THE ROLE OF WOMEN'S ASSOCIATIONS IN AGRICULTURAL DEVELOPMENT: A CASE STUDY OF GITARAMA, RWANDA

Presented by

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ABSTRACT

The role of Women's Associations in Agricultural Development: A case study of Gitarama, Rwanda

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The objective of this study is to investigate the impact of membership in women's rural associations on farm productivity. A survey of 320 women was carried out in the Prefecture of Gitarama in Rwanda, in order to obtain primary data and test the hypothesis.

The survey results indicate that women's associations contribute to an increased yield compared to NON-MEMBERS. Overall eighty-seven percent of all respondents believed that yields on agricultural association fields are higher than yields of the NON-MEMBER group. In fact, 89 percent of the MEMBERS and 84 percent of the NON-MEMBERS believed that women in associations obtain higher yields. Several factors such as work speed, harvesting at maturity, access to information and input availability are mentionned by the women to explain the higher yields. However, in this study, no significant differences were found with respect to access to inputs.

In the case of credit and technical assistance, women in general received low support. Rural women in Rwanda are poor, and their access to resources is limited due to their low economic and social status. Being a member of an association provides additional income to the member, but this is not the main reason to join the association. Social reasons, such as not having to work alone and being able to exchange views with other women, prevail over the economic reasons. Mutual aid is considered an important factor when considering joining the association. This aid takes several forms like combining all efforts for a common goal, getting help during the hard times, increasing knowledge, etc.

The survey results revealed that MEMBERS in general are more literate, are slightly older, have larger families and spend a higher percentage of their income on investments than NON-MEMBERS.

The increased interest in this type of organization is due to many factors. The government, in its policy of increasing food production is promoting these associations, but there is still no umbrella organization at the national level. Women's rural associations provide an efficient vehicle for development and can contribute towards better organization of scattered farmers. They ultimately result in higher agricultural production. So far this aspect seems to be under-exploited.

ABREGE

Le rôle des associations féminines dans le développement agricole, une étude de cas de Gitarama, Rwanda

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L'objectif de cette étude est d'analyser l'impact que les associations rurales féminines ont sur les rendements agricoles par rapport à ceux obtenus par les femmes qui ne sont pas membres de telles associations. Une enquête s'est déroulée dans la préfecture de Gitarama, au Rwanda, auprès de 320 femmes afin d'obtenir les données primaires nécessaires à la vérification de l'hypothèse.

Quatre-vingt-sept pourcent de toutes les répondantes ont reconnu que les rendements obtenus dans les associations rurales féminines étaient supérieurs aux rendements obtenus par les femmes qui ne sont pas membres d'associations. De ce nombre, 89 pourcent des femmes du groupe MEMBRE et 84 pourcent du groupe NON-MEMBRE ont répondu que les femmes membres d'associations obtenaient de meilleurs rendements. Les associations rurales féminines contribuent à l'augmentation des rendements pour les raisons suivantes: rapidité du travail, récolte à maturité complète des produits du jardin,

accès à la formation ainsi qu'aux intrants agricoles. Ce dernier point ne s'applique pas à tous les intrants. En effet, dans le cas du crédit et de l'assistance technique, les femmes en général reçoivent un niveau très bas de support. Les résultats obtenus par rapport aux rendements ne diffèrent pas d'un groupe à l'autre.

Les femmes rurales rwandaises ont des conditions de vie précaires. Leur accès aux ressources est bas, cela est principalement dû à leur faible niveau socio-économique. Etre membre d'une association permet d'obtenir un revenu additionel pour la famille, mais cela n'est pas la raison principale pour adhérer à cette forme de groupement. Les raisons d'ordre social telles que ne plus être seule ou encore, pouvoir échanger entre femmes dominent par rapport aux raisons d'ordre économique. Les femmes considèrent que l'entraide est le facteur prédominant pour adhérer à une association. L'entraide peut prendre différentes formes telles que mettre les efforts en commun afin d'atteindre un objectif pré-établi, compter sur l'appui des autres femmes durant les périodes difficiles, augmenter ses connaissances, etc. Les maris, quant à eux, considèrent que les raisons d'ordre économique sont les plus importantes.

Les MEMBRES sont, en général, plus alphabétisées, plus âgées, elles ont un plus grand nombre d'enfants et utilisent une plus grande proportion de leur revenu pour réinvestir que les NON-MEMBRES.

L'intérêt croissant dans cette forme d'organisation est due à plusieurs facteurs. Le gouvernement, dans la poursuite de son objectif d'auto-subsistance alimentaire, encourage la formation d'associations. Malgré cela, il n'existe toujours pas d'association au niveau national permettant de canaliser les énergies de ce mouvement. Les associations rurales féminines, de par leur nature et leur flexibilité, peuvent devenir un important vecteur de développement.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

"Women in development" (W.I.D.) has become a major issue in recent years. It is well known that women have an important role in the development of their country, but their role is an invisible one because most of their work is not recognized. In fact, half of the working hours of women do not enter into official statistics (FAO, 1984). Another characteristic of W.I.D. is that women in general are greatly affected by poverty. Most of them devote their time to productive and reproductive activities. The latter consists of domestic tasks and child care, the former deals mainly with subsistence agriculture. Both are sectors where the work is hard and wages are low. Women's lower economic status affects their social and legal recognition, so that most of them receive less than men.

Therefore, there is a need to provide women with activities that can increase their economic status without increasing their workload. This is hardly feasible without providing women with a better environment, i.e., better education, health care, nutrition and so on. One way of achieving this goal is to organize women into associations

that could provide them with more opportunities to generate income. By doing so, the costs related to extension work can be reduced, because more persons can be reached with the limited extension resources.

Several forms of association have been tried in different countries. The economic impacts of such organizations have varied widely from success (Naam groups of Yatenga in Burkina-Faso) to complete failure (Ujamaa's in Tanzania). In general, projects which tried to integrate women into the process of development had limited success because not enough information was available on women's role in developing countries.

In the East Central African Republic of Rwanda, associations were formed under colonization, largely by the missionaries. Women's associations dealt mainly with activities related to home economics. In the early eighties, the state decided to put a structure in place to ensure better coordination of resources for women (Niyonzimana, 1987; PNUD, 1985). In a speech, the President of Rwanda said: "The Mo vement[1] supports women's emancipation while respecting family ties; the advancement of her personality must be reinforced by access to instruction, and to professional, social, economic and political responsibilities"[2]

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[1] The "Movement" refers to the single political party called the National Revolutionary Movement for Development (M.R.N.D.)

[2] Translated from "Discours du Président de la République à l'occasion du 10ème Anniversaire de la IIème République; le 05 juillet 1983".

(Mukakamari, 1988). This showed an interest in women's issues within the traditional framework although it had not yet been translated into very much action for women's associations per se.

In more recent years, the government has been fostering the associations and their memberships by providing them with land, services and even credit. Interest in this form of organization is high. Many different types of associations have been created, dealing with production, credit, transformation or social activities. Most of these are tontines[3] , but it is hard to know how many of them exist in the country since they are not usually registered in the commune. Members prefer not to disclose how much money they contribute and once the objective of the group has been met, it usually dissolves.

There are also agricultural, handicraft and literacy groups among others. These can be men's, women's, mixed or youth associations. Women's associations are less numerous than the other types. In Gitarama, one of the 10 Prefectures of Rwanda, they account for only three percent of associations, according to a survey performed in this area. The most prevalent group was the mixed type (Musambimana et

[3] From the inventor's name, Lorenzo Tonti, a Neapolitan banker who established this form of savings around 1653. Tontines take different forms, in Rwanda today. The objective can be credit or work i.e. members contribute to a mutual fund or project (building houses, work in the field), and benefit from that fund or project when it is their turn.

al., 1987).

Agricultural associations deal with the production of cash crops, staple food, and with livestock raising. Growing interest in agricultural associations is due to several factors. The social aspect of an association is primordial. It allows members to communicate, and it reinforces the links between them which are necessary during hard times. Furthermore, Rwanda has a population density of 228 inhabitants/km^2, making it one of the most crowded countries in Africa (Guichaoua, 1986). High population density results in high pressure on land. The associations permit the more effective introduction of agricultural practices which are more labour intensive.

1.2 Hypothesis

Women's membership in agricultural associations is increasing, but there is little information on the economic impact of these associations. Therefore, the main hypothesis in this research is that membership in agricultural associations contributes to an increase in women's economic productivity.

1.3 General and Specific Objectives

The general objective of this research is to study the role of agricultural women's associations within the Rwandan context. The specific objectives are:

1- To describe national policies related to women's associations

2- To identify women's associations:
   a) Describe their objectives and programs
   b) Examine their location

3- To evaluate the motivation and needs of the women in those associations

4- To look at the uses of revenues generated by the associations

5- To examine production patterns and resource allocation through a comparison of women involved in associations with women working alone.

1.4 Scope of the Study

The analysis in this study is concerned with a survey performed in the East-Central African country of the Republic of Rwanda from January to July 1990. It looks at production functions associated with two different groups of women, the first group being members of agricultural women's associations, the second being women members of any association.

The analysis in this study is handled using different statistical methods; test for difference between means, chi-square test for independence and descriptive statistics.

1.5 Organization of this Study

Chapter two presents the country, Rwanda, where the survey took place. It includes a brief introduction to the socio-politico-economic factors related to the country. It then presents some of the important features of the agricultural sector and describes one of the ten Prefectures of the country, Gitarama, where the survey took place.

The next Chapter presents a review of literature. It includes three sections. The first looks at the role of women in LDC's in general and in Rwanda in particular. It examines more closely their limited access to resources and its effects on their productivity. Section two provides information on cooperatives. A historical picture of that movement is drawn and the applicability of the original form of cooperation in Africa is discussed. It also looks at women's indigenous cooperatives (associations) and presents different cooperation experiences from African countries. The cooperative movement in Rwanda is discussed and a description of women's agricultural associations is provided. Section three looks at survey techniques: the different types of survey, the problem of getting reliable answers, the ways to evaluate agricultural production and the weakness of each of these techniques.

Chapter four focuses on the methodology in the analysis. It presents the planning of the survey, the selection of the samples, the pre-test, the survey questionnaire and finally, some statistical tests, the assumptions underlying them and

the model uses.

The results are presented and discussed in Chapter five. Chapter six summarizes and concludes the study. It offers some recommendations for policy formulations and further research in this area.

CHAPTER 2

RWANDA

This chapter presents a brief introduction to the socio-politico-economic condition of Rwanda. It examines some of the important features of the agricultural sector. It then presents one of the ten Prefectures, Gitarama, where the survey took place. Some notions about population, administration, climate and agriculture are discussed.

2.1 Rwanda: the Country

Rwanda is a small, land-locked country in East-Central Africa, bordered by Uganda, Zaire, Burundi and Tanzania (see Appendix A). It has a GNP per capita of $280 US per year (1985 year estimate), making it one of the poorest countries in the world[4], comparing with Uganda: $220, Zaire: $170, Burundi: $230 and Tanzania: $290. Life expectancy at birth is 48 years and the literacy rate, 47 percent (Todaro, 1989). The urban centre is not well developed and settlement is dispersed. The capital, Kigali has 200,000 inhabitants in a country of 6.3 million (estimate for 1986). The population is scattered in a mountainous country in which the weakness of

[4] According to the OECD Classification System, Rwanda is considered a least least developed country (L.L.D.C.). This group includes 29 countries (Todaro, 1989).

the road infrastructure permits only limited access to several areas within the country. The tropical climate is moderated by altitude. There are two rainy seasons, from September to December and from January to April. A small dry season occurs in December and a long one from April to the end of August.

Its population is made up of three ethnic groups (Del Perugia, 1978). The first are the Hutus, who represent the majority (85 percent). They are from Bantu origins, and were involved mainly in agriculture. Second are the Tutsies who formed the monarchy until independence. They are from Hamitic origins and were pastoralists. Finally, the Twa form the smallest group in the country. They are from Pygmy origins, and were hunters and potters. All of them share a unique language, Kinyarwanda, and common traditions.

Rwanda was colonized by the Germans and then became a U.N. trust territory administered by Belgium. In 1959, "an uprising of the Hutu destroyed the Tutsie feudal hierarchy" (Paxton, 1988). Rwanda was originally part of the Rwanda-Urundi region. It gained its independence in 1962 and became the Republic of Rwanda. There is a single political party called the National Revolutionary Movement for Development (M.R.N.D.). The President, Major-General Juvénal Habyarimana, has been head of the country since 1975.

The country's administrative divisions consist of ten Prefectures, each governed by a Prefect. The ten Prefectures are divided into 144 Communes, each governed by an appointed

Burgomaster. The Communes are divided into Sectors and Cells. A Cell contains from 50 to 100 families (Ministère de l'Intérieur, 1986). Every administrative division is represented by a person, either elected or appointed by the government.

The population growth rate is very high and is estimated to be around 3.7 percent (Guichaoua, 1986) compared to 3.1 for Zaire, 3.5 for Tanzania and 2.5 for Somalia[5] . Rwanda's population is one of the youngest in the world (PNUD, 1985). The country must support many children through its school or health services, which are financed by income tax. This economic "dependency burden" (Todaro, 1989) can become a deterrent to economic development.

With an area of 26,338 km^2, the population density is 239 inhabitants per square kilometre, making Rwanda one of the most crowded countries in Africa. This high density puts pressure on land, which results in a breakdown of land into small plots, resulting in soil erosion, decline in soil fertility and an overall food deficit (UNICEF, 1987). Every family, on average, cultivates 75 ares [6].

Table 2.1 shows the increases of population and population density since 1934. From 1934 to 1989, the population increased by 5.83 million inhabitants, almost a

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[5] Canada has an annual growth rate of population of 0.8 percent.

[6] 100 ares = 1 hectare

five-fold increase over the fifty year period. The crude population density increased by 366 percent for the same period.

Table 2.1 Population and crude population density [a]

Year	Population (in millions)	Crude Pop. Density Inhab./km2
1934	1.60	60.5
1940	1.91	72.6
1950	1.95	74.0
1960	2.69	102.3
1970	3.76	142.6
1978	4.82	183.0
1980	5.26	199.6
1987	6.57	249.6
1989	7.43	282.0

[a] Kajyibwami, J. Le système d'exploitation agricole et d'aménagement du territoire au Rwanda. Kigali, 1990.

The population derives its living from agriculture. In fact, more than 90 percent are involved in this sector. It is mainly subsistence agriculture, based on the cultivation of sweet potatoes, bananas, cassava and sorghum. These crops are grown together, according to what is called "intercropping[7]".

[7] Intercropping consists of growing two or more crops simultaneously on the same piece of land. Up to eight different crops can be counted in Rwandan fields. They are grown in an homogeneous (separate rows of crops) or heterogeneous (any crop anywhere) fashion.

