CHAPTER III

RESEARCH RESULTS: RWANDAN PEASANTS AND THEIR LIVING STANDARDS

1. State of the Problem and Methodology

The present research was conducted to evaluate the difficulties, constraints and handicaps for Rwandan peasants. We believe that these observations will be useful to devise measures to help rural households in tackling the difficulties.

1.1. Scope of the study

The homogeneity of Rwandan farmers' activities has permitted us to limit the investigation to two sectors[1] (see Figure 3.1):

- Mubumbano sector in Gishamvu "commune" (Butare prefecture) in the south of the country.
- Ryamanyoni sector in Rukara "commune" (Umutara prefecture) in the northeast of the country.

Limited means compelled us to monitor only a small sample of households (5 per sector) for 6 months (from April until October 1999) and conduct the survey, by means of questionnaires, on 208 heads of household (104 per sector). The surveyed population is presented in Table 3.1.

The two sectors are distinguished from each other by their climatic ecosystems. Ryamanyoni sector is in the hot and dry lowlands of the Eastern part of the country, whereas Mubumbano sector has a mountainous landscape in the central plateau.

The main cultivated crops are as follows:

- Mubumbano: sweet potato, taro, aubergine, haricot, gourd, banana, sorghum, sunflower, cassava, green pea, coffee, maize, cabbage
- Ryamanyoni: sorghum, green pea, Irish potato, banana, sweet potato, haricot, maize, sunflower, cabbage, tomato, peanut, soya

[1] The Rwandan local administration comprises four levels: Préfecture – Commune – Secteur – Cellure. In this report, "secteur" is described as "sector" and "cellure" as "cell", while "commune" is indicated with quotation mark. The sector population is generally several thousands, while the cell population is around several hundreds.

Figure 3.1
Research Areas

Table 3.1
Canvassed Population

Mubumbano

Commune	Sector	Cell	Total population	Total households	Canvassed households	Couple	Single females	Single males
Gishanvu	Mubumbano	Bweramana	1,005	262	22	10	11	1
Gishanvu	Mubumbano	Kizenga	959	230	25	13	11	1
Gishanvu	Mubumbano	Nshingangabo	1,065	268	15	7	6	2
Gishanvu	Mubumbano	Rwinkuba	951	242	42	19	21	2
Total			3,980	1,002	104	49	49	6

Ryamanyoni

Commune	Sector	Cell	Total population	Total households	Canvassed households	Couple	Single females	Single males
Rukara	Ryamanyoni	Gacaca	981		40	33	2	3
Rukara	Ryamanyoni	Rwakabanda	1,177		20	19	0	1
Rukara	Ryamanyoni	Ryakirenzi	1,000		23	19	1	1
Rukara	Ryamanyoni	Ryamanyoni	1,892		21	19	4	2
Total			5,050	n.d.	104	90	7	7

Source: Survey data.

Note: The numbers for the total population and total households are based on the survey by the "conseiller" of the sector. "Couple," "single females" and "single males" indicate the familial situation of the household heads. In the case of "couple," the household heads have their spouse. "Single females" are female household heads without a husband, and "Single males" are male household heads without a wife.

Livestock raising is little, especially in Mubumbano.

1.2. Objectives of the study

This study has the following six main objectives:

(1) To acquire the best knowledge about the socio-economic environment of Rwandan peasants by collecting a series of data and information about the farmers' activities during the period after the genocide in 1994, in order to identify the characteristics of the farmers' exploitation of land in hill and swamp areas.
(2) To identify farming and non-farming resources of the peasants.
(3) To identify all difficulties due to farming on small plots.
(4) To find out useful methods for peasants in managing their land resources.
(5) To analyze different problems for the peasants in order to evaluate their impact on farming activities so that land management can be improved.
(6) To offer opportunities to the peasants to profitably speculate on their land.

1.3. Methodology of the study

The main objective of this study is to collect socioeconomic data that will be useful for understanding the environment for rural farming. Data were collected by two methods:

- A medium-term observation of households (from April 99 until October 99).
- A short-term inquiry during July 1999 (the end of the agricultural season).

1.3.1. Questionnaires

1.3.1.1. Form

During our study, which took place after a short pre-study to define the contents of the questionnaire, 2 types of questionnaires were prepared: the first, as the basis for the medium-term study, was addressed to 5 households each in Ryamanyoni and Mubumbano sectors.

The heads of household involved complete the questionnaire from the first page for their identification (the head of household's name, the spouse's name, number of children, number of fields, types of crop, etc.). They then completed each day the next page to indicate the composition of meals and drinks, and the daily income and expenditure.

The second questionnaire was addressed to 104 households in each sector on a

particular date in July at the end of the farming season. This questionnaire sought information related to the following:

- Address of the inquiry
- Family composition
- Principal work
- Financial resources
- Migration of household members
- Educational level
- Housing
- Familial relationships
- Landholdings
- Agriculture on hills and in wetlands
- Livestock
- Capital and agricultural tools
- Labor management and conservation of the farmland

1.3.1.2. Distribution of the questionnaire

The questionnaires for the medium-term observation were distributed once a month from April until the end of October 1999. The questionnaires for the short-term survey in July were distributed and managed by investigators in the survey areas. They inquired of the heads of household and noted answers on survey forms.

1.3.2. The sample

The questionnaire for the medium-term survey in each cell involved at least one head of household. In Mubumbano sector, there are four cells, the number of investigated farmers in the medium-term survey being five. It was the same in Ryamanyoni sector. The sample was chosen at random for the short-term questionnaire survey, (see Table 3.1.).

As agriculture in Rwanda is a familial activity under the supervision of the head of household, we specified that this person answers the questions in the name of the family.

1.3.3. Process of the study

Like any other field research, this study was carried out in six main stages: preparatory phase, data collection, counting, analysis and interpretation of results, first round report, checking results and preparing the final report.

1.3.3.1. Preparatory phase

- Documentation, field visit and discussion-meeting.

This project was initiated in 1998 by the visit of Takeuchi. Apart from the review of literature and documentation on agriculture in general and on Rwanda in particular, the researchers engaged in this project conducted preliminary investigations in order to conceive a relevant study.

- Preparation and test of the questionnaire

After the first field observations, the researchers prepared a preliminary questionnaire. The questionnaire was then tested with some families to see whether the questions were relevant. Next, the questionnaire was revised and translated into Kinyarwanda.

- Choice of the sample.

We chose two sites for the survey in "communes" sufficiently remote from one another: Gishamvu "commune" in the south and Rukara "commune" in the east of Rwanda. In each "commune", one sector was chosen as survey sites: Mubumbano sector in Gishamvu and Ryamanyoni sector in Rukara.

- Training the farmer investigators

Collaboration with the peasants was absolutely essential to carry out the survey. The first task was to explain to them the objectives and the contents of the questionnaire. In the medium-term survey, the five households from each sector were instructed on how to fill in the questionnaire.

For the short-term survey, we had to instruct the investigators who would question the 104 households in each investigated sector. We had to explain to them the contents of the questionnaire. Five investigators were trained in each sector. In all, 10 investigators carried out the survey on the 208 households.

