oiled after use.

Source: JICA Study Team, January 2008

Method of Seed Treatments:

Pre-treatment of Seed Treatments:													
Variety	Hours of Treatment (Hrs)												
	2 Days												
	0	4	8	12	16	20	24	28	32	36	40	44	48
	48 hours												
	Soaking Seeds with Kitazin Solution												
1 Gakire	Incubation with well moist condition												
	2 Days												
	52 56 60 64 68 72 76 80 84 88 92 96												
2 Insindagirabigega	1 Day												
	50 52 54 56 58 60 62 64 66 68 70 72												
	Sowing on Nursery Beds 400 m ² Bed for 1 ha.												
3 Intsinzi	4 or 5th Day												
	Remark												
	<div><div></div><div></div></div>												

**Method of Incubation Process**

Improved Rice Seed Multiplication and Dissemination Project by
RADA-JICA in Nyaburiba Marshland, January 2008

Report for the Final Evaluation Workshop on the Improved Rice Seed Multiplication and Dissemination Project in Nyaburiba Marshland

1. Date: September 4th (Thursday), 2008

2. Place & Time: Ikirezi Café, Ruhuha Sector, 9:00-13:30

3. Participants

- Total number of the Participants: Around 85 as below:

	Stakeholders	No of the Participants
1	Corinyaburiba Cooperative member	76members (Participants for the Pilot Project and Corinyaburiba Board members)
2	Ruhuha Sector Office	1 member (Agronomist)
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4	Bihari Cell ES	1 member
5	Bugesera District Office	1 member (C/P Agronomist assigned to the JICA Study Team)
6	RADA	1 member for rice specialist
7	AFSR	1 member/Inspector
8	JICA Study Team	3 members
	Total	Around 85members

4. Agenda

(1) Opening remarks

Opening the workshop, the Coordinator of Ruhuha Cell appreciated JICA Study support and let know to the participants that the CORINYABURIBA has received the first good performance award at the level of Bugesera District because of the back up of the JICA Pilot Project. Then the CORINYABURIBA President introduced the group Leaders and there was a self introduction of all participants including the Pilot project beneficiaries, the RADA and AFSR representatives and the JICA Study Team representatives.

(2) Briefing of Workshop Program

The JICA Study team expert explained the workshop aimed at evaluating the two cropping of JICA-RADA improved rice seed multiplication and dissemination Project and feeding the monitoring results back to the third rice cropping for the Season A.

(3) Presentation of key farming practice on Rice Production guided by JICA.

In a comprehensive way, the JICA local employed agronomist went through all modern rice farming practices introduced by JICA Study Team, procedures for registration of CORINYABURIBA as a seed grower and showed the cost and benefit of the two cropping of the rice seed production. The faming techniques were coupled with the study tour to broaden knowledge of CORINYABURIBA members. Particularly on 28-29 July 2008, 16 members of CORINYABURIBA cooperative and Ruhuha Sector head and Cell visited CPRB (Bugarama rice cooperative) in Bugarama, Western Province. Results on rice crop surveys in 2008 were presented as well.

The agronomist presented achievements of CORINYABURIBA Coop from July 07-July/08 including institutional capacity building.

- CORINYABURIBA Coop was registered as a cooperative in July 2007
- CORINYABURIBA Coop started Rice milling since March 2008
- A drying yard was constructed for Nyaburiba, storage and modern farming implements
- CORINYABURIBA Coop has established a Coop office since May 2008
- Purchase of stationary and office furniture
- A permanent accountant was hired
- CORINYABURIBA Coop started estate business by renting offices since May, 2008
- CORINYABURIBA Coop got a prize from the Ministry of Labor on May, 2008
- CORINYABURIBA cooperative has been authorized as the 2nd seed producer cooperative in the Country.

(4) Representative of AFSR

The representative of AFSR discussed seed production requirement with beneficiaries by the simple question ‘*why have become seed producers*’? The answer was that we produced 4 t/ha and now produced 8t/ha. We used to plant 12 seedlings/hill and now we plant 1 seedling/hill. From this answer the Representative concluded the beneficiaries do not understand well the whole process of how to be a seed producer and therefore training should be organized for them.

Beneficiaries were explained they have become seed producers because they have been registered by RADA and AFSR only works with people who have got a registration letter from RADA.

During the envisaged training, AFSR will explain to farmers the process all categories of seeds go through: from the foundation seeds to the certified seeds. She added that there is a third category of seed of declared quality but that have not been tested.

Usually, the seed has a higher price compared to cooking rice for consumption but the question is to know whether the produced seed has a market? Another issue to be considered is calculation of investment cost in order to determine the selling price. This will help understand the cost-effectiveness of your business.

She urged beneficiaries to work hard and understand what they are doing since they do not produce for JICA.

- Beneficiaries pointed out that they invest a lot in seed production (time, energy, money) but they do not get much profit since they sell the seed at the same price as the consumer products.