All these crops enter the diet of the population. Banana is often transformed into beer. This product is a source of income and an important element of social prestige for families.

They also grow coffee, tea, pyrethrum, vegetables, cotton and tobacco as export crops which contribute to a large part of the country's GNP, 97 percent ($87,7M US on a total of $90M US) according to FAO (1990). Coffee alone accounts for half of the export earnings and represents for 1989, 28,472 MT which was valued at $58,6M US (FAO, 1990). Coffee is grown on individual plots by most households A coffee plot can comprise 70 to 80 plants. Rice cultivation was recently introduced and is rapidly increasing.

A census (Guichaoua, 1986) performed in Rwanda, showed that the sources of revenue of peasants do not vary from one household to the other. Selling of banana beer accounts for 45 percent of the total revenues. This product can be sold all year round as opposed to coffee which is sold at specific times. It is renewable (replanting provides one harvest) and it does not create decapitalization as opposed to livestock selling (a peasant loses all his capital if he sells his livestock). Coffee accounts for 20 percent of peasant income and is cultivated by 75 percent of the sample households. Staple food accounts for 10 percent of the income.

The importance of the agricultural sector and the increasing relative scarcity of land are obvious. Demography, employment and production are linked together. Given these

conditions, high population growth means a worsening of living conditions for the vast majority of the population (Guichaoua, 1986).

2.2 The Prefecture of Gitarama

Gitarama is one of ten Prefectures of the Republic of Rwanda. It is located in the centre of the country (see Appendix A). Its area is 2393 km^2 and population 755,169 inhabitants (Ministère de l'Intérieur, 1988). Banana, sorghum, cassava, potatoes and sweet potatoes are the main crops grown in this area.

The birth rate in Gitarama is very high. This translates into a high demographic pressure on land. Indeed, we see the breakdown of land into smaller plots which can hardly support a family. This produces in the suppression of old agricultural practices like fallowing and results in cultivation of marginal land not suitable for agriculture. These factors, combined with a low level of investment in agriculture (the use of chemical fertilizers is quasi-nonexistent), contribute to further decrease in soil productivity.

There are 17 Communes, 171 Sectors and 1145 Cells in Gitarama. Table 2.2 shows the distribution of the population, population density and cultivable area over different Communes. The population is very young, with 36 percent under the age of 14 and 56 percent under the age of 24. There are

Table 2.2: Characteristics of the Communes in the Prefecture of Gitarama

COMMUNE	POPULATION			Total area	Density	Cultivated
	Total	Men	Women	Km²	inhab/km²	area (hectares)
1-Nyamabuye[a]	65526	31978	33548	164.87	397	13180
2-Tambwe[b]	38801	18299	20502	107.04	362	14188
3-Mukingi	40849	19656	21191	110.62	369	4647
4-Mushubati	58419	28599	29820	197.51	296	6561
5-Musambira	37627	18211	19416	123.16	305	9746
6-Mugina	36684	17658	19026	163.80	224	12429
7-Nyakabanda	46308	22778	23530	131.40	352	5411
8-Nyabikenke	46889	23474	23415	161.27	291	7613
9-Rutobwe	37354	18159	19195	98.11	381	3037
10-Kayenzi	41417	20421	20996	109.93	377	4622
11-Taba	55405	27303	28102	112.93	491	14181
12-Runda	36836	18308	18528	130.59	282	6141
13-Bulinga	42269	19982	22287	94.41	448	7127
14-Murama	39377	19951	19426	133.07	296	7754
15-Masango	47203	22809	24398	167.06	283	9860
16-Kigoma	43987	20389	23598	161.09	273	13756
17-Ntongwe	40218	19505	20713	226.36	178	18670

source: Monographie de la Préfecture de Gitarama, 1988.

[a] Administrative centre
[b] Commercial centre

large unemployment and underemployment problems, especially in major urban centres. This situation is seen in almost every Prefecture of the country. Table 2.3 shows the sectors of activity for five Communes where the survey took place. Nyamabuye and Tambwe are respectively the administrative and the commercial centres in the Prefecture. These have a high rate of unemployment compared with rural Communes like Taba, Bulinga and Masango.

Table 2.3 Distribution of the population according to the sector of activity [a]

Sector of activity	Nyamabuye	Tambwe	Taba	Bulinga	Masango
Public	1%	1%	1%	1%	1%
Private	4%	3%	0%	2%	3%
Agriculture	54%	58%	79%	70%	70%
Student	19%	15%	17%	15%	17%
Unemployment [b]	22%	23%	3%	12%	9%

[a] Source: Monographie de la Préfecture de Gitarama, 1988.
[b] This affects principally the young adults who have not enough land to establish on the farm.

CHAPTER 3

REVIEW OF LITERATURE

A study of women's associations in Rwanda requires some understanding of women's role in less developed countries (LDC's). Chapter three presents some aspects of LDC's which are related to this study. It is divided in three sections. The first one draws a picture about the role of women in LDC's in general and in Rwanda in particular. It goes more closely into their relation with agricultural production, access to resources, technology and credit. It compares their socio-economic status with men's status.

Section two gives some information about cooperatives: their origin, functioning and applicability to Africa. It then examines women's associations in Rwanda. It also looks at their access to resources, technology and credit needed in order to produce agricultural goods, and the difficulties inherent in production system. Section three relates to survey techniques; the different types of surveys, the problem of getting reliable answers, the ways to evaluate agricultural production and the weakness of each of these techniques.

3.1 Women

3.1.1 Women in Development

Integrating women into development is a revolutionary process. Their lower and precarious status makes them subordinate to men (Charlton, 1984; Rathgeber, 1991). Balandier (1985) explained that the participation of African Women in the process of modernization and political transformation was seen to be achieved by oppressed people and therefore, a revolutionary act.

Many scholars have written on the economic role of women since the sixties. Stamp (1989) identified four feminist frameworks; liberal feminism, radical feminism, traditional marxism and socialism (See also Mignot-Lefebvre, 1985). Liberal feminism deals with the principle of social contract and the rights of the individual. The primary object of this approach is the individual. Since women are rational, they can benefit from these principles. Radical feminism deals with the notion of women's oppression. It is not considered a coherent theory because it does not take into account the historical context. Traditional marxism starts with the work of Engels. The oppression of women is a function of class oppression, it rejects the idea of a biological basis for gender differences. This approach is considered flawed because it reduces women's condition into simplified concepts.

Finally, socialist feminism combines traditional marxism and radical feminism. It analyses gender oppression within the context of new economic order.

One of the first important writings on women and development within the liberal feminist approach was by Boserup (1971). She described the economic status of women in African societies. Her analysis is summarized in the following section.

Before the arrival of the European settlers, African women lived in a well-structured society. In most African societies, traditional farming was performed predominantly by women while men's occupations were hunting and warfare. The favoured agricultural system was shift cultivation. When the fertility of a plot of land decreased, they moved to cultivate another plot, leaving the previous one fallow. Land productivity was not important as long as everyone's needs were fulfilled.

Then came the European settlers. Under colonialization, the division of labor changed. Cultivation became "naturally a job for men". (Boserup 1971;p.57) New cultivation techniques were taught to the men. They learned how to grow the cash crop efficiently which was then consumed in the metropolis. Women were ignored in this process. The gap between men's and women's productivity and incomes widened. Men's prestige was increasing while women's role slowly changed from cultivator to family aid. This new division of

labor gave women a subordinate role.

Even today, women carry out most of the tasks related to production, reproduction and social cohesion (Balandier, 1985) but their work is not recognized. Women's role in the LDC's is invisible (Mignot-Lefebvre, 1986). According to the International Labor Organization (ILO), half of the total women working hours do not appear in statistics (FAO,1984). According to Lastarría-Cornhiel (1988), the underestimation of women's work includes not only their productive activities (the work which contributes economically to the household's maintenance), but also their reproductive activities. Women's participation in agriculture is also underestimated because of techniques that are biased towards men's activities. In fact, most surveys do not take into account housework, processing of crops and livestock rearing for sale or home consumption.

Many experts stress the fact that there is little information concerning women's needs, preoccupations and roles (Poats et al., 1988; Mignot-Lefebvre, 1985; Kumar, 1989). This lack of information does not allow for development projects to fully integrate women in the development process. "Anyone interested in the place of women in the third world faces the problem of a documentation that is scattered, difficult to obtain, incomplete and disorganized" (Bisilliat and Fieloux, 1983).

Rogers (1986) found that the household head in statistical surveys is almost always defined to be a male

while women are considered as dependent. This reflects a biased perception of reality. In fact, of the world's total households, one out of three is headed by a women. This group is found to be the most disadvantaged in terms of access to resources (Poats et al., 1988; Northrop, 1990). In Rwanda, 25 percent of rural households are headed by women (PNUD, 1985). The household concept has different meanings in western societies compared to African societies. In Africa, women and men within households are often found to have competing interests concerning family and community resources (Stamp, 1989).

Many authors agree that women's contribution to development is very important (Poats et al., 1988; Weekes-Vagliani, 1980; Mignot-Lefebvre, 1985). At the United Nation's conference in Mexico about the decade of Women (1975-1985), it was said that women, who represent 1/2 of the population, supply 2/3 of the working hours, get 1/10 of the wages and own 1/100 of the world's goods (Mignot-Lefebvre, 1986).

Despite all that, women are the great losers in the development process. Many projects had limited economic success (Kumar, 1989) and therefore did not take into account their contribution to an increased standard of living. "Development is a process which gives benefits; the negative consequences affect the ones who do not participate" (Roberts, 1985). Studies showed that even today, agricultural and rural

development programs are directed almost entirely towards men. These affect women's subsistence activities. Kumar (1989) found that there is often an "apprehension that benefits to women are at the cost of "development" on the other".

Buvinic (1986) found that several projects for women went awry. Project's welfare dimension prevailed over their economic objectives of income generation. Women's income is among the lowest, and it is used for household food consumption and child nutrition. There is a need to increase possibilities to generate women's income. This involves investment in human capital as well as access to resources.

The ILO found that women's participation in traditional agriculture accounts for 70 percent against 12 percent in modern agriculture (Presvelon, 1980). Traditional agriculture is a sector where revenues are found to be low. Cash crop activities which are included in modern agriculture, are a way of generating income. Land, labor and markets for cash crops are used by men, who get payment from that activity. It results in an increase in women's workload who must assume the part of work which was previously accomplished by men. It also decreases the amount of land available to grow staple food, which means growing those crops more intensively. It reduces their opportunity to earn cash income (Rogers, 1986) since those activities are taken by men.

Women's access to resources is limited (Gladwin et al., 1983; Moock, 1976). The most important resource in

subsistence agriculture is land. Lack of land means no security and women without land are reduced to a state of dependence (Rogers, 1986). Credit is another resource which women do not get credit easily. They cannot provide guaranteed collateral (PNUD, 1985), which is a necessary condition for most lending agencies. Extension services is a third resource from which women do not always benefit. Information is often provided to men (Staudt, 1985; Moock, 1976) even though women are highly involved in agricultural activities. Feder et al. (1987) found that agricultural extension "pays" i.e. it brings benefits to the people who get it. Women's access to formal education is lower than men and they encounter a low literacy rate.

Even though their access to resources is lower than for men, some studies showed that their productivity is the same and in some cases, higher (Gladwin, 1983; Lastarría-Cornhiel, 1988).

Rathgeber (1991) analyzed the impact of macro economic policy measures on women. She found that the policies affected their economic opportunity and equality, legal rights, social participation and relationship with the environment. Structural adjustment policies imposed by the International Monetary Fund (IMF) and debt crisis have hurt the poor much more than the rich (see also Levitt, 1990), and more women than men. Those measures created several cutbacks in jobs which were assumed by women, and a decline in social

services which affected women directly.

3.1.2 The Rwandan Women

Only a few writers have written on women's role in the traditional Rwandan society . This role is usually one of submission, which place women in a lower economic and socio-cultural strata than men (UNICEF-ESK Butare, 1987). Women live in a patriarchal system: once married, they live in their husband's family (Nyiramatama, 1987; Niyonzimana, 1987).

In the family structure, the man is the chief and the woman must obtain permission from the men for everything. She must be respectful, obedient and submissive to her family (Nibakure, 1990). The woman must be fertile, and will gain higher standing according to the number of children she has (UNICEF-ESK Butare, 1987). In traditional society, it is believed that a direct relation between women's fecundity and land fertility exists (Nyiramatama, 1987).

Traditionally, women do not have a right to inheritance. The Rwandan constitution recognizes the same rights to both men and women. Nevertheless, there is no recognition over land inheritance for women as opposed to men (Pomerleau, 1986).

According to 1978 census in Rwanda, there were slightly more women than men; and 14 percent of the adult women were widowed, divorced or separated, against 2 percent of the men. Life expectancy was 48 years for women and 45 years for men.

Polygamy, despite its legal prohibition, was practised by 12 percent of the men with a mean of 2.1 wives. "In regions where women do most of the work, polygamy is high" (Boserup,1971;p.47-8). Migration between regions and towards the capital, Kigali, was substantial, and accounted for a rural man/woman ratio of 45:55. The migration of men increases the workload of the women left behind. There are 0.6 percent of women in industry and 1.2 percent in the tertiary sector. In 1983, they held 102 commercial business licenses out of 1840 (Bremer, 1985).

Women's contribution to food production is very important. About 98 percent of working women[8] are involved in agriculture against 88 percent of the men. This is a sector where revenues are usually low. In farming directed by their husbands, the majority of women assume the role of family aid: only 8 to 13 percent of farming enterprises are directed by women. Women are more preoccupied by the survival of their family and spend more time growing staple food rather than cash crops (FAO, 1987). In fact, women's agricultural work includes almost all activities related to cultivation of staple food (mainly sweet potatoes, beans and sorghum). Furthermore, the woman has to take care of the small animals and perform the domestic tasks (Nyiramatama, 1987). They work two to three times more than men in that sector (Bremer, 1985). Men work on coffee and banana

[8] Person involved in productive activities.

plantations.

At the marketing level, the responsibility depends on the product. Coffee and banana beer are usually commercialized by men while sorghum beer is sold by women. Women can be responsible for the marketting of staple products, but men have the last word (Bremer, 1985). The involvement of women in the marketing field in Rwanda is lower than the one of West African women (Pomerleau, 1986).

According to Nimbona (1988), women spend more time working and being sick than men. For the 1960-1975 period, women's input to agricultural tasks increased by 25 percent (ISAR, 1976).