1.3.3.2. Data collection

The medium-term survey had been planned to start in February 1999. Nevertheless, because of some difficulties, the survey started in April 1999 and was carried out until 10/11/1999, that is for six months.

Each month, Marara visited each research site to collect the questionnaire. The short-term survey was processed from the 12th until 16th July 1999 in Mubumbano sector and from the 5th until 11th July 1999 in Ryamanyoni sector. During this short-term survey,

the researchers supervised the work to deal with some difficulties and to collect the questionnaire answer-forms.

1.3.3.3. Counting and checking results

Marara did the counting with the help of some students. Elements of the answer to each question were noted on a form. 33 such forms allowed us to synthesize the results of the short-term survey, and about 20 forms recorded the results of the medium-term survey. These forms were used to input the data into a computer.

After this recording, two researchers checked the coherence and relevance of the data during August 1999. We noticed, for example, that it was very difficult for the peasants to estimate exactly the area of their fields. For this reason, we decided to measure by ourselves the fields of some of the investigated households. Field measurement was carried out for 21 households in Mubumbano (i.e. 20% of those investigated) and for 22 households in Ryamanyoni (i.e. 20% of those investigated).

A supplementary check consisted of discussing some unclear points with the investigated population. Observations during those meetings allowed us to examine the reliability of the collected data and to add some comments on the study.

2. Presentation, Analysis, and Interpretation of the Results

2.1.1. Age and sex of the canvassed population

Table 3.2 indicates the age and familial situation of the canvassed household heads. The majority of interviewed household heads were between 30 and 39 years old, as shown in Table 3.3.

It was observed that, although there was not much difference between the ages of the husbands and wives, the husbands were generally older than their wives. On the whole, the number of male household heads was greater than that of female household heads (139 male heads of the 208 canvassed persons, i.e. 67%). Surprisingly, however, in Mubumbano sector, the number of male household heads (i.e. "couples" and "single males") was almost equal to that of the female heads (54 husbands to 49 wives). This means that widowhood / widowerhood was very common, perhaps because of the preceding events (the civil war and genocide). In Mubumbano sector, an important number of males were either dead or exiled. In Ryamanyoni sector, the situation was in contrast to this: 97 male heads against 7 female heads. The population in this region, was mainly composed of repatriates from neighboring countries, especially Uganda.

Table 3.2

Age of the Household Heads

Age	Mubumbano			Ryamanyoni		
	Couples	Single females	Single males	Couples	Single females	Single males
-19		1	1	0	0	0
20-29	5	3	2	12	1	1
30-39	19	19	0	28	2	1
40-49	10	5	1	19	3	1
50-59	5	6	0	21	1	2
60-69	9	9	0	9	0	1
70-	1	6	2	1	0	1
Total	49	49	6	90	7	7

Source: Survey data.

Table 3.3

Proportion of Household Heads by Age

Age	Number of households	%
- 19	2	1 %
20 - 29	24	12 %
30 - 39	69	33 %
40 - 49	39	19 %
50 - 59	35	16 %
60 - 69	28	14 %
+ 79	11	5 %

Source: Survey data.

2.1.2. Adults in households

The number of adults in each household was, in many cases, 2 as shown in Table 3.4.

Table 3.4

Adults in a Household

Number of adults	Mubumbano	Ryamanyoni	Total	%
1	53	12	65	31%
2	51	82	133	64%
3	0	9	9	4%
4	0	1	1	0.5%

Source: Survey data.

We observe that 64% of the investigated households had two adults in the household. However, in Mubumbano sector, the situation was very different: among 104 households, 53 had only one adult in the family, this being due to widowhood / widowerhood in this sector.

2.1.3. Number of children

The average number of children was 4 per household. In Ryamanyoni, the average was 3.6, while it was 3.1 in Mubumbano. According to a socio-demographic survey (MINIPLAN - ONAPO 1997), the average was 4.5 children per household in all Rwanda.

2.1.4. Familial situation of household heads

In Ryamanyoni sector, single household heads (either male or female) constituted the minority, whereas in Mubumbano, there were as many widows as couples. This is an abnormal situation, perhaps being the result of many males having been displaced or killed during the period of genocide (see Table 3.5).

Table 3.5
Familial Situation of Household Heads

Sector	Couple	%	Single males	%	Single females	%
Mubumbano	49	47%	49	47%	6	9%
Ryamanyoni	90	87%	7	7%	7	7%

Source: Survey data.

2.1.5. Origin of the canvassed farmers

Our study clarified an important movement of population. In Ryamanyoni sector, 46 of the 184 interviewees[2] were natives of the same sector. Although another 56 were natives of the same sector, they had left the sector and came back between 1995 and 1996. 60 interviewees came from other sectors or even from outside the country. In Mubumbano sector, we observed the same phenomenon: 60 of the 151 persons who responded came from other sectors, whereas 91 out of the 151 were natives of the same sector.

[2] This question was asked both the family heads and their spouses. 184 is the number of those who replied to this question.

The reasons for this movement are various, the main ones being the war that occurred in the 1990s (especially for the population on Ryamanyoni) and marriage (especially for women). Table 3.6 summarizes the main reasons for this movement.

Table 3.6
Reasons for Population Movement

Reason	Mubumbano		Ryamanyoni	
	Number	%	Number	%
War	0	0	46	25
Marriage	46	30	19	10
Work	4	3	6	3
Other	10	7	67	36
Not moved	91	60	46	25

Source: Survey data.

Movement of the population, inside as well as outside the country, was more frequent in Ryamanyoni than in Mubumbano. For example, in Ryamanyoni, 94 persons moved internally compared with 47 persons in Mubumbano sector.

2.1.7. Economic activities

We cannot identify a person without placing in an occupational category. It not only helps to understand a person's place in society in general, but also allows us to understand the person's role in the process of economic production. In the survey, we tried to identify the economic activities of the household heads and their spouses.

Table 3.7
Economic Activities

Occupation	Mubumbano		Ryamanyoni	
	Number	%	Number	%
Agriculture	145	81	175	80
Livestock raising	25	14	39	18
Builder	2	1	1	0
Salaried worker	5	3	2	1
Trade	2	1	1	0

Source: Survey data.

The main activity was obviously farming. Livestock raising came far behind in the second place at 14% and 18% respectively in Mubumbano and Ryamanyoni. The other activities (builder, trader and salaried worker) were almost negligible in numbers.

In Mubumbano, the tendency to have other jobs than agriculture and livestock raising was a little higher than in Ryamanyoni. This is probably because Mubumbano sector is near an urban center (Butare).

2.1.8. Educational level

The level of instruction and training of the population is a important factor in the management of farming units and, therefore, for economic growth. Our survey has revealed that, in Mubumbano and Ryamanyoni, the level of instruction was very low, being nil in many cases.

Table 3.8
Educational Level

Level	Mubumbano		Ryamanyoni	
	Number	%	Number	%
Nil	46	32.9	90	42.3
Primary 1	4		0	
Primary 2	7		3	
Primary 3	5		12	
Primary 4	21		14	
Primary 5	14		11	
Primary 6	33		53	
Primary 7	3		11	
Primary 8	7		7	
Primary Total	94	67.1	111	52.1
Secondary 1	0		1	
Secondary 2	0		3	
Secondary 3	0		2	
Secondary 4	0		1	
Secondary 5	0		0	
Secondary 6	0		5	
Secondary Total	0	0.0	12	5.6
Total	140	100.0	213	100.0

Source: Survey data.