The representative of AFSR emphasized on the quality and purity of the produced seeds

- Cleaning of the multiplication fields
- Fertilizers as required
- Proper drainage
- Strict follow-up of farming activities
- A large field for multiplication activities
- Good analysis of market prospect

She urged them to keep in mind all the farming practices received from the JICA ST in order to have a profit. In addition multiplication material should absolutely come from RADA and what CORINYABURIBA Coop has now produced will be used for food consuming since multiplication material was not provided by RADA

nor ISAR

- Weeding is a must since weeds can make the seeds inappropriate.
- Control of disease
- It is recommended to rotate varieties as a disease control strategy
- Good varieties and adaptable to agro-ecological environment in the region
- The plot selection which is nearby water source and if possible testing the soil.
- When buying the seed, it should buy the basic seed not the certified seed.

(5) Key word by the representative of RADA

He showed that CORINYABURIBA Coop activities fit within the country 2020 vision since they contribute to poverty reduction. Rice production 2006-2016 is one of the tangible programs aimed at self-sufficiency food production and export. And among key elements for good production

- seeds
- fertilizers
- techniques

Participants were informed about the current new system of fertilizer distribution. In the new scheme, the businessman signs a distribution agreement with the government with fixed prices. For the case of Bugesera, the Trader who was awarded the market for Eastern Province is Nkubiri then the cooperative will be supplied from him at a fixed price.

- He urged beneficiaries to eagerly follow the training organized by AFSR in order to constantly ensure the seed quality. He thanked JICA for the progress they made to CORINYABURIBA Coop.

Some of the questions raised by the beneficiaries: The 3 varieties were good at the start-up but now, some are not performing well and they were wondering which varieties to replace them with, the farmers wanted to know the current update productive seed varieties?

The representative of RADA told them to let them know whenever there is a problem since there are other many varieties availed by ISAR that are appropriate to Bugesera, RADA would come to try them. For example, during the next cropping season (January 2009) RADA would come and try another variety.

(6) JICA Study Team Expert

He discussed with participants about the Post Bugesera Development Study. He informed beneficiaries about the possible technical cooperation scheme after the development study. JICA HDQ is to send 2 consultants (agriculture and water use) to prepare it and JICA Study Team has suggested to JICA HDQ 2 programs including **strengthening of improved rice seed multiplication** and **dissemination and supporting of Hillside Agricultural Development**. The project may start from the next fiscal year 2009.

Q. As we have been recommended to use manure, we would like to be introduced with the cow distribution project as it was the case in Ntarama Sector.

This could be some of the ideas to give to the 2 consultants that will carry out the survey.

Q. It would be better to consider erosion control on both sides of the marshland, a component that was not done during the study team pilot project.

Q. CORINYABURIBA Coop also requested to be trained in auditing and AFSR promised it will consider it.

Then the JICA Study Team expert did an overall evaluation of the Pilot Project: with the question what was good, what was fair and what was not good about the project

95 % of beneficiaries responded that the project was good given the rice production that came from 4t/ha and reached 8t/ha, the new modern farming implements they received and new techniques they had through implementation of the project.

Those who responded fair was because the project had promised to carry out erosion control activities but this activity was not done

(7) Reward

Three models farmers were given a reward consisting of 1 hoe per each owing to their good performance in cleaning path, embankment and ensuring overall cleaning of the plot.

(8) Conclusion

-The JICA agronomist reminded that quality in seed production is a must

-Preparing nursery together is a must

-Use fertilizers is a must

The Sector agronomist thanked JICA Study Team that combined the Study with the practice. He wishes Nyaburiba should be a model marshland” *Igishanga ndatwa*”

Erosion control should be done on both sides of the marshland. He urged CORINYABURIBA President and the group leaders to plant trees. The marshland has to be made productive.

The JICA Study Team Expert informed beneficiaries that on September 25th, 2008 he would leave for good and

Financial base of Corinyaburiba Coop

Corinyaburiba Coop has changed name from Dufatanye Cooperative to Corinyaburiba Cooperative and registered officially to acquire corporate right when JCIA Study Team has launched the improved rice seed multiplication and dissemination project in June 2007. The said pilot project has just been launched since thereabout of changing name. Since that time, Corinyaburiba Coop has drastically changed from quiet coop to very active coop via diversification of financial resource, and the financial base of Corinyaburiba coop was studied as of August 2008. Below table summarized the survey result by interviewing the Accountant, and Association Leaders.