Extension work is done by men and the information is addressed to men. It creates a gap between the knowledge of men and women over modern techniques. Her access to formal and informal education is very limited. A low state of health, frequent pregnancies, tiresome work, and overwork makes attending extension classes difficult. This limits her access to tools which could make her more efficient (Bremer, 1985; Niyonzimana, 1987; PNUD, 1985). According to the 1978 census, 74 percent of women and 51 percent of men were illiterate. The split between the education of men and women was increased under colonization (Biloa, 1990; Ministère de l'Intérieur, 1989), and still today, very few women undertake higher education.

Nyiramatama (1987) sees a direct relation between women's

promotion and national development. She sets a list of criteria for women's promotion:

i- To recognize women's right to land ownership,

ii- To provide them with suitable technologies to increase their productivity and decrease their workload,

iii- To provide better access to extension and informal education, and

iv- To facilitate the creation of cooperatives, the access to credit and agricultural inputs.

The integration of women into development is not an easy process. Their lower status puts them in a precarious situation, and a very high proportion of them live in poverty. It results in difficulties to have access to resources in order to insure their subsistence. This study will look at the production patterns of Rwandan women in the family unit as compared to women's association. Their role in the society, their access to resources and therefore productivity is analyzed.

3.2 Cooperatives

This section draws a historical picture of the cooperative movement, its origin and its applicability to Africa. It looks at women's indigenous cooperatives

(associations) and analyzes some cooperation experiences in different African countries. It finally talks about the cooperative movement in Rwanda and more specifically, women's associations. A description of the association's needs in term of organization, their objectives and major problems they face are discussed.

3.2.1 The Cooperative Movement

According to Angers (1976) the cooperative movement originated around 1820. It started with the birth of modern capitalism. It was a way for the workers to control economic activity. Owen and Fourier, who were socialists, are credited as the pioneers of that movement. In those days, the cooperative movement was synonymous to socialism and even communism and was opposed to the capitalist system of individualism and competition.

At that time, cooperation and association were considered the same thing. Association was conceived to be a production cooperative that eventually extended to consumption, distribution and credit. Owen imagined a system in which small groups were to be organized in cooperatives in order to be self-sufficient but this never encountered any real success. In 1843 at Rochdale, the first status of cooperation were written by Howarth, a student of Owen. It was called the Rochdale principles.

Modern cooperatives share the same principles. The

owners are the users; decisions are taken within the general assembly on the basis of one person, one vote; only the members present can vote and; rebates are paid to the members according to the proportion of the value of goods and services used by these persons. Even though cooperation is essentially an economic action since it involves economic activities (production and consumption), participation is the foundation of it.

In Africa, cooperatives were originally considered as privileged instruments for African socialism (Gentil, 1984). It was a way to introduce socialism in some countries. The rules were the same as the ones used in the colonial country, i.e., according to the Rochdale principles and without adaptation to the specific needs of the local people. The economic impact of such organizations have varied widely. In some countries, they ended up in complete failure, for example, the Ujamaa's in Tanzania.

Female cooperatives are not numerous. Nweze (1990) found that the official cooperative movement, in Nigeria, was unsuccessful at incorporating rural women. This was because its rigidity did not reflect the needs and social structures of the Nigerian society. Women were culturally used to working together and the unofficial indigenous cooperatives were more suited to them. Women are more comfortable within informal associations (Mignot-Lefebvre, 1985). In that type of organization, women know their rights and their duties

compare to formal cooperatives where rules are unknown or hardly applicable (high social share to pay, attendance to meetings not always easy, etc).

Women's associations lack the means of production and supportive services and sometimes face the bad will of men (Gentil, 1984). Ndimurukundo (1988) found that women's associations in Burundi faced weak organization, low profit activities and no viable management structures; the principal interest of their members was mutual aid.

3.2.2 Women's Association in Rwanda

Women's groups in Rwanda are diversified organizations (Musambimana et al., 1986). Some are not very organized. They are associations or pre-cooperative in the process of being aggregated, and have a poor structure. Few are organized ccoperatives, with legislative recognition from the authorities. Most deal with production of goods and services and are directed by a management committee.

The formation of those groups is often inspired by the "traditional solidarity" between women (Mignot-Lefebvre, 1985). According to Gentil (1984), African traditional solidarity is founded on reciprocity, which is different from the cooperative spirit of solidarity. Solidarity in a cooperative sense deals with the effort of a group toward a common objective, within a democratic process, i.e., all the members decide collectively over the use of profits. This is

not always the case in African countries.

Women's groups in Rwanda originated in the 1960's. Some were the results of the "foyers sociaux" which dealt with activities related to home economics and others evolved from social centres for development (C.S.D.), which taught manual jobs to women. Some authors (Mignot-Lefebvre, 1985; Roberts, 1985; Salat-Desgranges, 1984) think that 1975 was a significant year for the groups in general. In the early eighties, the Rwandan state decided to put a structure in place to ensure better coordination of resources for women, but very little was done for women's groups (Niyonzimana, 1987; PNUD, 1985). The discontinuity in the supporting actions and the absence of coordination reduced the impact of those associations. There is little funding for programs related to the promotion of these associations. Until now, there has been no association at the national level. In more recent years, the interest in such an association by governmental authorities is increasing.

In some Communes, we can find an association[9] at the Communal level which is set to help each association in its activities. This type of organization has an administrative council which is established in order to provide solutions to the needs and common problems of the associations which are related to marketing, technical formation, access to input, organization, etc.

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[9] This type of association is known as "intergroupement".

Mwumvaneza (1989) found that this administrative entity can have a direct effect on associations. They encourage and reinforce collaboration within association, provide information and intermediaries between administrative authorities and organizations, coordinate activities from non-governmental organization (NGO) and governmental organization.

IWACU[10] made a census for 1989 and found 3,232 associations (of which 493 are women's associations) having 251,689 members, 18% of whom were women (Nibakure, 1990). This contradicts the official figures from Ministry of Interior which found the number of associations as shown in Table 3.1. This table shows an important increase in terms of the numbers of associations but also points out the underestimation made by the governement. In fact, several associations do not register at the Commune because members do not want their activities to be known. This is the case for the majority of the tontines[11] which usually do not disclose the amount of money they contribute to their mutual fund.

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[10] Centre of research and cooperative formation.

[11] Tontines are associations where members contribute to a mutual fund with an objective of credit or work.

Table 3.1 Number of associations in Rwanda

Year	Number of associations
1981	83
1986	486
1989	765

Source: Ministry of the Interior, 1990.

The creation of associations is usually spontaneous. They are structured around several factors; neighbourhood, relatives, religion, gender and age (Musambimana et al., 1987). Most of the groups, about 63%, work in the cultivation of field crops, but there are also some involved in the livestock rearing, commerce, mutual aid or handicraft sectors.

Most of the agricultural groups deal with staples (potatoes, beans, sweet potatoes, sorghum, etc.), and some of them add vegetable cultivation (cabbage, carrots, celery, onions). Cup (1989) found that work related to cultivation is performed in the morning while handicraft and social activities are more likely to take place in the afternoon. The end use of their produce can vary, as some of the women will sell all of it, while others may share the surplus for family consumption. Marketing difficulties are observed by some groups. Saturation of the market and not enough diversification are some of the problems (Yameogo, 1988).

The handicraft groups produce mainly weaving, basketry, beadwork, braiding, sewn goods and cooking. The marketing of

these products present a major difficulty. The commercial groups sell mostly staple commodities. These groups are not well developed and face management and supply problems (Bekker, 1988; Niyonzimana, 1987). There are problems related to marketing. The middle-men are not always honest and frauds occur which are related to price and weight (Ministère de l'Intérieur et du Développement Communal, 1986).

The needs of associations are important. They involve obtaining sufficient information, equipment, credit, technologies and improving internal communication (Réseau des Femmes, 1988; Yameogo, 1988). The government supervises the associations in order to achieve its objective of food self-sufficiency, provides support to the associations. In its quinquennial plan, the government stresses the fact that supportive actions have to be enhanced in order to foster the creation and durability of associations. Those activities include coordinating activities, providing marketing facilities and technical information (IWACU, 1987).

According to Musambimana et al. (1986), the beneficial economic impact of rural associations is related to performing all agricultural activities on time, due to their high number of workers[12]. Nevertheless, their first objective is usually not profitability, but rather mutual aid. The social aspects prevail over the economic ones (see also Buisserogge, 1990).

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[12] The word workers is used here to represent the members.

Nimbona (1988) found that major causes of desertion from those associations are: misunderstanding of the objectives of the associations; husband's opposition to membership; dissention within members and illness or overburden with work.

A census (Goyette, 1991) performed in five communes of Gitarama showed that most associations were recently formed. Twenty-six percent were formed in the past year and 79 percent had less than five years of activity. Three percent of the associations had the status of a cooperative and five percent were in process of being aggregated. All of them had written rules and democratic elections even though it is always the same people who are elected. Every member has to pay their social share to the association. Participation to the work is mandatory and an absence is sanctioned by a fine. The harvest is either sold or consumed by the members. Five percent encountered misappropriation of funds which was low compared to mixed or men's associations. The simplicity of the financial apparatus is an explanation of it. Most associations (57 percent) possess bank accounts.

3.3 Survey

A survey is a research method whose aims are acquiring information on a group of people (D'Haese et al., 1989), "to understand the attitudes, behaviour, or beliefs of a large group of people" (Weisberg et al., 1989). Two types of survey can be done; the unstructured and the structured survey.

The unstructured survey is used when constraints over time, money and employees exist. This technique is considered more of an art than a science and, it requires much skill (Wright, 1979). There is no test of hypothesis. Instead, questions are asked and the orientation of the research will depend on the answers. Some critics of this method stated that this can easily degenerate into "rural development tourists" (D'Haese et al,1989; Byerlee et al., 1981). Farm Systems Research (F.S.R.) uses unstructured informal interviews. It is cheap and provides data collection aimed at identifying farmer's constraints and providing possible solutions to improve resource allocation of individual farmers (Byerlee et al., 1981; Norman, 1980).

The structured survey follows a much more rigid pattern which lends to systematic treatment (Wright, 1979). The questions are asked according to the problem stated. They must be clear to prevent errors. The problems dealing with the bias of the results are grouped in three different areas (D'Haese et al. 1988). They are related to:

i-The formulation of the questions

ii-The investigator

iii-The survey

The first one is based upon the translation of the survey

question from one language to another one. The second is linked to the training of the investigators. To avoid this problem, a training period is necessary to make sure that :

- The objectives of the survey are well understood.
- The questions are clearly formulated.
- The surveying techniques are uniform.

D'Haese (1989) found difficulties arising from the people who answered the questions. He found many inconsistencies for questions related to household revenues and expenses. In fact, peasants do not like to disclose the amount of money they earn.

A survey can be used to get information about yield. It can be done easily in the case of monoculture but it is quite different when we deal with intercropping. The farming system is complex when it deals with subsistence agriculture (Norman, 1980) since it involves small plots and intercropping. In Rwanda for example, the heterogeneity within the plots makes evaluation of density or yield harder to perform. Therefore, the use of subjective evaluation should be considered (Asselin, 1984).

De Jaegher (1988) found that the two methods which are usually used to measure yield are either weight (buckets, kilos, etc) or number of units (maize cubs, banana bunches, etc). There is a need for several visits to the farm, when

dealing with crops like sweet potatoes, cassava and banana which have a long harvest time. When comparing the precision of the method of objective measures with yield plots with survey methods, the World Bank and F.A.O. found the first method provides unreliable data for the small irregular plots with variable densities typical of the Rwandan system of production. It has been shown that peasants are able to provide good information on their harvest yields with an acceptable margin error.

CHAPTER 4

METHODOLOGY

Carrying out a survey in Rwanda is not an easy task. The lack of reliable data about the population, the weakness of communication infrastructure, the language barrier and the mistrust of outsiders by the peasants are some of the problems. It is therefore important to know the country and the specific aspects of the staple agricultural sector to overcome some of these problems.

The diversity of the climate is one example of the problems. At higher altitudes, temperature declines and precipitation increases. This directly affects agricultural production. There are also several micro-climates which have to be taken into account.

As discussed in Chapter two, high population density is a critical factor for Rwanda. It affects population distribution within the country and it causes agriculture to be a sedentary activity. This means, that yields can be calculated more easily, than for those African countries where agriculture is nomadic.

In Rwanda, the population is scattered. Only three percent of the population lives in urban centres. This affects the method of sampling to find the primary unit. In

developed countries, this unit is usually the nuclear family. However, in most African societies, agricultural work is organized around villages and we have to consider the extended family as the primary production unit. In Rwanda, there is no need to take the ethnic groups into account since the major group represents over 80 percent of the population (see Chapter two). The activities which used to be prefered by one group no longer are.

The evaluation of yields within a subsistence tropical agricultural context has to be done carefully. Both the system of intercropping and crops which are harvested over a long period of time make it very difficult to have a clear idea about yield. Sporadic surveys do not encompass this character of continuity. Because of these characteristics of Rwandan agriculture, using yield plots to estimate output is a common practice in modern agriculture may provide misleading information. We must therefore rely on a subjective method. The subjective approach has been preferred because it can provide accurate information and has a low cost of application. As already discussed in the review of literature, peasants exhibit reliable judgement when estimating their yields and we can use their estimate to compare groups.

But this information alone is not sufficient to understand the elements which affect yield. It is necessary to use structured and unstructured survey questionnaires to

recapitulate these elements.

4.1 Survey Design

In order to carry out the survey a number of steps were planned and executed. The initial questionnaire was prepared in Canada. In Rwanda, after discussion with specialists involved in the field of development, the questionnaire was revised. The survey was carried out over a period of six months; January to July, 1990. The first month and half was devoted to meetings with specialists who corrected and translated the survey, discussions with agricultural economists to establish the study meetings with government authorities to obtain permission to conduct the research, and finally meetings with specialists in the area of women and their associations in order to continue the review of literature. Three local female investigators conducted the interviews. The completed surveys were then translated and compiled.

4.2 Identification of Associations

This study is interested in studying the female farm population. A survey of 320 randomly selected women was done. The samples were selected using a stratified random sampling method. The population is divided into strata (or groups). Independent random samples are drawn from each stratum (or group) (Wright, 1979). The stratification criteria used was

one of geographical location, the Communes. It presupposes the existence of a list. The list of women's agricultural associations was completed using different sources as described below.

The first step of identifying the women's associations at the national level was done with the help of the Ministry of the Interior which provided a list of associations for the country. The list was made from census compiled in 1988. This list was a little outdated so several associations were missing and some were nonexistent. The same procedure was followed at the Prefectural (Administrative Division) level. A visit was made to Gitarama's C.P.D.F.P. (Prefectural Centre for Development and Professional Formation) in order to obtain more precise data on women's associations. Finally, a preliminary visit was done in each selected Commune to meet with the administrative personnel in order to complete a list of the existing associations. The information obtained from every Commune on the existing women's agricultural associations were the most complete and up to date. Random sampling was done from that list to select the associations.