Table 3.8 shows the educational level of the interviewed peasants. According to our sample, illiterate people were respectively 32.9% and 42.3% in Mubumbano and

Ryamanyoni. Those who had studied at primary school level were respectively 67.1% and 52.1%. In Ryamanyoni, only 5.6% reached secondary school. Most of the illiterate people were women, as occurs elsewhere in Rwanda. In our sample, only one woman had completed secondary schooling and one woman had attended 2 years of secondary schooling. All the others who studied at secondary school level were men.

2.1.9. Housing

Housing is an indicator of the living standard and spatial organization. Settlements are dispersed everywhere throughout Rwanda and are scattered in the hill country. In Ryamanyoni sector, most houses are in built-up areas called "*imidugudu*."[3] The houses, almost all being roofed with tiles or metal sheets, are built with sun-dried clay bricks or with wood. The majority of farmers have their own houses, but because of the recent events in Rwanda, some households live in others' houses. One house usually accommodates one or two households. The housing situation is indicated in Table 3.9.

2.1.10. Monetary income of the households

Household income constitutes a very important factor for evaluating living conditions and understanding the socio-economic situation in comparison with other households. During our survey, it was difficult to evaluate with any precision a farmer's income because most subsist on their own produce and dealings of food products are very rare. Domestic animals tend to be sold only occasionally when a farmer has a strong reason to raise money (school fees for children, medical care, etc.). Few households, however, purchase or sell livestock. Other income sources are also rare, as we will see later.

2.1.11. Social relationships

Social relationships are founded on the familial way of life. In Rwanda, the main observable social unit is the "*urugo*" (pl. *ingo*, literally translated as enclosure) meaning both the place where a family lives and the family itself. In a language full of imagery, to get married or to start a family is called "*Kubaka urugo*" (to build an enclosure, which means, in a broad sense, to get married).

The "*ingo*", whose chiefs are brothers, form an "*inzu*" (pl. *amazu*. house) which constitutes a sort of sub-lineage whose length does not extend beyond three generations.

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[3] *Umudugudu* (pl. *imidugudu*) means "agglomeration, village" (Jacob [1984]).

Table 3.9
Housing

	Mubumbano					Ryamanyoni				
	Rented house		Own house		No answer	Rented house		Own house		No answer
Habitant	Ordinary	Umudugudu	Ordinary	Umudugudu		Ordinary	Umudugudu	Ordinary	Umudugudu	
Couple	3	0	46	0	0	20	2	20	47	1
Single males	12	0	37	0	0	0	0	1	6	0
Single females	3	0	2	0	1	2	0	1	4	0
Total	18	0	85	0	1	22	2	22	57	1

Source: Survey data.

Table 3.10

Clans and Lineages (Ryamanyoni)

Clan	Lineage	Number
1. Umunyiginya	Abashambo	7
	Umwenegahaya	4
	Umuturagara	2
	Umuganzu	1
	Umukobwa	5
	Umukondo	1
	Umwenegitore	1
	Umwaya	1
	Total	22
2. Umwega	Umwakagara	8
	Umuswere	2
	Umukondo	1
	Umubanzangabo	1
	Umucaniro	1
	Uwarusatsi	1
	Total	14
3. Umusindi	Umuranzampwi	2
	Umwimba	1
	Umwuhiye	1
	Umuyongi	1
	Umurore	1
	Umuhanuka	1
	Umushishi	1
	Umumitanga	1
	Umugega	1
	Umukandaba	1
	Total	31
4. Umusinga	n.d.	7
	Umugahi	2
	Umurora	5
	Umuhambya	1
	Total	15
5. Umugesera	Umuzirankendo	26
	Umucana	2
	Total	28
6. Umucyaba	Nyirarucyaba	12
7. Umuzigaba	Umuhabahamye	13
	Umujyambere	1
	Ungirumpatse	1
	Umudali	1
	Umuvubi	1
	Total	18
8. Umwungura	Umudara	4
	Umuteke	9
	Umudihiro	1
	Umurihira	1
	Uwarutaro	1
	Uwagisake	1

Source: Survey data.

A group of "*amazu*" coming from the same ancestor is called "*umuryango*" or lineage. This is a social group with common ancestral history. In the survey carried out in Mubumbano and Ryamanyoni, we tried to understand social relationships through clans, lineage, and number of sisters and brothers. Dominant clans and lineages and lineages in Ryamanyoni sector are indicated in Table 3. 10.

In Mubumbano sector, the clans and lineages are more selective:

Table 3.11
Clans and Lineages (Mubumbano)

Clan	Lineage	Number
1. Umusinga	Umuziba	15
	Umwiyunze	13
	Total	28
2. Umunyiginya	Umushambo	41
		1
		42
3. Umuzigaba	?	30
4. Umwega	?	16
5. Umucyaba	?	9
6. Umusindi	?	2
7. Umushi	?	1
8. Umuturagara	?	1

Source: Survey data.
Note: Interviewees often did not know their lineage.

It is obvious that, contrary to Ryamanyoni, many farmers do not know their lineage in Mubumbano. In the two sectors where this research has been carried out, the number of brothers and sisters varies from 1 to 9 for the husband and wife. The average is 5 brothers and sisters. Mutual help is rather rare due to modern customs which require payment for work done, and free services have tended to disappear. There is no direct collaboration among the members of a clan or lineage. However, some relationship rituals still exist; for example, weddings and various other ceremonies.

2.2. Agricultural exploitation in the hill

Familial agricultural exploitation now involves a whole range of food products in a gradually reducing space. Intensive exploitation leads to soil degradation, due to the fact that the Rwandan peasant uses little fertilizer and agricultural techniques are still traditional, and therefore archaic. The agricultural tools are still rudimentary. Every

peasant exploits his plot of soil with his family members. The lack of land often makes the peasant rent the land and attempt to cultivate in wetlands.

2.2.1. Area of farmed land

With the sample of 208 persons from 104 families in Ryamanyoni and 104 families in Mubumbano, we measured ourselves the fields of 21 families in Mubumbano and of 22 families in Ryamanyoni.[4] The results from this measuring are presented in Table 3.12.

Table 3.12
Area of Farmed Land

Land area	Mubumbano	Ryamanyoni
Total average area	4,839 m^2 (100%)	8,829 m^2 (100%)
Hill country	4,537 m^2 (94%)	8,632 m^2 (97%)
Wetland	324 m^2 (6%)	1,726 m^2 (3%)
"Couple" households	5,934 m^2	9,208 m^2
"Single female"	3,094 m^2	n.d.
"Single male"	2,811 m^2	5,040 m^2

Source: Survey data.

Obviously, the degree of exploitation is very small: the average is 0.48 hectares in Mubumbano and 0.88 hectares in Ryamanyoni. This small area of land, of course, complicates the use of modern agricultural methods and hinders the possibility of achieving self-sufficiency in food. The average land in the swamps is also very small (0.03 hectares in Mubumbano and 0.17 hectares in Ryamanyoni).