Table 0.1 Financial Basis of Corinyaburiba Coop

Income source of the Coop		outline			
1	Investment form Coop members	Up to 2007	4, 000 Rwf/season/member: Annually 8,000Rwf/member		
		From 2008	10,000 Rwf/season/member: Annually 20,000Rwf/member* 2 years		
2	Loan from Bank	Corinyaburiba Coop gets the following two bank loans according to annual plan.			
		(1) Inkingi (Micro Finance)	• Loan of 8,000,000 Rwf for purchasing of one-pass rice milling machine (2.8 million Rwf) and Sotorage construction (65m²)		
			• Interest is 12 %/month, and planed to refund within 6 months. The balance is 3 months from June to August remained.		
		(2) Popularly Bank (Nyamata town)	• Purchasing of sophisticated rice milling machine with function of separator and 540 kg/hour processing cap and storage construction.		
			• Applied a loan of 36million Rwf (10 years redemption, 14 % interest/year)		
		• Renovation and expansion of Coop Office (ongoing)			
• Borrowing of 10,000,000Rwf from bank loan with 10 % /3 years					
		Loaning of the Coop members			
		Popularly Bank (Nyamata Town)	• Limited loanamount: Up to 150,000Rwf/member		
			• Refund: one time refund at harvest time		
			• Interest rate: 6% of loan amount		
			• Around 70 % of the coop members get loan		
3	Income of selling rice	Purchasing of seeds by JICA PP	Buying from the beneficiary farmers/JICA PP	• 2007Season: Buying price=220 Rwf/kg (baseon on market price)	
				• 2008 Season: Buying price=270Rwf/kg	
		4 Cooperatives under Abahujumugambi Coop Union	• 300Rwf/kg as certified seeds		
			-Intisinzi/upper= 5,250 kg		
		-Insindabiragigega/middle=6,720 kg			
		-Gakire/Lower= 8,750 kg			
• 2 tons were left as own seeds and the remaining was sold as certified seeds.					
• Gross income =5.61million Rwf					
• Net income = around 1.5 million Rwf (buying price from the beneficiary=220 Rwf/kg)					
		Production of cooking rice	• 50 % of non-seed grower sell the produce to Corinyaburiba coop. Buying price as of early August was 250 Rwf/kg and increased to 270 Rwf/kg from September 1st, 2008.		
			• There is no sale record of the rest of coop members because of selling paddy to other buyer.		
			• Corinyaburiba Coop has plan to sell polished rice as Nyaburiba rice brand by purchasing a upper spec rice milling machine for milling purchased rice from other rice cooperatives.		
		Sale of by-product of rice	Sale of ricebran	Coop member	15Rwf/kg
				Non coop member	20Rwf/kg
		Sale of rice husk	Sale unit is based on truck capacity		
			• Fuso truck (3 - 4m³) =30,000Rwf/turuck		
			• Small truck (1.5m³) =10,000Rwf		
			• User use rice husk as fuel source for making brick.		
4	Fertilzer sale	Prime cost	570Rwf (including transportation cost)/kg from private supplier		
		Selling price	Coop member: Cash payment= 580Rwf/kg		

Income source of the Coop		outline				
			Package payment at harvest=600Rwf/kg			
		Sale amount/season	NPK(17-17-17)=4,000 kg, Urea=3,300 kg			
		Income estimation	30Rwf*7300 kg=219,000 Rwf, or 50 Rwf*7300 kg=365,000 Rwf			
5	Real estate business	House rent (from late 2007)	Net Café	20,000/Month	240,000/year	Annual income: 948,000 Rwf
			Small shop	20,000/month	240,000/year	
			2 Room	10,000/month	240,000/year	
			1 Room	8,000/month	96,000/year	
			1 Room	6,000 /month	72,000/year	
			1 Room	5,000/month	60,000/year	
6	Milling charge	10 Rwf/kg (paddy)	• Rice milling machine (One pass type): 280 kg/hours processing • Byproduct like rice bran and rice huse belong to Corinyaburiba coop			
7	Income source forAssociation	Coop benefit return to Association	• Corinyaburiba Coop gains some profit via coop activities, Coop allots it to each association in future via discussion of the general assembly meeting.			
Future Issues to be tackled						
8	Employment of full-time Agronomist for Coop	• How to keep a full-time agronomist for Corinyaburiba coop after JICA scheme is phased out. Salary level paid by JICA Study Team is very high, and the Coop is not affordable; thus the JICA employed angronomist is unable to work under Corinyaburiba salary level, other agronomist is planned to recruit.				
9	Capacity building of Coop Accountant	• Ministry of Commerce in charge of cooperatives pointed out as follows; - Computerization of accounting system should be introduced but not yet.				
10	Expansion of Coop management	• Planning of poultry project (egg production and broiler by feeding rice bran as feeding materials) • Planning of rice milling project: Nyaburiba rice as brand name is planed to sell by collecting local rice in Ngenda area and milling them with newly planning rice milling machine equipped with separator function. • New loan business to the coop members is under planning by collecting subscription from the coop members. • Facilitation of borrowing fund from bank by making a property list of Corinyaburiba Coop				

Source: Interview survey result to Accountant/Coop president by JICA Study Team, August, 2008.

In this Table, Corinyaburiba Coop has got flaw of accounting issue which was pointed out by MINICOM. Furthermore, Corinyaburiba has stated that agronomist employed by JICA Study Team was difficult to keep by paying same salary scale. In order to keep extension worker (agronomist), it is essential for the Corinyaburiba Coop to strengthen financial basis..

Strengthening of financial basis as a rice cooperative is only possible to build capacity of increasing production by improving a unit yield, and selling of rice by adding value. Sale of certified seeds is also included in the aforementioned countermeasure. In addition to it, Corinyaburiba Coop has other income sources such as introduction of new project (poultry), rice milling project, sale of byproduct, real estate business (housing rent), sale of fertilizer, and membership fee (40,000 Rwf) to Corinyaburiba coop. Therefore, strengthening of accounting system is vital issue because of no recording income sources about previous items.