4.3 Selection of Communes and Associations

The main objective of this study is to compare crop yield performance amongst selected women's groups and to test if membership in agricultural associations contributes to an increase in women's economic productivity. To test this

objective, a survey was performed in five out of seventeen randomly selected Communes of the Prefecture of Gitarama. The Communes were selected on the basis of belonging to the two major agricultural regions in this zone: central plateau and dorsal granitic.

In fact, ecological factor is an important stratification to be used in a survey dealing with agricultural production. In Rwanda, there are twelve agricultural regions and four of them are found in Gitarama (see Appendix B). The selected Communes were: Nyamabuye, Taba, Masango, Bulinga and Tambwe (see Appendix C for the distribution of these Communes within the Prefecture).

Within each Commune, a census was carried out through the C.C.D.F.P. (Communal Centre for Development and Professional Formation) to draw up a list of all registered female agricultural associations. The Commune of Masango could not provide such a list. From that list of eighty associations, 39 were randomly selected to answer the survey. This gave eight associations per Commune with the exception of Taba which had only seven associations. The respondents belonging to these 39 associations will be called MEMBERS throughout this study. Four to six women were selected from each association. They had to be either the president, treasurer or a member. This subgroup was composed of 220 respondents.

In each of the five Communes, 20 women who did not belong to any of the associations were randomly selected to answer

the survey questionnaire as the control group. The respondents belonging to this later group will be called NON-MEMBERS throughout the study and was composed of 100 respondents. See Table 4.1 for the information related to the sampling procedures.

4.4 Pre-test

A pre-test was conducted in the Commune of Nyamabuye, sector Ruli, to test the survey questionnaire with a group of ten women. This permitted the surveyors to get acquainted with the survey. The questions were deemed appropriate and no changes were made.

4.5 The Survey Questionnaire

The survey questionnaire comprises of four parts: socio-economic situation, needs in terms of agricultural input, allocation of revenues and motivations. The majority of questions were structured with a few unstructured ones appearing.

The first part dealt with the socio-economic situation of the women, into MEMBER and NON-MEMBER category. It consisted of ten structured questions related to age, marital status, head of the household, number of persons living in the domicile, schooling, literacy levels and main activities. (See Appendix D for a more detailed description of the survey

Table 4.1 Sampling procedures and sample size

Prefecture	**Gitarama**
Communes (5/17)	Nyamabuye, Taba, Masango, Bulinga, Tambwe[13]
Primary unit (39)	Agricultural women's associations
Secondary unit (220)	MEMBER
Sub-group	President (37), treasurer (33), members (150)
Control group (100)	NON-MEMBER

[13] Eight associations (with the exception of Tambwe which had only seven) and 20 women of the NON-MEMBER group were selected in every Commune. In every association, one president, one treasurer and four to six members were selected.

questionnaire). All questions were asked in Kinya-Rwandan, the national language. There were a total of three hundred twenty (320) respondents.

The second part dealt with the needs of women in terms agricultural goods and services. Four sections were analyzed: work planning, access to inputs, extension services and marketing. It had eight structured questions, but all pertinent information provided by women on most questions were taken into consideration. The questionnaire was submitted to every association for discussion rather than a response on an individual basis (39 survey questionnaires were filled corresponding to the number of surveyed associations). It allowed for a better understanding of the needs of the associations and for evaluation of the relative democratic climate since all members had a chance to participate in the discussion. For the NON-MEMBER group, the survey was administered individually so there were 100 answer sets.

The third part dealt with the revenue allocation within the family. The objective was to know how and by whom revenue is spent and if someone else had control over the respondent's revenue. This part had three structured questions and was asked of all participants, 320 answers were obtained.

Final part dealt with motivations and more specifically, the yield obtained by MEMBER versus NON-MEMBER respondents. The questionnaires for both groups were slightly different. They were composed of four questions for the MEMBER group and

three for the NON-MEMBER group. Those questions were unstructured and allowed women to speak about their reasons for being members of groups or wanting to become members of an association. To add to that, a survey was performed to obtain information on the association: their objectives, activities, internal regulations and external support (see Appendix E for a description of the questionnaire). Their perception of who produced more (given the same crop and area) was asked to all (MEMBERS and NON-MEMBERS). A total of 320 women were interviewed.

4.6 Statistical Tests

This section provides a brief review of the statistical methods to be used in this study. The test for differences between means is used to test the means of different variables X such as literacy rate, access to seed, tools, chemical fertilizers, land, credit and extension services for both groups; the Y variable (MEMBER or NON-MEMBER) is compared in order to understand which variables are significantly different from each other. The chi-square test of independence is also used to evaluate the relationships between MEMBER/NON-MEMBER variables already defined. Those variables can take different values, as specified below:

Y_i = is a dummy variable which represents the membership in association for every i observation, i going

from 1 to 320. It is equal to 1 if the respondent belongs to an association, 0 otherwise.

The X_{1j} are defined as:

LITERACY= represents the literacy rate and takes value 0 for illiterate, 1 for reading only and 2 for reading and writing skills.

LABOUR= is the number of workers available either in the associations or at the household level and uses actual numbers which vary from 1 to 33.

SEED= shows the degree of difficulty of obtaining seed. It takes the values: 1 for never difficult to obtain seeds, 2 for seldom difficult, 3 for often difficult and 4 for always difficult.

TOOLS= shows the degree of difficulty of procuring tools. It takes the values: 1 for never difficult to procure tools, 2 for seldom difficult, 3 for often difficult and 4 for always difficult.

FERT= shows the degree of difficulty of getting chemical fertilizers. It takes the values: 1 for never difficult to get chemical fertilizers, 2 for seldom difficult, 3 for often difficult and 4 for always difficult.

LAND= shows the degree of difficulty for access to land. It takes the values: 1 for never difficult to access to land, 2 for seldom difficult, 3 for often difficult and 4 for always difficult.

CREDIT= is a dummy variable representing either having utilized credit, 1; otherwise 0.

EXTENSION=is a dummy variable representing either having had access to extension services, 1; otherwise 0.

4.6.1 Test for difference between means

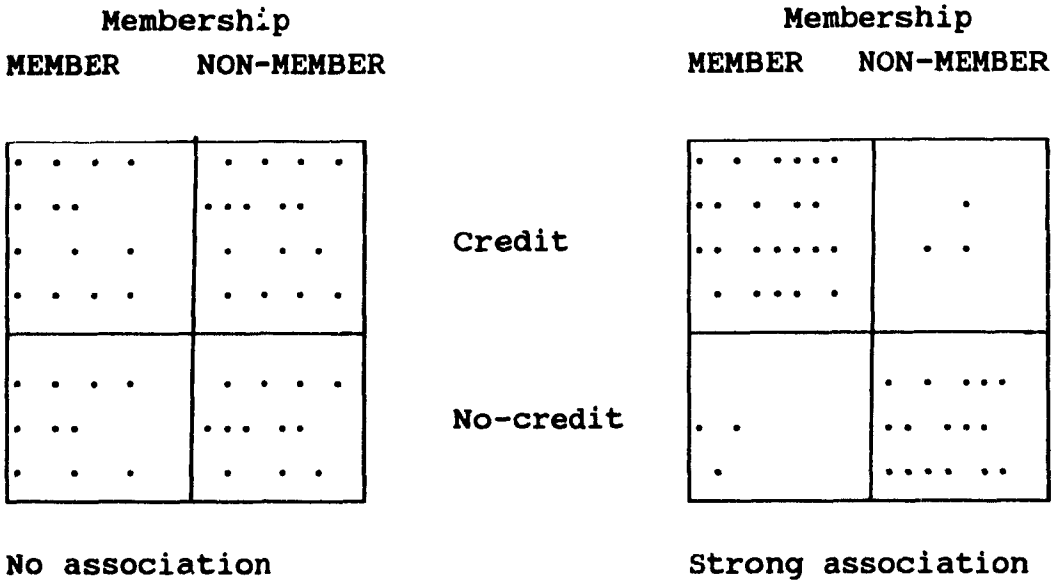
The t test for difference between the means is used to compare the means of different samples. It will be used to compare the means of MEMBER and NON-MEMBER groups with respect to literacy rate and access to seed, tools, chemical fertilizers, land, credit and extension services.

4.6.2 Chi-square

While the t test can be used to test whether means of MEMBER and NON-MEMBER groups are identical, the chi-square can be used to test whether the distribution of MEMBER group is similar to that of the distribution of NON-MEMBER groups. Chi-square test of independence is used to test relationships between two variables. It is used in situation where collected data on population variables are qualitative in nature. The null hypothesis to be tested implies that the two

variables are statistically independent (Wright, 1979; Hoshmand, 1988; Senter, 1969; Weisberg, 1989).

We use cross-tabulation tables to analyze the effect of one variable on another. It can be pictured as follow:



It shows the relation between two variables; membership (MEMBER or NON-MEMBER) and the access to credit (credit or no-credit). The first case shows no relationships between membership and access or use of credit. In this case, the null hypothesis would be accepted, which means that the two variables are statistically independent. In the second case, there is a strong association between the variables as shown by the large number of MEMBER-credit/NON-MEMBER-non-credit pairs. In this case, the null hypothesis would be rejected which means that the two variables are statistically

dependent.

The computation of chi-square is carried out with the following formulas:

$$X^2 = \Sigma \frac{(O - E)^2}{E}$$

where, $$E = \frac{(R)(C)}{T}$$

$$d.f. = (r-1)(c-1)$$

X^2=chi-square statistic

O= the observed frequency for a given cell

E= the expected frequency for a given cell

R= the row total frequency

C= the column total frequency

T= total number of cases in the table

d.f.= degrees of freedom

r= number of rows in the table

c= number of columns in the table

The relationship between membership and literacy rate and access to seed, tools, chemical fertilizers, land, credit and extension services will be tested using the chi-square method and the test for differences between means.

CHAPTER 5

RESULTS

This chapter presents the results of the analysis of the surveys carried out in Rwanda. The first part examines the differences between the two groups, MEMBERS and NON-MEMBERS of the women's associations, in terms of literacy rate, labour availability and access to resources, using the t test for difference between means and the chi-square test for independence. This chapter then shows the perception of the surveyed women over yield in order to test the hypothesis that women's membership in agricultural associations contributes to an increase in their economic productivity. It also presents descriptive statistics that illuminate the role of agricultural women's associations within the Rwandan context. Finally, it provides interpretations of some of the results which cannot be explained with the use of statistics alone.

5.1 The sample: MEMBER/NON-MEMBER profile

Table 5.1 presents a comparison of the MEMBER and NON-MEMBER groups with regard to important characteristics, such as literacy rate, labour availability and access to seed, tools, chemical fertilizer, land, credit and extension services. It describes these factors and presents t and chi-square tests.

Table 5.1 Factors differentiating MEMBERS and NON-MEMBERS

Variables	Overall mean	MEMBER mean	NON-MEMBER mean
LITERACY [a]	1.14	1.28 **	0.79 **
LABOUR [b]	13.58	18.24 **	2.47 **
SEED [c]	2.11	1.95 **	2.45 **
TOOLS [c]	2.10	2.10 *	2.36 *
FERT [c]	1.11	1.11	1.10
LAND [c]	2.91	3.12 **	2.45 **
CREDIT [d]	0.19	0.16	0.25
EXTENSION [d]	0.51	0.52	0.49
Number of observations [e]	308	217	91

* Difference between the two means is significant at 0.05 level.

** Difference between the two means is significant at 0.01 level.

[a] Literacy rate which takes the value 0 for illiterate, 1 for reading only and 2 for reading and writing.

[b] The actual number of labour available for work.

[c] The degree of difficulty in obtaining seed (SEED), tools (TOOLS), chemical fertilizer (FERT) and land (LAND). They take values from 1 (no difficulty) to 4 (always difficult).

[d] Access to credit (CREDIT) or extension services (EXTENSION) is coded 0 if no credit or extension services were obtained; otherwise 1.

[e] The number of women surveyed was 320. Twelve survey questionnaires were discarded for this section (3 for the MEMBER group and 9 for the NON-MEMBER group) because they answered "I don't know" for the question about yield.

5.1.1 Literacy Rate

Women in the MEMBER group are more literate as shown in Table 5.1. To test whether the level of literacy rate and other factors are really different at the mean level of the two groups, t tests were performed. The results presented in Table 5.1 show literacy rate was significantly different at the 0.01 level. Table 5.2 presents the literacy rate broken down by MEMBER subgroups: presidents, treasurers and ordinary members. The presidents have the higher literacy rate; 81 percent of them are literate. Women from the NON-MEMBER group however have the lowest (only 37 percent) literacy rate. The presidents, due to their administrative tasks, have to be more literate. This explains the high variation between groups and subgroups.

Table 5.2 Literacy rate

Group	MEMBER			NON-MEMBER
Sub-group	Presidents	Treasurers	Members	
Illiterate	5%	24%	35%	57%
Only reading skills	14%	21%	15%	6%
Literate	81%	55%	50%	37%

Another recent survey has shown that 29 percent of the population in the commune of Nyamabuye was illiterate[14]. Women in the 26-45 years age group had a literacy rate of 40 percent, which is close to the results obtained from the NON-MEMBER group in this study. Several associations offer literacy courses for their members, especially in the Commune of Bulinga. This activity usually lasts two hours per week and is given by the members who are literate. This explains the high rate of literacy for the associations and it also shows the role of associations as instruments for continuing education and extension work for women.

5.1.2 Labour

"Labour" represents the number of persons working within the association. It varies from 7 to 33, with an average of 18.2, and a coefficient of variation of 0.40 for the MEMBER group. The number of persons working on family farms for the NON-MEMBER group varies from 1 to 6, with an average of 2.5, and a coefficient of variation of 0.44. As expected, there is a large difference in the number of workers between the two groups. It results in the difference between the means being significant at the 0.01 level as shown in Table 5.1.

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[14] This comes from a preliminary survey on literacy in the Commune of Nyamabuye done in the framework of the Year for Literacy by the C.C.D.F.P. (Communal Centre for Development and Professional Formation) of Nyamabuye in 1990.

5.1.3 Difficulty in Getting Inputs

The respondents were asked how difficult it was to get agricultural inputs, such as seeds, tools, chemical fertilizers and land. The difficulty measured on the scale of 4; 1 being "no difficulty" to obtain inputs and 4 being "always difficult". The frequencies of difficulty in getting input was highly variable as shown in Figures 5.1, 5.2, 5.3, and 5.4.