We tried to identify the types of family possessing relatively large fields. We noticed that the "couple" family tended to have more land (average 0.59 hectares in Mubumbano and 0.92 hectares in Ryamanyoni). Families comprising widowed wives and husbands had less land (0.31 ha for "single female" and 0.28 ha for "single male" in Mubumbano, versus 0.50 ha for "single male" in Ryamanyoni).

[4] 21 heads of these households in Mubumbano are composed of 13 "couples," 7 "single females" and 1 "single male," while 22 household heads in Ryamanyoni are composed of 20 "couples" and 2 "single males".

2.2.2. Acquisition of land

There are 4 methods for land acquisition: purchase, gift, inheritance and borrowing or rent. The land law is not precise with regard to the regulation of land acquisition in rural areas; this is still regulated by customs. We clarified the mode of acquisition by measurement and interviews with farmers.

Table 3. 13
Method of Land Acquisition

	Mubumbano (21 households)		Ryamanyoni (22 households)	
	Area (m^2)	%	Area (m^2)	%
Purchase	14,739	14.7	26,279	13.6
Gift	5,153	5.1	85,022	44.0
Inheritance	73,215	72.9	59,589	30.9
Borrowed	7,318	7.3	22,188	11.5
Total	100,425	100.0	193,078	100.0

Source: Survey data.

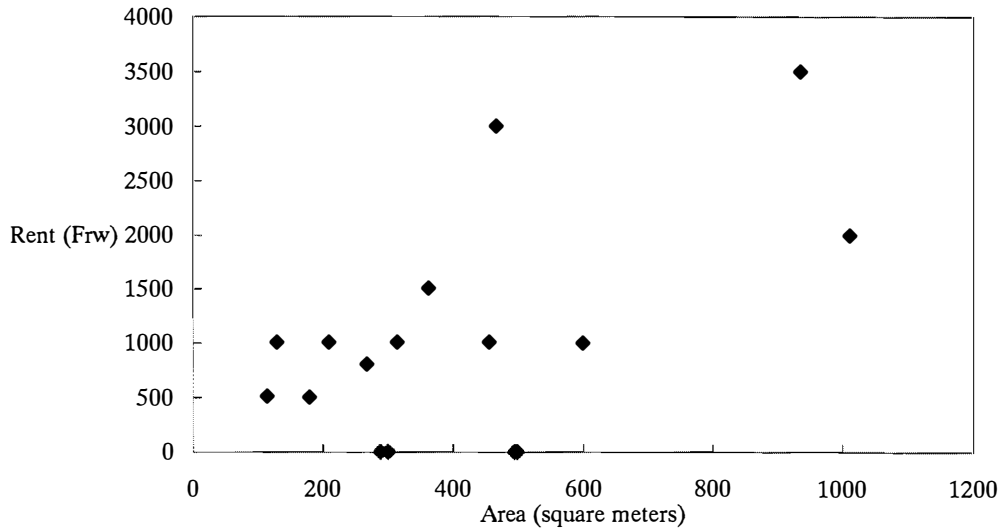
The farmers who acquired land in swamps usually got it as gift from the state, but this land is sometimes too far from the dwelling. Almost all fields are cultivated and land reserved for pasture is very small. The fact that the peasants frequently rent or borrow fields indicates the scarcity of land. The rent for the land varied from 1,000 Rwandan francs (Frw) to 5,000 Frw per year, depending on the quality and the size of the field. The rent is sometimes decided according the agricultural season. Landowners rarely ask for services in kind. This is a sign of rural transformation and the development of a monetary economy in rural areas. However, the peasants sometimes borrow land without any rent. The relationship between the rent and the area of land is shown in Figures 3.2 and 3.3.

2.2.3. Crops

In the area of this research, there is a wide range of agricultural products, from food crops (the majority) to cash crops intended only for sale. These are bean, sorghum, cassava, yam, taro, pea, sweet potato, Irish potato, sunflower, cabbage, soybean, maize and coffee. Some peasants have eucalyptus wood for use as firewood. Among the food crops, bean (haricot) is the most important, followed by sweet potato, banana and cassava. The cultivation of vegetables and sunflower is much less.

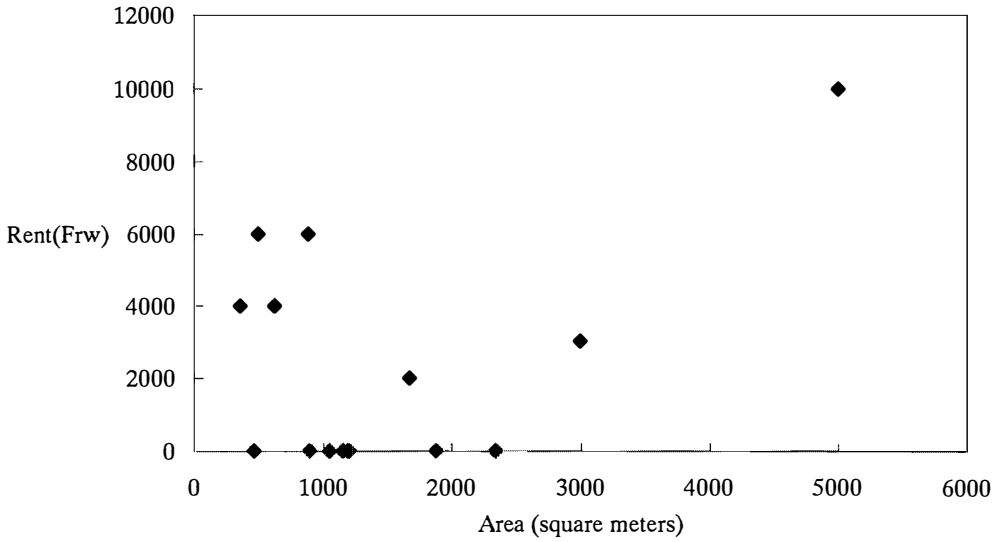
Except for the above-mentioned crops, the peasants have fruits trees near their

Figure 3.2
Area of Borrowed Land and Its Rent
(Mubumbano)



Source: Survey data.

Figure 3.3
Area of Borrowed Land and Its Rent
(Ryamanyoni)



Source: Survey data.

houses such as papaya and avocado. The only cash crop grown in this zone is coffee.

2.2.4. Importance of crops

According to the peasants, these crops do not have equal importance. In respect of food, the most important crops are bean, sweet potato and cassava. To earn money, the most important crops are banana, coffee, vegetables and sweet potato.

The area allocated for each crop depends on its usefulness. Nevertheless, it was not easy to measure exactly the areas allocated to each crop, especially because of crop association. In general, the most important areas are allotted to banana, bean, sweet potato and cassava.

At the national level, the statistics department of MINAGRI shows the following classification for the agricultural season A (1997).