In the case of seeds, the difference between the means is significant at 1 percent. On the whole, women from the NON-MEMBER group encounter more difficulty in getting seed than women from the MEMBER group. In fact, the problems faced by both groups are different. For the NON-MEMBER group, the difficulties are related to money instead of non-availability of seeds in the market. This problem must have been worsened by the famine that took place at the time of the survey since several families had already eaten the seeds. According to Muhawenimana (1988), 85 percent of women conserve part of the harvest for the next growing season. For the associations, this is not as critical. Even though they keep a part of their harvest for seeding, they have resources to buy some seed. It is easier for them to amass money, due to their numbers. However, it is hard for them to find selected (or improved) seeds. Seeds are usually available in the capital city (Kigali). There is high variability in seed quality; a low germination rate, and irregular supplies are the main

Figure 5.1
Percentage of respondants reporting different frequencies of difficulty in getting seed

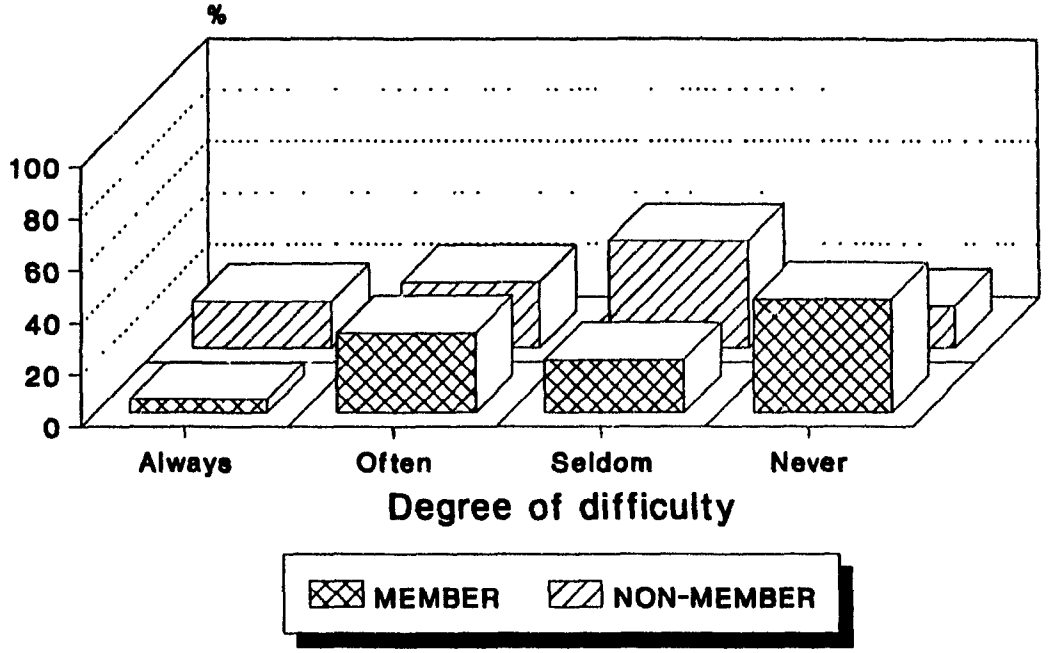


Figure 5.2
Percentage of respondants reporting different frequencies of difficulty in getting tools

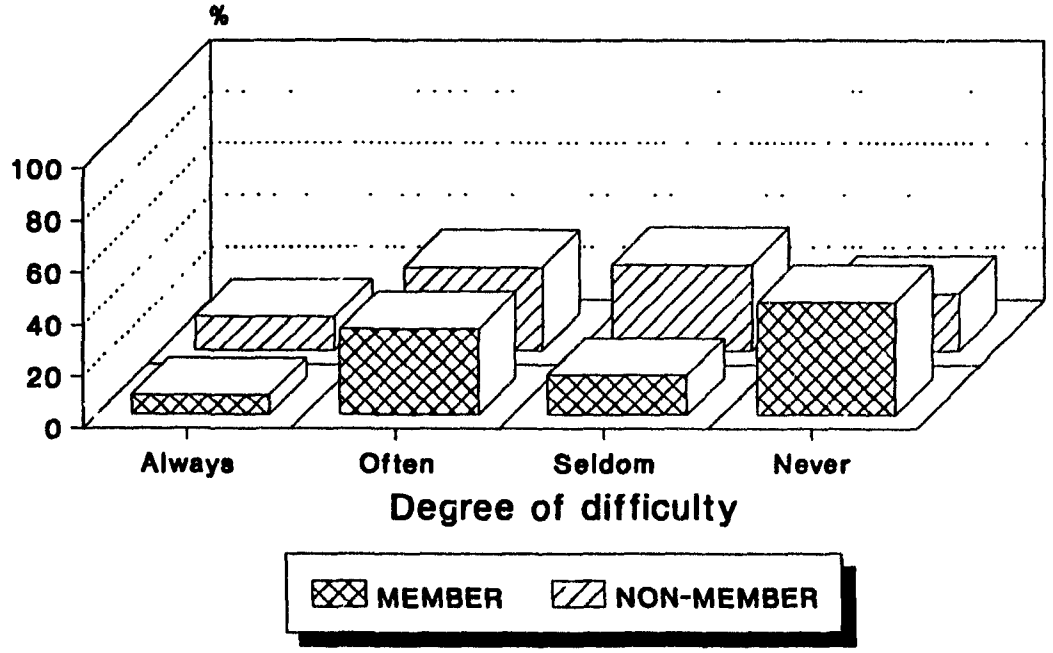


Figure 5.3
Percentage of respondants reporting different frequencies of difficulty in getting chemical fertilizers

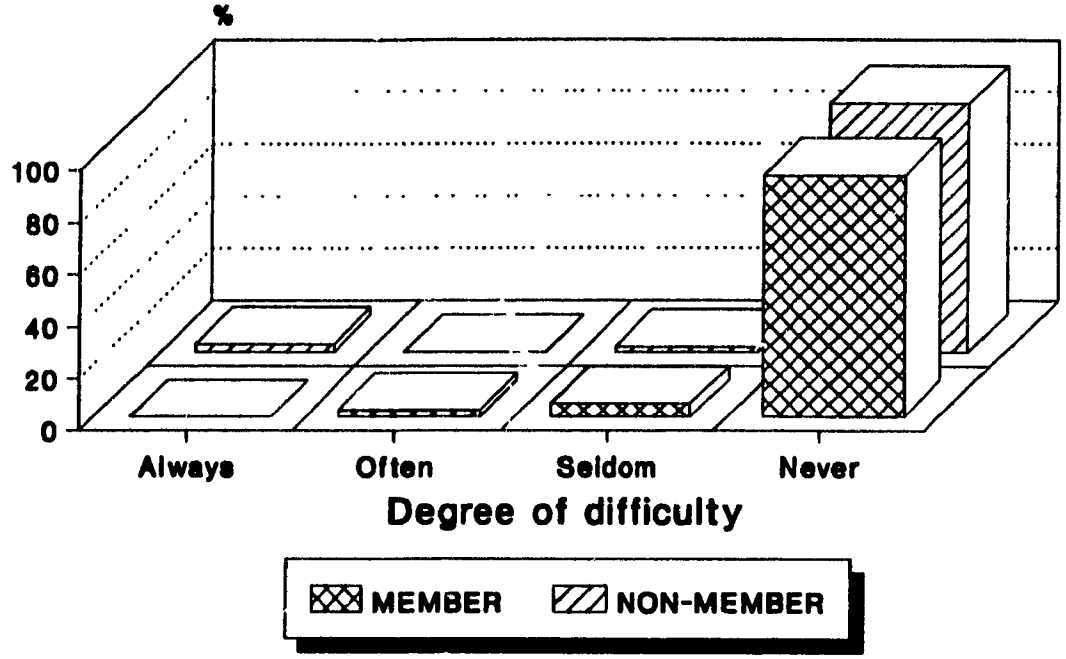
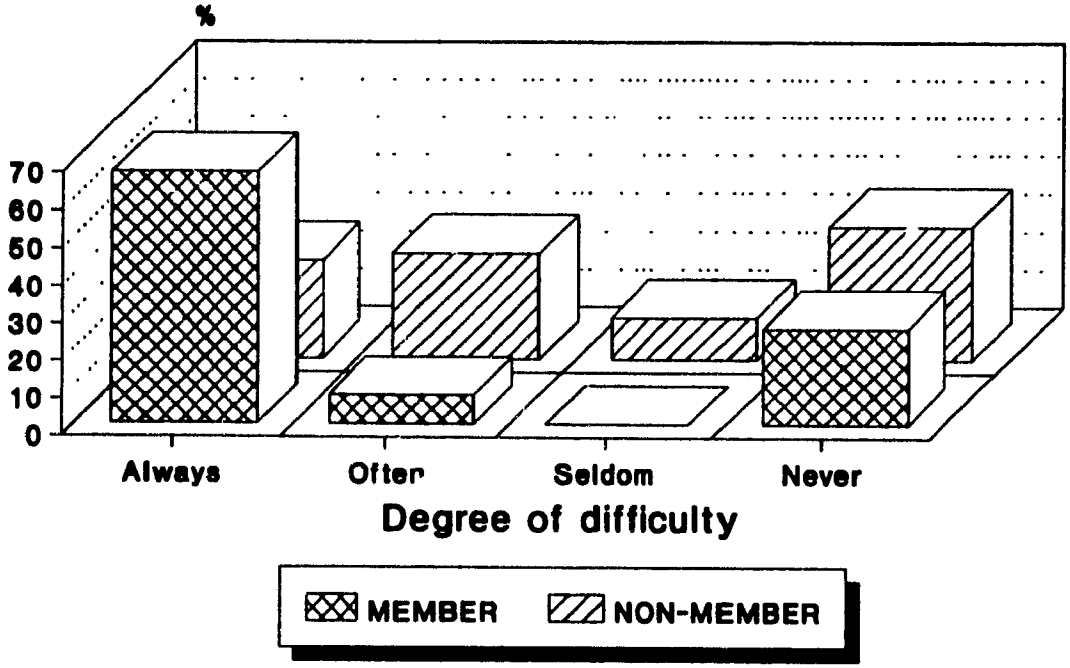


Figure 5.4
Percentage of respondants reporting different frequencies of difficulty in getting land



problems.

In the case of the access to tools, the difference between the means is significant at the 0.01 level. Here again, it is more problematic for the NON-MEMBER group. The degree of difficulty is also related to the lack of money. For women in the MEMBER group, the problem is more complex since they use the family hoe to perform their tasks. This displeases husbands because they think their tools get worned out without compensation. In order to attenuate this conflict, some associations use their money to buy their own tools.

More than 90 percent of the respondents from both groups, found no difficulty in getting access to chemical fertilizers. However, this is due to the fact that most of them never used chemical fertilizers, and some do not know what they are. There are several prejudices related to chemical fertilizers; "it impoverishes soils", "yields will be lowered", "we cannot use both chemical fertilizers and manure", etc. The difference between the means is also not significant at the 0.05 level. Most of the women and in particular, women who are members of associations, are willing to see experimental plots close to their fields in order to learn about it.

Soil fertility in Rwanda is low and most women recognized the value of manure and compost in increasing it, but manure and compost are produced in small quantities on the farm. To get good yield in Rwanda, the use of chemical fertilizers and

manure is not enough; the high acidity of soils must be corrected by incorporating lime into the soil. The use of lime to decrease soil acidity is unknown, and soil analysis is hard to get done. Many agricultural staff members do not know the soil pH of the area they work in. Therefore, agricultural staff training is essential before initiating any experimental plots.

Access to land poses a greater difficulty for women of the MEMBER group. Difference between the means is significant at 0.01 level. In most cases, associations get land from the Government, a small number leases land plots from farmers. High population density and the large proportion of that population working in agriculture create severe problem to access and cultivate land in Rwanda as shown in Chapter 2. This difficulty is higher for the MEMBER group because they have a higher number of labour available which gives a low land per labour ratio. Nevertheless, women in association have their own plots on the family farm, the access to more land through the association allows for an extra income for the family.

5.1.4 Credit

Most studies (see for example Gladwin et al., 1983; Moock, 1976; PNUD, 1985) have shown that women's access to credit, as for most inputs, is low. The results shown in Table 5.1 tend to reinforce those studies. Credit is not

widely used as shown by an overall mean of 0.19. Access to credit is coded 0 if no credit; otherwise 1. The mean is 0.16 for the MEMBER group and 0.25 for the NON-MEMBER group which means that MEMBERS face a lower access to credit. However, statistically, there is no significant difference between the means. Table 5.3 shows the different sources of credit used by women of both groups. Women from the MEMBER group have a limited choice of credit sources compared to women of the other group. In fact, they rely mainly on official sources like banks and the government. The latter deals mainly with projects. For these, the terms of lending are more flexible than those faced by women in the NON-MEMBER group. Non-members often face usurious rates.

Table 5.3 Different sources of credit in Rwanda

Sources	MEMBER	NON-MEMBER
Bank	33%	36%
Family	0%	4%
Friends	0%	43%
Businessmen	0%	6%
Mutual aid organizations	0%	11%
Church	17%	0%
Other*	50%	0%

* For the associations, "other" includes three sources of credit; two are from governmental origins (National Revolutionary Movement for Development (M.R.N.D) and Ministry of Interior (MININTER)) and one is non-governmental (United Nation Fund for Women (UNIFEM)).

Credit could be useful in initiating development projects. In fact, most women in the MEMBER group wished to diversify their activities by: including cattle rearing (which generates not only income but also valuable manure), building shops to sell their production (agricultural surplus, homemade beer and handicrafts, among other things), building premises for work, and buying tools.

Table 5.4 shows why many women do not ask for credit. We can see from the table that 92 percent and 77 percent of women in MEMBER and NON-MEMBER groups, respectively, would use credit, if they were not scared of bankruptcy, if they know

where to ask for it or if their demands were accepted. They had difficulties offering guaranteed collateral, because of their lower socio-economic status and lack of assets. This supports several studies discussed in Chapter 3.

Table 5.4 Reasons for not asking for credit

Reasons	MEMBER	NON-MEMBER
No need	8%	23%
Request refused	6%	3%
Scared of bankruptcy	63%	44%
Don't know where to ask for	23%	30%

5.1.5 Extension Services

The women from the two groups were asked if they benefited from technical support of their activities. Access to technical services is coded 0 if no technical services; otherwise 1. The difference between the groups were found to be statistically insignificant. In fact, half of both groups received technical help as shown by the overall mean of 0.50. This shows the low level of extension help they get. This result confirms findings of other studies already discussed in chapter three. Most women wished to get more supervision from extension service workers, especially in agriculture (72 percent of the respondents), cattle rearing (11 percent),

health and nutrition (9 percent), management (3 percent) and literacy (3 percent).

5.1.6 Chi-square test for independence

The chi-square test for independence was performed between the membership variable and all other independent variables one by one, with the exception of labour which takes ordinal values. This test shows the strength of the relationship between the two variables. A significant test implies that the two variables are statistically dependent. The chi-square statistic is used to test whether the distribution of a given characteristics is identical for MEMBERS and NON-MEMBERS where t test is used to determine whether the two groups on the average, and for a given characteristics are statistically similar. The results of chi-square test shown in Table 5.5, are similar to the ones already obtained with the t test for differences between means i.e. literacy rate and access to seed, tools, and land are significant at the 0.01 level. The only exception is chemical fertilizer (FERT). The chi-square test may not be a valid test for chemical fertilizers because there are many cells with too few observations in them.

Table 5.5 The chi-square test of independence between membership and other variables

Variables	DF	Value
LITERACY	2	23.869 **
SEED	3	37.730 **
TOOLS	3	15.941 **
FERT ▲	3	11.199 *
LAND	3	58.299 **
CREDIT	1	3.123
EXTENSION	1	0.244

* Significant at 0.05 level

** Significant at 0.01 level

▲ Chi-square may not be a valid test for this variable because 63 percent of the cells have less than 5 expected observations each.

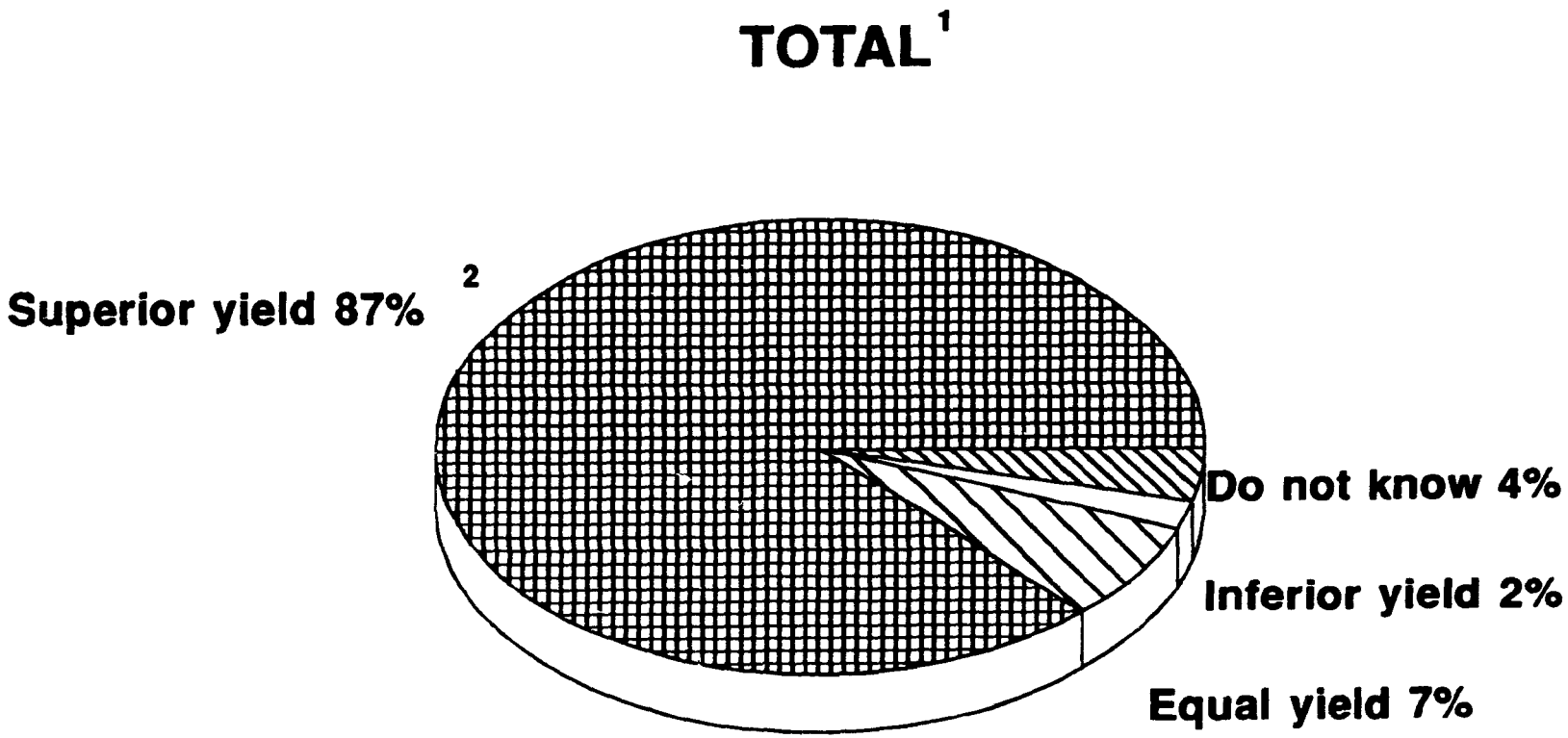
5.2 Agricultural Yield

The sample women were asked whether the women in associations produced more than the women working on their own, given the same plant crop and land area. Three hundred twenty respondents were surveyed, their answers are presented in Figures 5.5, 5.6 and 5.7. It should be noted here that it was not possible to obtain the actual yield data for various reasons, hence the opinions were solicited.

Figure 5.5 shows that 87 percent of all 320 respondants believed that yields of agricultural associations are higher than yields of the NON-MEMBER group, 7 percent thought that yields are equal for both groups, 2 percent perceived the NON-MEMBER group get higher yield and 4 percent answered they did not know. Figures 5.6 and 5.7 show the results for the same question, but discriminate according to their MEMBER/NON-MEMBER status. The results are similar for both groups since 89 percent of the MEMBERS and 84 percent of the NON-MEMBERS perceived that women in association obtain a higher yield.

Reasons for the higher yield were also investigated through the survey. The respondents were not limited to a choice of given answers i.e. this part was made up open questions. The results are presented in Table 5.6. The main reasons are, in order of importance: workspeed, harvesting at maturity, using manure and access to information.

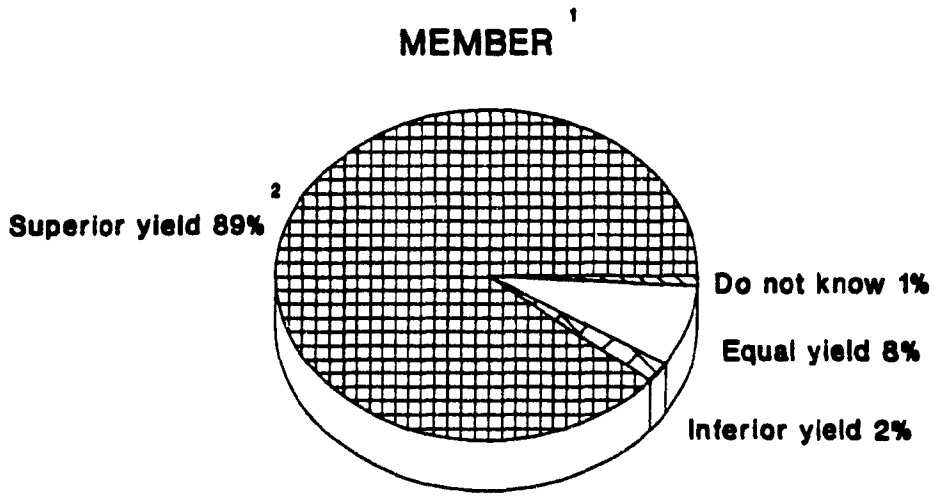
Figure 5.5
Perceived yield results of associations
Average of all respondents



Note 1 : It includes the answers for the two groups, 320 respondents.

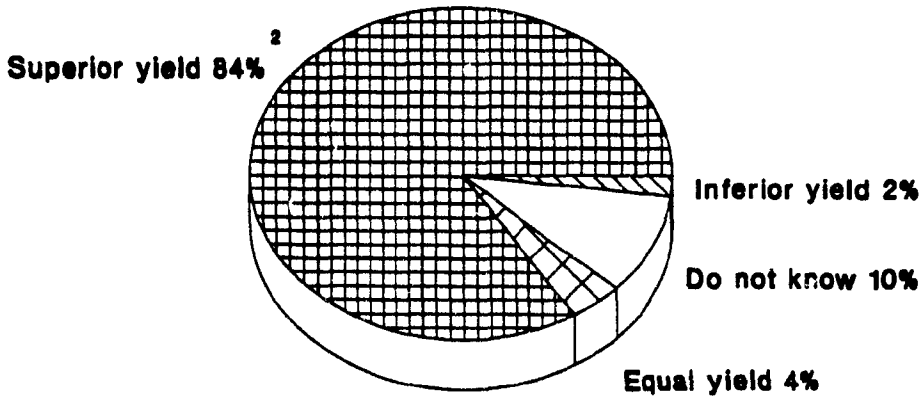
Note 2 : Members of agricultural associations perceived to get an higher yield than non-members.

Figure 5.6
Perceived yield results of associations
Members' response



Note 1: It includes 220 respondents.
Note 2: Members of agricultural associations perceived to get an higher yield than non-members.

Figure 5.7
Perceived yield results of associations
Non-members' response



Note 1: It includes 220 respondents.
Note 2: Members of agricultural associations perceived to get an higher yield than non-members.

Table 5.6 Reasons for higher yield for the associations' members.

	MEMBER	NON-MEMBER	TOTAL*
Work speed	24%	30%	26%
Harvesting at maturity	17%	9%	15%
Using manure	14%	8%	12%
Access to information	11%	11%	11%
Using modern techniques	9%	9%	9%
Access to credit/money	9%	7%	8%
Self-training	8%	7%	8%
Mutual aid	6%	12%	7%
Support from authorities	2%	8%	4%
TOTAL	100%	100%	100%

* TOTAL is the weighted average of the results of the two groups.

Both groups consider work speed, from seeding to harvesting to be the main reason for higher yield. This supports the findings of Musambimana et al. (1986) that the benefits of rural associations are related to being able to complete all agricultural activities on time. Some of the respondents suggested that when they are working on their own, they sometimes get sick or discouraged. This delays work. In agriculture, there is a short period for each step of crop operation and a delay often means considerable loss in output. Even more, working in a group gives encouragement and has a direct, positive effect on work quality and productivity.

The second reason for higher yields deals with the maturity of the harvested crops. In fact, women in associations always wait for the complete maturation of the crops before they harvest them. This is not always the case for family farms. During starvation periods, they will start the harvest early in order to get something to eat, which reduces yields.

Land fertility in Rwanda is low and the addition of organic matter is essential to obtain higher yield. In every association, manure or compost is almost always used. Each member is supposed to contribute some of it, to be incorporated into the land before planting. However, this does not always happen because they do not have enough manure or compost at home. Some associations mentioned that to alleviate this problem, they would like to include cattle

rearing in their activities, so they could get more manure and compost for the land.

Even though nine percent of the respondents mentioned that the use of modern agricultural techniques was responsible for the higher yield in women's agricultural associations, this was not discernible from visits to every association's fields. There are few differences between the way women in associations cultivate and the traditional farming methods used by households in the countryside. In part, the low support MEMBERS received from extension service personnel explains this situation as discussed in the previous section. Some of the other factors mentioned infrequently are access to credit/money, self-training, mutual aid and support from the authorities.

5.3 Socio-Economic Situation

The first part of the survey dealt with the socio-economic profile of the surveyed women (see Appendix D, Survey Questionnaire part A). The average age of the MEMBER group was 38.7 years, compared with 34.0 for the NON-MEMBER group. More than 76 percent of all respondents were married.

For the majority of the respondents, the husband is the head of the household and the family farm, and takes decisions related to resource use. This confirms the results obtained during the National Agricultural Survey of 1984 (Ministère de l'Agriculture de l'Elevage et des Forêts, 1985). This is the

case for 68 percent of the MEMBER group and 71 percent of the NON-MEMBER group. The remaining women are widowed, divorced or alone (their husbands being outside of the household, working in the towns).

The number of children per family is 5.4 children for the MEMBER group and 4.7 children for the NON-MEMBER group. The number of persons working on the family farm does not vary much for the two groups. It ranges from 1 to 10, with an average of 2.9, and a variance of 1.5. In fact, in most cases, it is the couple who performs most farming tasks, their children being in school or too young. When there are more than two workers, the children usually help their family. Rarely are workers hired from outside of the family structure. This usually happens during peak times such as the harvest, or when there is an off-farm salary income. Dependent persons include children, students, the old, sick and the disabled. The number in this group ranges from 0 to 10, with an average of 3.5.

There is a difference between the two groups in the level of schooling. The MEMBER group has a higher schooling level. This is also reflected within the educational sub-groups as shown in Table 5.7.

Table 5.7 Schooling level of MEMBERS and NON-MEMBERS

Group	MEMBER			NON-MEMBER
Sub-group	Presidents	Treasurers	Members	
None	11%	24%	35%	54%
Primary	78%	64%	53%	45%
Secondary	6%	6%	1%	0%
CERAI[a]	0%	0%	1%	0%
Other[b]	5%	6%	10%	1%

[a] CERAI refers to a technical school attended after primary education to learn agriculture or home economics.

[b] Other includes informal courses related to home economics.

It can be seen that a large proportion of presidents (89 percent in the MEMBER group) have a schooling level equal or higher than primary. This makes sense since it is the presidents who are responsible for most of the administrative and representative tasks.