Table 3.14
Important Products and Cultivated Area

1. Banana	213,195 ha	8. Irish potato	16,347 ha
2. Bean	150,987 ha	9. Sorghum	15,118 ha
3. Sweet potato	55,268 ha	10. Fruit	12,327 ha
4. Maize	54,545 ha	11. Groundnut	4,397 ha
5. Cassava	36,630 ha	12. Soybean	5,912 ha
6. Yam	25,110 ha	13. Rice	2,411 ha
7. Pea	18,803 ha	14. Wheat	2,333 ha

Source: Assessment report 1998.

Table 3. 15
Production by Type of Plant

Plant	1998		1999	
	Production (t)	%	Production (t)	%
Banana	1,338,620	60.45%	1,404,108	58.05%
Tuber and root	662,722	29.93%	799,717	33.07%
Cereal	117,198	5.29%	111,132	4.59%
Bean	66,091	2.99%	70,301	2.91%
Vegetable/Fruit	29,428	1.33%	33,344	1.38%
Total	2,214,062	100%	2,418.601	100%

Source: MINAGRI, Assessment Report 1998-1999.

In respect of type of plant, the following classification for the season B (1998 and 1999) shows the importance of the produced quantities.

It is obvious that banana trees produced 60,45 % and 58,05% of total crop weight in 1998 and 1999, followed by tubers and roots (29,93% in 1998 and 33,07% in 1999). In the area of our study, the three most important crops were banana, bean and sweet potato.

2.2.5. Crop association

The system of intensive exploitation used by the Rwandan peasants involves associating (i.e. cultivating together in the same field) some crops. The main types of association that we found during our research are as follows:

- Maize + bean + sorghum
- Bean + cassava
- Banana + bean
- Cassava + sweet potato
- Bean + sweet potato
- Bean + yam
- Soybean + groundnut

The association of banana and beans is the most frequently conducted, followed by that of cassava and sweet potato. According to the peasants' answers, the main reasons for this choice were based on the characteristics of the crops and on the high productivity when they are associated.

In general, vegetables and fruits are not frequently cultivated in hill land. However, during the rain season, some vegetables can be planted near houses (*urugo*) such as auberigine, carrot, tomato, onion, cabbage, "*imbwija*," "*dodo*" and "*sogi*." The last three are traditional vegetables and consumed within the family, whereas the other crops from abroad are for sale and therefore generate supplementary financial income.

2.3. Agricultural exploitation of wetland

Wetland cultivation was not commonly carried out in traditional Rwandan society. However, due to the scarcity of land on hills and demographic pressure, farmers became more interested in swamps where agricultural activities can be carried out during the dry season.

Today, swamps are being exploited rather anarchically by the peasants. There should be some strategies applied to improve the development and management of

swamps, since wetland contributes much to agricultural production everywhere in Rwanda.

During this research, we tried to identify the importance of agricultural production from swamps. It was noticed that the proportion of cultivated area in swamps was respectively 6% and 3% of the total in Mubumbano and Ryamanyoni, as shown in Table 3.12.

Although wetland fields do not represent a large cultivated area, they may become more important if they were rationally managed. The farming of wetland by the interviewed families was generally limited to some blocks of sweet potato and vegetable.

Agricultural methods were almost the same as those used on the hills. There is association of:

- Bean + gourd + yam
- Yam + maize + sorghum
- Yam + soybean

Cabbages and sweet potatoes were generally planted without any other associated crop in the swamp. The crop is generally rotated as follows: sweet potatoes → vegetable (cabbage, tomato); aubergine → sorghum → sweet potato; sweet potatoes → beans → sorghum → vegetable. It is worth noting that the rotation of crops in the swamps is not as strictly fixed as that on the hills, where there are normally two cultural seasons in a year.

Agricultural production in swamps involves many difficulties. According to the answers from the inquiry, the main difficulties are:

- Lack of adequate agricultural tools
- Difficulties of clearing
- Long distance from dwelling

The opportunity for development is not easy: agricultural tools are still rudimentary, techniques are old-fashioned, and extension services do not work (some extension service for agro-fishery is now on trial). Farmers do not therefore get any help to exploit wetland cultivation, while they need selected seeds, agricultural chemicals (pesticides), agricultural tools and fertilizers to increase the production.

2.4 Livestock raising

In Rwanda, as elsewhere, livestock raising is associated with farming. The two activities are complementary and sometimes interdependent. We tried in this study to identify the role and importance of livestock raising throughout the samples that were

surveyed in Mubumbano and Ryamanyoni.

In Mubumbano sector, the lack of pasture was evident, and there were not many cattle breeders. In Ryamanyoni sector, there was extensive livestock raising in natural and collective pastures. Livestock raising seemed more important there. Table 3.16 shows the results of the inquiry about livestock raising in the two sectors.

In Ryamanyoni, 40 of the 104 families that were surveyed had cattle, 31 had goats, 2 had sheep and 52 had poultry. No family had pig. In Mubumbano, of the 104 families surveyed 9 families had cattle, 21 had pigs, 27 had goats and 28 had poultry. No family had sheep. As shown in Table 3.16, the number of livestock is relatively small in both of the two sectors

Table 3.17 indicates the total number of livestock among the 208 households in the two sectors. In brief, there are more cattle in Ryamanyoni than in Mubumbano. In Mubumbano, on the other hand, there are more pigs and goats than in Ryamanyoni.

As shown in Tables 3.16 and 3.17, the degree of livestock raising is not much in the farming by the Rwandan peasant. Although small domestic animals seem to be more important in the actual agricultural management, the peasants wish to have more cattle, as they would increase the production of manure and provide a supplementary source of money income. Livestock raising should be encouraged because many peasants complain about the lack of manure, that is indispensable for agricultural production. However, the lack of pasture is a great hindrance to cattle raising, and the peasants do not have enough space to grow fodder.

What then is the main objective of livestock raising by Rwandan peasants? In the interview, we asked the peasants for their three main objectives in livestock raising. The answers are shown in Table 3.18.

According to the peasants in Mubumbano, manure making was the most important objective of livestock raising, while milking and then meat sale were the main objectives for the peasants in Ryamanyoni, where manure making was not considered very important.

Tables 3.19 and Table 3.20 show the purchase and the sale of livestock carried out during the three months before our survey took place. The total amount of these dealings is shown in Table 3.21.

The sales of livestock products such as milk and butter are not very active: there were no such sales in Mubumbano. In Ryamanyoni, only two households answered that they often sold milk. This indicates that the economy is almost totally self-consuming. During the week of our research, the sales of milk, eggs and butter amounted to only 4,360Frw for the 104 households in Mubumbano. In Ryamanyoni, the

Table 3.16
Number of Head of Livestock

Head	Cattle		Pig		Goat		Sheep		Poultry	
	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni
0	95	64	83	104	77	73	104	102	76	52
1-5	8	18	20	0	26	29	0	2	26	46
6-10	1	14	1	0	1	2	0	0	1	5
11-15	0	5	0	0	0	0	0	0	1	1
16-20	0	3	0	0	0	0	0	0	0	0
Total	104	104	104	104	104	104	104	104	104	104

Source: Survey data.

Table 3.17
Total Number of Livestock

	Cattle	Pig	Goat	Sheep	Poultry	Others
Mubumbano	17	34	55	0	60	15
Ryamanyoni	297	0	82	2	160	4

Source: Survey data.

Table 3.18
Main Objectives of Livestock Raising

Objective	Mubumbano					Ryamanyoni					
	1st	2nd	3rd	nil	total	1st	2nd	3rd	4th	nil	total
Manure	24	7	3	70	104	4	12	7	1	80	104
Milk	5	1	0	98	104	28	3	0	3	70	104
Meat	6	3	2	93	104	21	4	3	0	76	104
Sale	11	23	3	67	104	13	31	3	1	56	104

Source: Survey data.

Table 3.19
Purchase of Livestock

Purchased amount (Frw)	Cattle		Pig		Goat		Poultry		Total	
	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni
0	100	99	94	104	101	103	99	101	84	95
1-5000	0	0	9	0	1	1	5	3	13	4
5001-10000	0	0	1	0	1	0	0	0	3	0
10001-50000	1	5	0	0	1	0	0	0	1	5
50001-100000	2	0	0	0	0	0	0	0	2	0
100001-150000	0	0	0	0	0	0	0	0	0	0
150001-200000	1	0	0	0	0	0	0	0	1	0
Total	104	104	104	104	104	104	104	104	104	104

Source: Survey data.

Table 3.20
Sale of Livestock

Sold amount (Frw)	Cattle		Pig		Goat		Poultry		Total	
	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni	Mubumbano	Ryamanyoni
0	102	90	98	104	101	101	101	103	90	87
1-5000	0	1	3	0	2	1	3	1	8	3
5001-10000	0	0	3	0	1	1	0	0	4	1
10001-50000	1	11	0	0	0	1	0	0	1	11
50001-100000	1	2	0	0	0	0	0	0	1	1
100001-150000	0	0	0	0	0	0	0	0	0	1
150001-200000	0	0	0	0	0	0	0	0	0	0
Total	104	104	104	104	104	104	104	104	104	104

Source: Survey data.

amount was 33,680Frw.

Table 3.21
The Total Amounts of Livestock Dealing

	Mubumbano		Ryamanyoni	
	Purchase	Sale	Purchase	Sale
Cattle	351,000	72,500	162,000	573,000
Pig	33,500	35,000	0	0
Sheep	0	0	0	0
Goat	24,000	13,300	5,000	22,500
Poultry	3,800	3,150	1,800	1,400
Others	2,320	1,980	3,200	0
Total	414,620	125,930	172,000	596,900

Source: Survey data.

Although the peasants often complained about the lack of fertilizer, the purchase or sale of manure was rare. This seems to be caused by the lack of available money. In Mubumbano, six households declared that they had bought manure (for example, $2m^3$ of manure for 3,000Frw, 45kg for 6,000Frw, 100 baskets for 500Frw). In Rukara, it was only three households that had bought fertilizer. In short, the activity of livestock raising in the agricultural exploitation by the peasant is generally very small, whereas it is clear that this activity is strongly demanded.

2.5. Inputs

Since it is impossible to extend the cultivable area because of the lack of available land, the peasants have to depend on such inputs as fertilizers and pesticides to increase production. In addition, adequate agricultural tools are necessary to rationally manage their available land. During our research in Mubumbano and Ryamanyoni sectors, we tried to survey the inputs possessed by the peasants for their farming.

2.5.1 Fertilizers

Table 3.22 shows the use of fertilizers in the two sectors. In Mubumbano sector, 59 families declared that they use manure, whereas only 17 families use it in Ryamanyoni sector.

Table 3.22
Use of Fertilizers

	Mubumbano	Ryamanyoni
Chemical	1	1
Organic (manure)	59	17
Both of them	2	0
Not used	42	86
Total	104	104

Source: Survey data.

As shown in Table 3.22, those who use chemical fertilizers are exceptional. In Ryamanyoni sector, more than 80% of the households do not use any fertilizer. In Mubumbano, the use of fertilizer (manure) is more frequent. It is interesting to note that the peasants use more manure in the area where there are fewer cattle. Is this phenomenon due to the system of livestock or to certain ignorance? According to the peasants from Ryamanyoni sector, the many livestock grazing far from their fields and houses does not favor the use of manure. On the other hand, in Mubumbano sector, the population pressure on land is so high that the peasant has more incentive to use manure. It is rare that the manure is sold or bought. In this study, only four households declared that they had bought manure.

Table 3.23
Use of Phytosanitary Products

	Mubumbano	Ryamanyoni
Yes	4	8
No	100	96
Total	104	104

Source: Survey data.

2.5.2. Use of phytosanitary products (pesticides and fungicides)

The use of phytosanitary products is still negligible (Table 3.23): 12 households said that they used these products (4 households in Mubumbano and 8 in Ryamanyoni). According to the peasants, phytosanitary products (and also chemical fertilizers) are very expensive and they do not have enough money to buy them (Table 3.24).

Table 3.24

Prices of Some Phytosanitary Products

	Mubumbano		Ryamanyoni	
Name of Product	Quantity	Price (Frw)	Quantity (kg)	Price (Frw)
Dithane	-		1 kg	2,000
Soumicombi	1 liter	3,600	1 liter	4,000
Dicatex	-		3 liters	7,500
Samurn	-		1 liter	2,000
Transilin	-		1 liter	5,000
Ardonine	3 kg	7,500		
Totari	5 kg	12,500		
Tioda	1 liter	2,800		
D.D.T.	1 kg	300		

2.5.3 Farming tools

Although many factors are concerned with the agricultural production, the importance of farming tools should not be underestimated. The lack of appropriate farming tools can hinder or limit agricultural production. Table 3.25 shows the number of farming tools possessed by the interviewed peasants.

Table 3.25
Farming Tools

	Mubumbano					Ryamanyoni					
Number possessed	0	1	2	3+	total	0	1	2	3+	n.a.	total
Hoe	10	78	11	5	104	5	25	50	23	1	104
Machete	55	48	1	0	104	16	82	5	0	1	104
Axe	80	24	0	0	104	69	33	1	0	1	104
Shovel	96	8	0	0	104	96	6	1	0	1	104
Wheelbarrow	104	0	0	0	104	103	0	0	0	1	104
Watering can	104	0	0	0	104	103	0	0	0	1	104

Source: Survey data.

Relatively many peasants possessed such farming tools as hoe and machete. Among the 208 surveyed households, 103 (i.e. 49,5%) had one hoe in their house; 61 households (i.e. 29%) had two; 28 households (i.e. 13,5%) had 3; only 15 households (i.e. 7%) did not possessed a hoe. On the other hand, very few households had shovels (8 in Mubumbano, 7 in Ryamanyoni). No household had a wheelbarrow or a watering can.

Even if hoes and machetes are the most common farming tools, the problem is

that there were some households without these tools (7% for the hoe, 34% for the machete). Considered in terms of absolute property, the households cannot afford to buy these basic farming tools.

2.5.4. Water

Water is important not only for agriculture, but also for living. In the two surveyed sectors, the farmers have to water their plants and cattle during the dry season. Table 3.26 indicates the practice of watering in these sectors.