In the survey, women were asked to rank three activities which occupied most of their time. Agricultural tasks (in particular ploughing, seeding, and harvesting), housework (which includes child care, cooking and cleaning), and livestock rearing were mentioned. The results are shown in Figures 5.8 and 5.9. Figure 5.8 shows the allocation of time

Figure 5.8
Allocation of time among activities and order of importance assigned to them

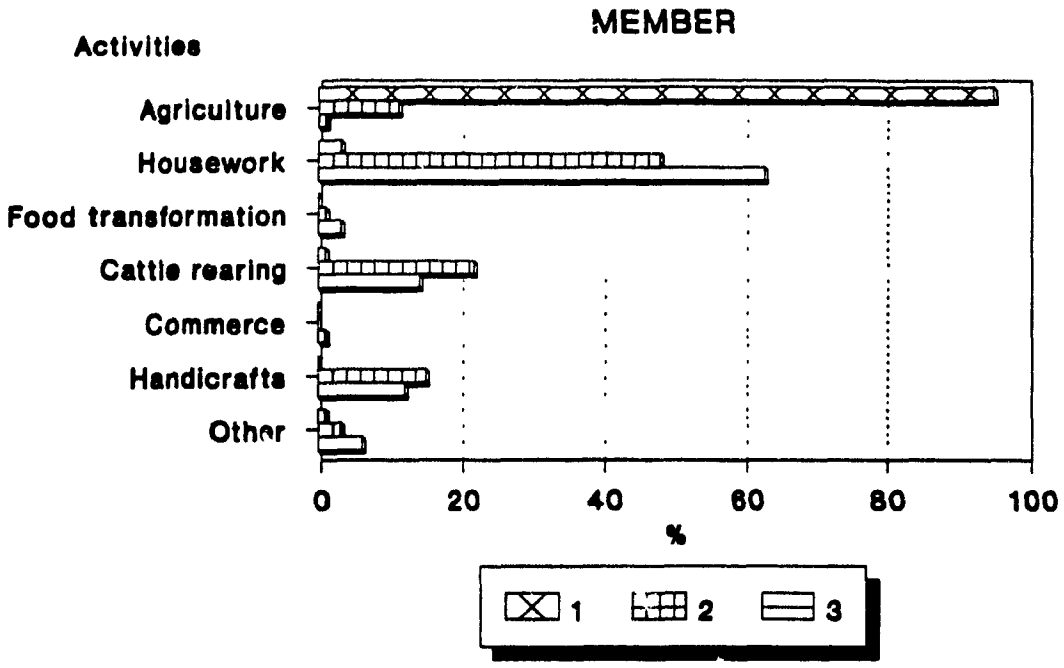
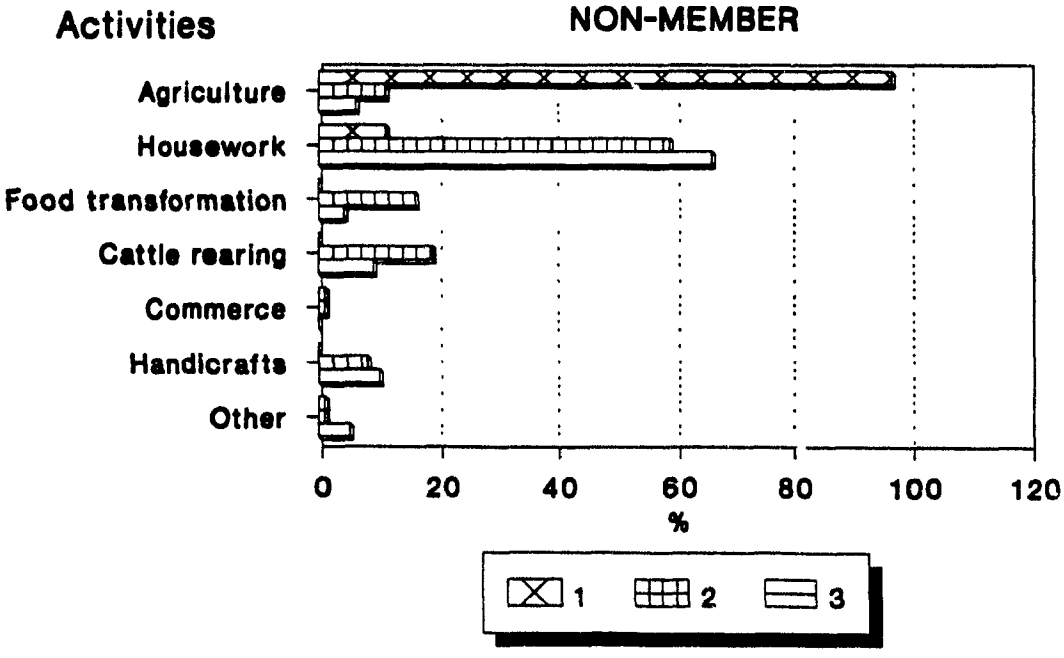


Figure 5.9
Allocation of time among activities and order of importance assigned to them



among activities and the order of importance assigned to them for the group MEMBER. When women were asked which activity takes most of their time to be achived, 95 percent of them answered agriculture[15]. Five percent answered housework takes most of the time to be achieved. The same question was asked to know what was the second activity which takes most of their time. Fifty percent of the respondants answered housework takes most of their time, 22 percent answered cattle rearing and 18 percent answered handicraft. Finally, for 64 percent of the respondant, housework is the third activity which takes most of their time.

The same exercise was performed for activities which generate revenue (see Figures 5.10 and 5.11). Agriculture is the main source of revenue for both groups. This deals with selling crop surpluses. Food transformation, which deals mainly with the production of banana and sorghum beers is also very important as shown in Chapter Two. Not only does it account for an important source of income, but it also has an important role in social exchanges between families. Livestock rearing is a third important source of revenue. Usually, it involves small animals, mostly goats, which are sold on the local market. Rwandan peasants keep sheep, but do

[15] In fact, ploughing is the activity within agriculture which takes most of the time.

Figure 5.10
Share of income generation by activity
and order of importance assigned to them

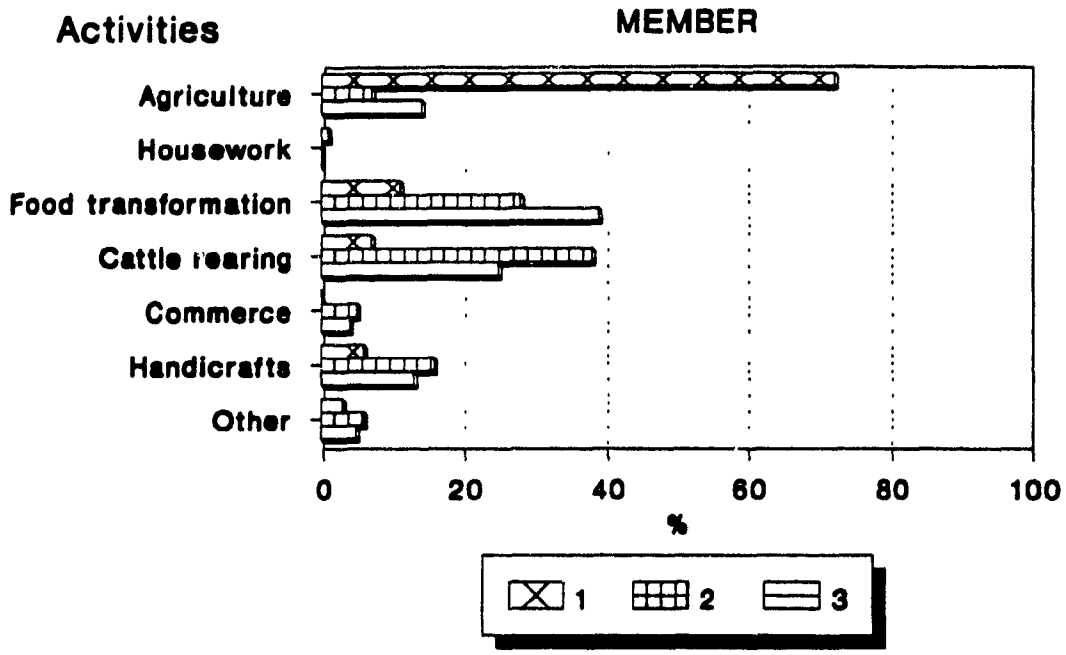
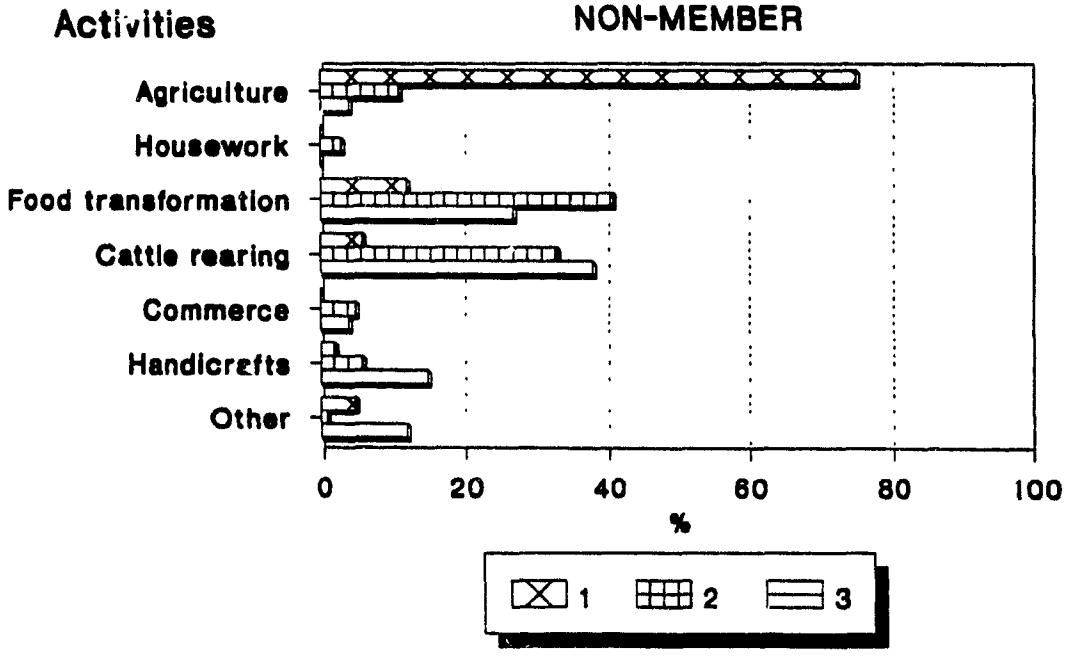


Figure 5.11
Share of income generation by activity
and order of importance assigned to them



not consume them for cultural and mystic reasons[16]. Cows are rarely sold because they represent financial security for the peasants. They will only be sold in hard times or be given as a dowry. As shown by Figures 5.8, 5.9, 5.10 and 5.11, activities which are time consuming do not necessarily generate high income.

It is interesting to note that women have very few sources of income. In fact, 21 percent of women from the MEMBER group and 34 percent of women from the NON-MEMBER group declared having only one source of income as shown in Table 5.8. Agriculture almost always provides that source of income.

Table 5.8 Proportions of respondents having different sources of income

Number of sources of income	MEMBER	NON-MEMBER
One	21%	34%
Two	33%	50%
Three	46%	26%

[16] Sheep are not used for wool purposes, they are companions for the cows. When they die, the Twa (one of the three ethnic group) consume them.

5.4 Work Organization

This part deals with women's needs in terms of agricultural inputs. It is concerned with three aspects of production: work planning, extension services , and marketing. Survey questionnaires were submitted to associations as a basis for group discussion. Thirty-nine questionnaires were filled. For the NON-MEMBER group, questions were asked on an individual basis and got 100 responses. Most questions were structured, but some were unstructured to permit better understanding of the difficulties faced by women in terms of their needs (see Appendix D, Survey Questionnaire part B).

5.4.1 Work Planning

The first question was related to who was in charge of planning agricultural work. Forty-eight percent of women from the NON-MEMBER group answered that they were in charge, 24 percent answered that it was the husband, and 23 percent decided jointly with their husbands. This shows the large responsibility borne by women. The migration of men toward cities to find work (see Chapter Two) influenced this figure.

For 46 percent of the associations, the decisions are taken by one person. This person is usually the president or a member who is known for her knowledge of agriculture. For 54 percent of them, decisions are arrived at by the group consensus.

5.4.2 Training

Several non-governmental organizations (NGO) and governmental organizations work with women's associations in order to provide technical and administrative training. Most Ministries (Interior, Youth and Cooperative Movement, Agriculture, and Women's Condition) provide human and material resources for specific programs. Sometimes, the programmes overlap due to the lack of communication between Ministries. A small number of NGOs are involved with women's associations[17].

5.4.3 Marketing

Most of the associations' agricultural production is used for consumption. Seventy-six percent of the associations

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[17]Those organizations include:
a) the research and cooperative formation centre (IWACU) works mainly in research and training, with cooperatives, pre-cooperatives and associations in the country. Its curriculum includes courses in cooperation, management, and production techniques, given to groups which have operated for at least three years. The cooperative service centre (C.S.C) has the same tasks, but works only in the Prefecture of Gitarama.
b) DUTERIMBERE works with low income women. Its main objective is to increase their socio-economic status through entrepreneurship. It will only supervise profitable projects. Its activities are country-wide and include: training, technical support, access to credit, project supervision, and research in innovative ideas for new enterprises.
c) Most foreign N.G.O.s have some projects dealing with women's associations. Usually, they give more resources to the associations but this help is sporadic.
d) Several smaller organizations also provide services to women's groups. Their objectives vary from one organization to the other.

consume more than 80 percent of their production. The quantity sold depends on yield (a good year means that they will sell a larger quantity). Members have priority in buying this production. The remainder is sold to neighbours or in the local market. In 77 percent of the cases, every member shares the responsibility of marketing agricultural products. In the remaining associations, one person is responsible for the job.

For women of the NON-MEMBER group, 50 percent of the respondents said that they were responsible for marketing. Twenty-two percent shared this task with their husbands and for 12 percent, it was the husband who took care of marketing.

In both groups, the majority of the respondents did not encounter problems in marketing their agricultural products. The famine that took place when the survey was administered explains this. Nevertheless, 20 percent of the respondents found there were difficulties. Low prices, lack of markets for specific non-traditional crops (vegetables for example), transport, storage, and transformation were, by order of importance, the main difficulties mentioned.

Some associations which had handicrafts as a secondary activity encountered several marketing problems. The low diversity of their products and few selling points were two major causes.

5.5 Income Allocation

This part looks at family income. It examines three different aspects: who manages the family income, what is the money used for and who has control over women's personal incomes. The survey questionnaire was submitted to 220 women from the MEMBER group and 100 women from the NON-MEMBER group for a total of 320 respondents (see Appendix D, Survey Questionnaire part C).

The first question was who was responsible for managing family income. The answers are shown in Table 5.9. For 21 and 23 percent of the respondents of the MEMBER and NON-MEMBER groups respectively, it is the respondent herself who manages family income. The husband is responsible for 35 and 37 percent of the respondents respectively and the couple is jointly responsible for 30 percent and 32 percent of the respondents respectively. In the remaining cases, a parent or another person is responsible. The difference between the two groups is not significant.

Table 5.9 Who manages family income

Respondents	MEMBER	NON-MEMBER
Herself	21%	23%
Her husband	35%	37%
The couple	30%	32%
Parents or other	14%	8%

Table 5.10 shows the expenditure patterns of the two groups together. Money is usually spent on household goods. In fact, about 70 percent of the income is spent on that item. The households are poor, most of them get their living from subsistence agriculture, which explains the high proportion of income spent on household products. About 16 percent of the income is spent on the item investment. This includes mainly maintenance and repair of the house and property, purchase of tools, animals, etc. Twelve percent of the income is spent on the item other which includes mainly schooling fees, social expenses like a birth, a wedding or a funeral.