Table 3.26
Practice of Watering

Mubumbano			Ryamanyoni		
Yes	No	Total	Yes	No	Total
13	91	104	14	90	104

Source: Survey data.

It is obvious that few farmers practiced watering, and that almost all surveyed households depended on the natural rainfall. The most important reason for this is that water can only be found far from their fields and houses. According to our survey in Ryamanyoni, the average distance to water for agriculture was around one hour of walking; as for potable water, it took around two hours.

2.6. Labor force

As far as the surveyed families are concerned, most of the agricultural work tends to be carried out by their family members. The quantity of available labor in the family was assessed according to the method of "labor unit:" adults from 15 to 64 years old are supposed to have a one unit of labor, while youngsters from 10 to 14 years and aged persons of more than 65 years are supposed to have half a unit, and children under 10 are supposed to have zero unit. The result is shown in Table 3.27.

Table 3.28 shows the use of employed labor by the surveyed households. In this case, workers are employed permanently (at least for one year). The employment of permanent workers is not common.

Table 3.27
Labor Unit

Labor unit	Mubumbano			Ryamanyoni		
	Couple	Single female	Single male	Couple	Single female	Single male
0.5	0	2	0	0	0	0
1	0	11	2	0	2	2
1.5	1	9	1	1	2	1
2	21	3	2	31	0	0
2.5	4	9	1	11	0	1
3	4	8	0	7	2	1
3.5	5	2	0	8	1	2
4	1	1	0	8	0	0
4.5	1	2	0	11	0	0
5	4	1	0	6	0	0
5.5	0	0	0	1	0	0
6	0	0	0	1	0	0
6.5	1	0	0	2	0	0
7	2	0	0	0	0	0
7.5	2	0	0	1	0	0
8	3	0	0	1	0	0
8.5	0	1	0	1	0	0
Total	49	49	6	90	7	7

Source: Survey data.

Table 3.28
Employment of Permanent Workers

Number of workers	Mubumbano	Ryamanyoni
0	98	99
1	2	3
2	1	2
3	3	0
Total	104	104

Source: Survey data.

Table 3.29
Employment of Casual Workers

	Mubumbano				Ryamanyoni			
	Couple	Single Female	Single male	Total	Couple	Single female	Single male	Total
Frequently	1	2	0	3	2	0	0	2
Sometimes	17	8	1	26	29	2	2	33
Never	31	39	5	75	59	5	5	69
Total	49	49	6	104	90	7	7	104

Source: Survey data.

Table 3.30
Working as a Casual Worker

	Mubumbano				Ryamanyoni			
	Couple	Single Female	Single male	Total	Couple	Single female	Single male	Total
Frequently	0	7	1	8	17	1	1	19
Sometimes	19	7	1	27	21	0	2	23
Never	30	35	4	69	52	6	4	62
Total	49	49	6	104	90	7	7	104

Source: Survey data.

Table 3.31
Help with Others' Agricultural Work

	Mubumbano				Ryamanyoni			
	Couple	Single female	Single male	Total	Couple	Single female	Single male	Total
Always	0	4	1	5	1	0	0	1
Frequently	1	1	1	3	3	0	0	3
Sometimes	20	14	1	35	72	5	6	83
Never	28	30	3	61	14	2	1	17
Total	49	49	6	104	90	7	7	104

Source: Survey data.

Table 3.32
Help from Others

	Mubumbano				Ryamanyoni			
	Couple	Single female	Single male	Total	Couple	Single female	Single male	Total
Always	0	1	1	2	1	0	0	1
Frequently	0	1	0	1	3	0	0	3
Sometimes	13	13	2	28	72	5	5	82
Never	36	34	3	73	14	2	2	18
Total	49	49	6	104	90	7	7	104

Source: Survey data.

Table 3.29 shows the employment of casual workers. We asked whether the farmers had employed casual workers. 30% of total households (64 cases among 208) had employed casual workers. We also asked if the farmers had themselves worked as casual workers for others. The result is shown in Table 3.30. According to the survey in two sectors, the daily salary for casual work varied between 200 and 400 Frw in 1999. Table 3.31 and 3.32 concern mutual help.

2.7. Other sources of income

Although it is certain that the Rwandan peasant generally depends on agriculture and livestock raising, they sometimes have other work to earn some income. During the survey, we asked if they have any other work than agriculture. The result is indicated in Table 3.33. According to our survey, few peasants engaged in other work.

Table 3. 33
Side Jobs for Peasants

Job	Mubumbano		Ryamanyoni	
	Number of households	Average income (Frw)	Number of households	Average Income (Frw)
Builder	4	14,000	3	35,000
Tailor	1	3,000	1	9,000
Trader			2	45,000
Commission-agent (1)	2	40,000	1	n.d.
"Conseiller"(2)	1	15,000	1	15,000

Source: Survey data.
(1) Those who gain a little money in intervention dealings between two others.
(2) The official name of the chief in each sector.

2.8. Land management

Land is the most important resource for agriculture and livestock raising in Rwanda, the "land of the thousand hills," where the soil tends to be overexploited under the prevailing demographic pressure. Since the colonial period, farmers have practiced several methods of land conservation. Table 3.34 indicates some practices carried out by the interviewed farmers.

We realized that the period of fallowing has been substantially reduced. This phenomenon has undoubtedly been caused by the limited cultivable land per family.

Table 3.34
Methods Applied for Land Conservation

	Mubumbano	Ryamanyoni
Pit (P)	51	4
P+Other (O)	1	3
P+Grassing (G)	23	0
P+Mulching (M)	6	0
P+G+M	1	1
P+G+M+O	0	1
Grassing	1	0
Mulching	2	29
G+M	1	0
M+O	0	7
Terracing+M	1	0
Others	0	9
Nothing	17	50

Source: Survey data.

2.8.1. Traditional techniques

It is worth evaluating the effectiveness of theses techniques used by the peasants.

1. Small terraces (generally from 0.5m to 1m in height), especially in regions where the slope is often steep such as Mubumbano.
2. Sloped mound: in other words, strips of 2 to 3 meters in length separated by furrows on the steep slopes.
3. Traditional agro-forestry: the farmers use various indigenous agro-forestry methods for such aims as:
   - Soil fertilization by adding organic elements (ficus, sesbania)

- Field protection against animals
- Protection as anti-erosive devices (markhania, vernonia)
- Protection against heavy rain

4. Cultivation in mounds or in plots (amayogi and imitabo)
5. Applying manure and practicing mulching. The manure or compost is put around the «*rugo*.»

2.8.2. Modern methods of soil preservation recommended by the ministry of agriculture

There are a variety of measures, and we only cite the following as examples.

1. Crossed pit
2. Strips of grass on inclined slopes (contour lines covered with setaria and pennisetum)
3. Strengthened strips of grass
4. Terraces of various sizes

During our study, we inquired about the techniques and methods that are practiced. In general, the techniques and methods are combined as illustrated on table 3.34. Anti-erosive pits are sometimes combined with grassing or mulching. However, we cannot assert that all necessary techniques have been mastered by the peasants. Extension services are necessary, as appropriate measures or techniques for soil preservation should be instructed for different applications.

We have examined in this chapter the characteristics of agricultural exploitation by using our research sample of 208 families that gives data on the composition of the families to the method of soil conservation, agricultural management on hills and in swamps, livestock raising, labor employment, additional income resources, etc. The study has indicated to us how Rwandan peasants are in difficult situation. They are today facd with many problems and constraints.

2.9. Obstacles and difficulties for Rwandan peasants

The crucial problem is the food shortage or unbalanced nutrition. According to data from the medium-term observation, it was noticed that the diet was mainly composed of sweet potatoes and beans. Table 3.35 indicates the composition of meals and drinks of the ten families who were canvassed.

In Ryamanyoni sector, the unbalanced nutrition tends to be ameliorated by drinking milk. The problem is aggravated if climatic hazards (drought or too much rain)

Table 3.35

Meal Composition of Ten Families (April – July 1999)

ID No.	No. of surveyed days	Meal composition																		Drink composition							
		Pd	Ha	Au	Pa	Pp	Pt	Fr	Le	Vi	Sg	Ar	Sj	Frt	Ri	Bn	Mz	Mc	Co	So	O	Bi	Bbn	Bsg	Ju	Th	Pr	Lt
G1	89	79	77	3		6		1	45	1			1	1	1	5	1	17	10	2	65	46	12		7	9		
G2	90	48	74		28	9	1	7	59	6					23	4	1	9	2	1	44	69	46	4	2		1	
G3	89	31	76	1	2	7	5		15						4	13		1	16		45	31	9	1	2	3	1	
G4	90	33	71		40	13	1	1	41	3					28	12	2	23	11		74	79	29	6	6		2	4
G5	90	64	75	0	27	14	0	0	35	4			0	0	6	6	0	9	11	0	71	58	13	21	2	0	0	0
R1	70	44	9		3	2	12		1	2					3	59	5	65			1	68	17	14	1		9	70
R2	86	27	75		14		20		25	4	2	1			1	20		13	1		46	54	40			10	6	15
R3	86	26	68		11				16	4		4			7	34		12			46	33	33	1		11	14	44
R4	38	18	32		4	1	10	3		2		4			4	21		6	1			12	18	4	1	8	1	29
R5	36	16	30		12		8			6		2			1	32		12			2	8	27	11	3	19	1	32

Source: Survey data.

Legend

G1～5: Families in Mubumbano (Gishamvu Commune) R1～5: Families in Ryamanyoni (Rukara Commune)

Pd: sweet potato Ha: bean Au: aubergine Pa: cassava Pp: pea Pt: potato Fr: fruit Le: vegetable Vi: meat

Sg: sorghum Ar: groundnut Sj: soy Frt: fry Ri: rice Bn: banana Mz: maize Mc: manioc Co: taro So: sunflower

O: water Bi: porridge Bbn: banana beer Bsg: sorghum beer Ju: juice Th: tea Pr: industrial beer (Primus) Lt: milk

occur. Although the peasants are obliged to get some food from the market in this case, their source of cash is very limited. Famine and starvation is chronic under these conditions.

2.9.1. Obstacles and difficulties

The obstacles and difficulties mentioned by the farmers are summarized in Table 3.36.

All these difficulties and obstacles have a serious impact on the peasants' life and their work. In short, the biggest problem is the food shortage which has a serious influences on many other factors.

Table 3.36
Difficulties Mentioned by the Interviewed Peasants

	Number of times cited	
	Mubumbano	Ryamanyoni
Disease	77	60
Poverty	38	79
Weakness	14	
Age	6	
Lack of education	2	
Bad weather	13	7
Scattered settlements	3	
Lack of phytosanitary products	2	29
Lack of transport		1
Lack of markets		11
Theft		2
Lack of pasturage		2

Source: Survey data.

Table 3.37

Obstacles Mentioned by the Interviewed Peasants

	Number of times cited	
	Mubumbano	Ryamanyoni
Lack of seeds	35	5
Manure shortage	49	
Bad harvests	10	7
Lack of farming tools	61	65
Bad weather	9	
Working alone	13	3
Lack of land	32	35
Lack of market	1	
Damage by moles	15	
Lack of phytosanitary products	1	
Soil degradation	2	1
Theft	2	1
Drought	3	82
Weakness		1
Damage by rats		25
Water shortage		6
Manure shortage		22
Long distance		5

Source: Survey data.

2.9.2. Causes of the food shortage

2.9.2.1. Climate hazards

In recent years, irregular weather marked by drought has occurred, disturbing the rhythm of the agricultural seasons and causing bad harvests and crop diseases.

2.9.2.2. Shortage of tillable land

During the survey, we realized that the land possessed by most families hardly reached 0.5 ha. As each family has, on the average, around five persons, of which two or three are adult, we can easily understand that the available land is not sufficient to produce enough food to feed only the family. Famine appearing periodically in certain "communes" highlights the land shortage and the lack of efficient agricultural techniques.

In this way, the shortage of tillable land tends to result in permanent overexploitation of the soil. Fallowing and crop rotation have become practically impossible. In addition, the lack of tillable lands was lead to massive unemployment of the youth in the countryside. This can bring about a rural exodus; moreover, a dramatic

situation of the youth has developed in the last decade concerning drugs and banditry.

2.9.2.3. Lack of inputs and technical instruction

Very little input is used to increase agricultural production (see tables 3.22 and 3.23 illustrating the use of manure and phytosanitary products). Some peasants use fertilizers and manure, but their quantity is trivial. Although numerous diseases attack crops, the use of phytosanitary and veterinary products remains marginal, as these products are expensive. The number of agents in charge of instructing peasants is very few, and they sometimes behave like bureaucrats.

2.9.3. Consequences of these obstacles and difficulties

These problems, obstacles and difficulties seem to have had a catastrophic impact on the peasants' lives.

2.9.3.1. Pauperization

The decrease in agricultural production, which is the principal source of income, has caused a dramatic decrease in the living standard. The majority of the canvassed peasants live in poverty: their monthly income rarely goes beyond 500Frw, around 1.5$ U.S.A.

2.9.3.2. Nutritional unbalance

This low living standard is expressed by the nutritional unbalance within the family. This has resulted in the recrudescence of diseases, reducing the working capacity of the peasants. During this survey, we could observe certain despondency among a certain number of children, and an investigation showed a high rate of death at an early age. Those diseases are exacerbated by general weakness due to deficient and insufficient nutrition.

2.9.4. Approach to the solution

In our study, we did not go deeply into possible solutions to those problems/ obstacles. However, the peasants expressed some solutions and wishes during free-talking: they wish that the government would give them agricultural inputs at a good price and in sufficient quantity. The peasants without cattle would like such inputs to make up for the lack of manure for their fields. They want technical assistance for agriculture, or by training by such means as seminars in order to improve their knowledge. They want to cooperate in establishing a new agricultural strategy capable of

helping the rural population. The local administration can be an efficient catalyst, and an organization of peasants can be an operational unit to tackle poverty in the rural area.

In the following chapter, which concerns the personal profile of some peasants, we try to see how peasants are doing their best to resolve the difficulties and obstacles. These brief presentations will provide an understanding of how a family manages agricultural exploitation.