Table 5.10 Percent of income spent on household products, investment and other

Proportion of income	Household Products	Investment[a]	Other[b]
MEMBER	69.3%	17.4%	13.4%
NON-MEMBER	76.5%	13.8%	9.7%
TOTAL	71.6%	16.3%	12.1%

[a] The item investment includes mainly maintenance and repair of the house and property, purchase of tools, animals, etc.

[b] It includes mainly schooling fees, social expenses like a birth, a wedding or a funeral.

In general, a few people exercised control over women's personal earnings. However, we do not know if the husbands knew about the existence of that money. About 35 percent of presidents' husbands, had a control over their wives' income, compared to 21 percent for the treasurers, 25 percent of the members, and only 8 percent of women of the NON-MEMBER group. This is surprising since the MEMBERS should, due to their social and economic status, be more independent vis-à-vis their husbands.

5.6 Motivation

It is important to understand the reasons why women do or do not become members of associations, the advantages they get from membership, and their husbands (or parents) perceptions

of membership in associations. The responses were divided into two sections; MEMBER and NON-MEMBER. Three hundred and twenty questionnaires were filled (see Appendix D, Survey Questionnaire parts 1 and 2).

5.6.1 MEMBERS

The women of the MEMBER group were asked to state the three main reasons, in order of importance, to become a member of an association. Most of the answers were related to social factors and not economic ones as shown in Table 5.11. This confirms the study done in Western Africa by Buisserogge (1990). He found that social aspects prevailed on explaining membership in women's rural associations. Answers like "we are not alone" and "we can exchange" prevailed over "access to land" or "access to credit".

Table 5.11 Main three reasons to join an association (by order of importance)

Reasons	1st reason	2nd reason	3rd reason
MEMBER	Not alone	Can exchange views	Credit access
NON-MEMBER	Not alone	Credit access	Can exchange views

In most cases, 93 percent of responses, the husband or parents favoured the respondent's membership in an

association. This is high, given that 6 percent of the responderts were widowed or divorced. Only one percent of husbands were unhappy because they did not see concrete benefits. Women thought that their husbands were in favour of joining the association because of the following reasons:

Table 5.12 Husband's motivations

Motivation	Frequencies of responses
Can get a supplementary harvest	24%
Can get harvest cheaply	22%
Mutual aid [a]	16%
Greater access to information	15%
Greater access to credit	15%
Access to manure	5%
Women's promotion	2%
Other	1%

[a] Mutual aid can take several forms. It includes: putting their efforts toward a common goal, getting help when in difficulty, taking a tontine form, increasing technical knowledge through exchanges or getting help during the fasting period.

As we can see from this table, husband's reasons are more related to economics than to social aspects. They want to see some financial benefits from their wives' memberships. The

participation of women in associations does not only deal with their blossoming out through their exchanges with the group, but also with obtaining additional harvests.

Being in an association allows the creation of links between women, and prevents them from being alone in difficult periods.

5.6.2 NON-MEMBERS

The same question about the benefits that they saw in membership in association, was asked to women in the NON-MEMBER group. Here again, the social aspects prevailed over the economic ones. Most of them answered "we are not alone" and "we can exchange" as shown in Table 5.11.

To the question, "have you ever been a member of an association?", 10 percent of them said "yes". Their reasons for leaving were the following:

- Health problems
- Old age
- Family problems
- Dissension among members
- Dissolution of the association

Of the 90 percent of women who had never been a member of an association, 67% wished to become a member, for the following reasons:

Table 5.13 Reasons of the NON-MEMBERS to become a member of an association.

Mutual aid	63%
Information and training	22%
Supplemental income	15%

There is a real interest in this form of cooperation and there will be, in the near future, many associations being formed to meet the need and demand of people who see benefit in being member of such organization.

It is clear from the results of this study that women's rural associations get higher yield than women who are not a member. This is so because of many factors such as work speed, harvesting at maturity and access to some input and information. The reasons to join the associations are mainly of social nature: women are no longer isolated, they can discuss with other women, etc. Nevertheless, membership in an association represents an additional income which is important to ensure the family subsistence.

CHAPTER 6

CONCLUSIONS

The primary objective of this research was to investigate how membership in women's agricultural associations contributes to an increase in women's economic farm productivity. A survey was carried out in order to obtain the primary data necessary to test the hypothesis that membership in agricultural associations contributes to an increase in women's economic productivity. The statistical tests used were the t test for difference between means and the chi-square test for independence, along with other descriptive statistics.

6.1 Conclusions

Rural women in Rwanda experience a low standard of living due to cultural and socio-economic factors. Their lower socio-economic status affects their access to resources which, in turn, affects their socio-economic status. Women's associations have been present in Rwanda since colonization. They were managed by missionaries who taught mainly home economics to women. The associations evolved slowly over time, but their numbers have increased rapidly during the eighties. They are highly diversified in terms of the number of members, their objectives and their activities. The

formation of these associations is voluntary and women are free to join them. Membership in most associations is not forced by the authorities but rather reflects the need of the women for joining together. This explains the solidarity found within the members.

The results show that MEMBERS of rural associations obtain a higher yield than NON-MEMBERS. Eighty-seven percent of all respondents believed that yields of agricultural associations are higher than yields of the NON-MEMBER group. In fact, 89 percent of the MEMBERS and 84 percent of the NON-MEMBERS perceived that women in associations obtained a higher yield.

The main reasons stated by the respondents for the higher productivity on association farms are work speed, harvesting at maturity and facilitated access to inputs and information. Work speed is an important element of an association's success. Working in a group gives encouragement and has a direct, positive effect on work quality and productivity. The results related to an easier access to inputs and information contradict however the observations made in the associations' fields. The survey results showed that the members of associations did not necessarily enjoy better access to agricultural resources. Their access to credit, technical services, tools and land was lower than for non-members. However, these differences were statistically insignificant. The problems related to these inputs are all

of different natures.

In the case of technical services, women are willing to observe experimental plots near their own fields in order to compare the effect of chemical fertilizers, improved seeds or other modern agricultural techniques. There is still room for more support from the extension service personnel in this regard.

MEMBERS are generally more literate and slightly older, have larger families and spend a higher percentage of their income on investments, than NON-MEMBERS.

Most women join an association for social reasons instead of economic ones. Mutual aid is considered an important factor when considering whether to join the association. Aid takes several forms such as making all efforts toward a common goal, getting help during hard times, increasing knowledge, etc. Men's reasons for their wives joining the association are more related to economic gain. The potential of these associations is considerable. They are an efficient instrument for diffusing information but, until now, this aspect seems to have been under-exploited. The government should take advantage of associations to disseminate extension information. This could be done with experimental plots located close to the association fields.

The government of the Republic of Rwanda is fostering these associations in order to meet its objective of food self-sufficiency. However, there is still no coordinating

agency at the national level. Several ministries offer support to the associations, but there is no clear policy. Further, the potential of these associations can be realized by making such institutional change.

6.2 Suggestions for Future Research

This study on women's associations in Rwanda examines production patterns and resource allocation through a comparison of the situation of women involved in associations with women working alone. Risk was not studied, but this could be of interest for future research. Being in an association allows for risk sharing, which is an important element in subsistence agriculture.

Most associations encounter marketing difficulties. This aspect could also be further investigated. For example, what are the problems and what solutions could be implemented in the case of handicrafts.

Associations could diversify their activities by including activities such as cattle rearing. They could produce not only meat to sell, but also manure to increase land fertility. This aspect should also be further studied.

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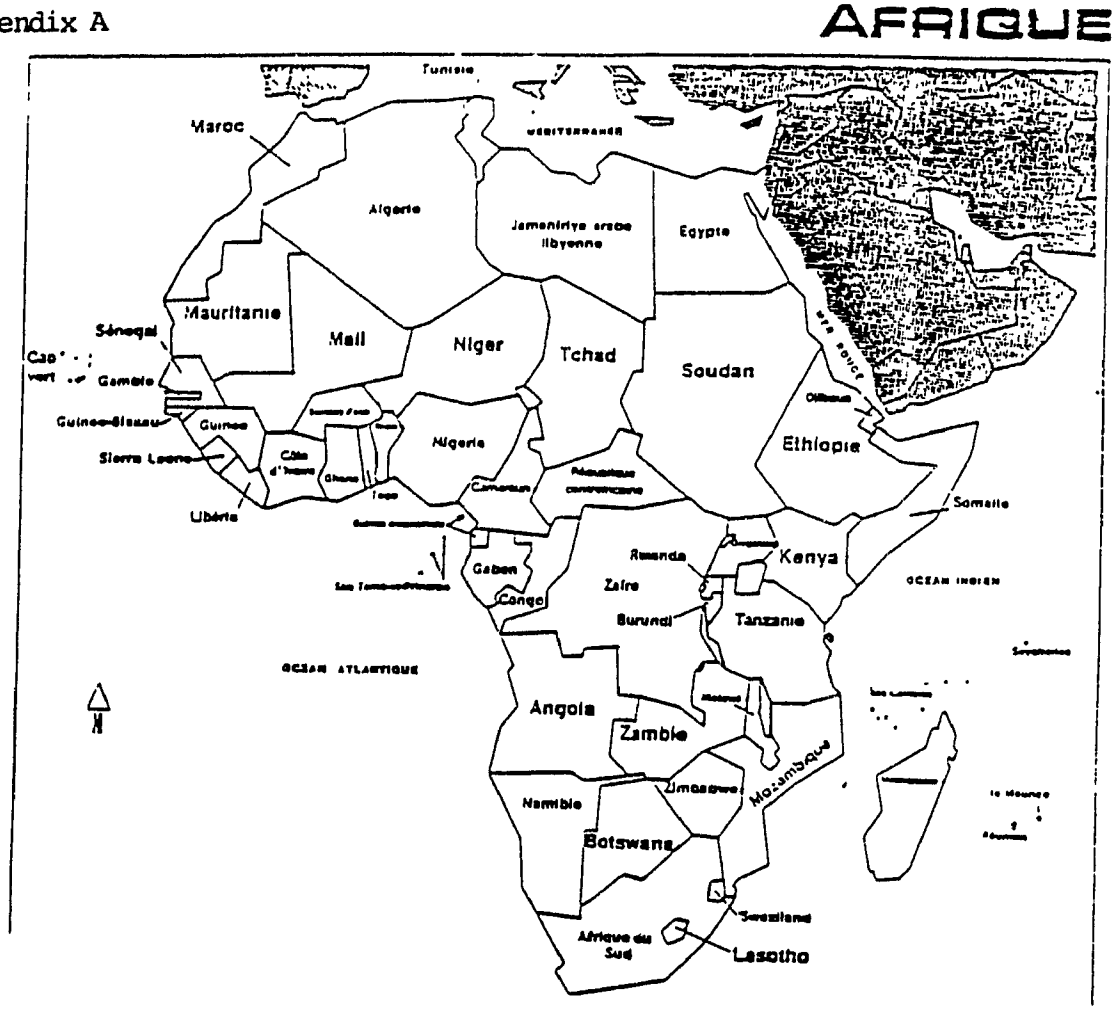
Appendix A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Mauritanie
Mali
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Gambie
Guinée-Bissau
Guinée
Sierra Leone
Libéria
Côte d'Ivoire
Ghana
Togo
Nigeria
Cameroun
Ethiopie
Somalie
Gabon
Congo
Rwanda
Zaire
Burundi
Kenya
Tanzanie
OCEAN INDIEN
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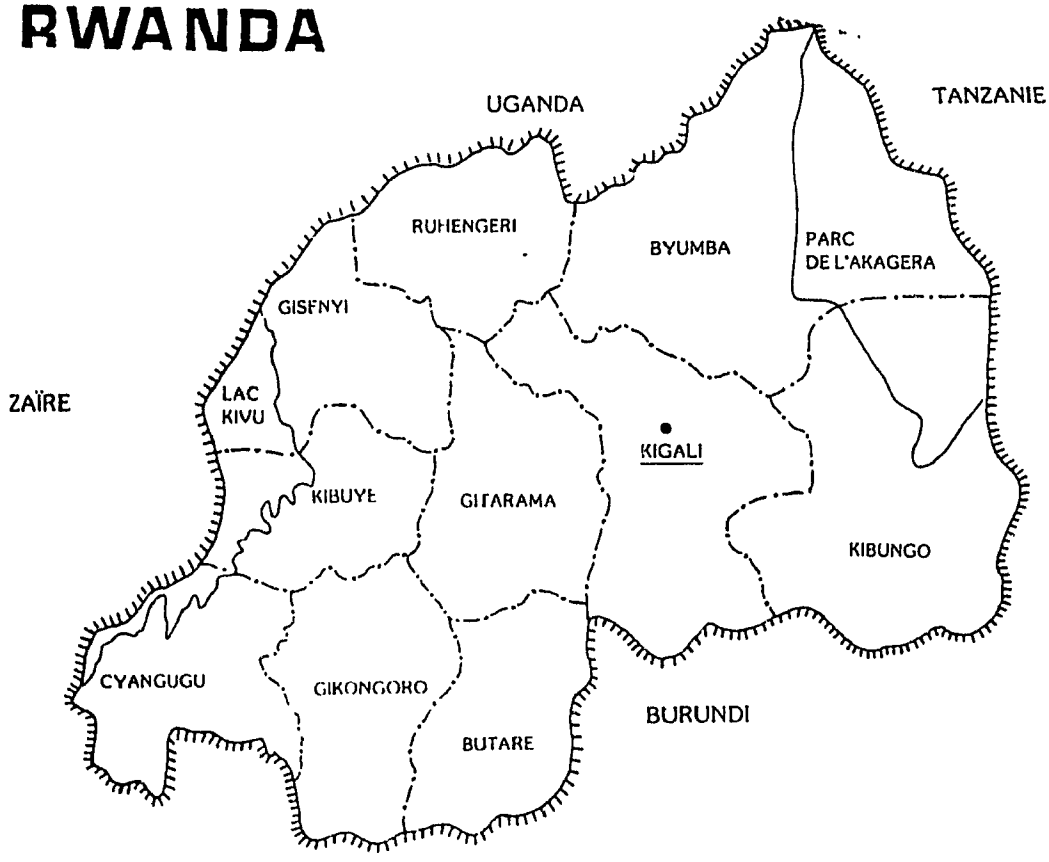
Zambie
Zimbabwe
Mozambique
Namibie
Botswana
Swaziland
Afrique du Sud
Lesotho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BYUMBA
PARC DE L'AKAGERA
GISENYI
LAC KIVU
KIGALI
KIBUYE
GITARAMA
KIBUNGO
CYANGUGU
GIKONGORO
BUTARE
BURUNDI

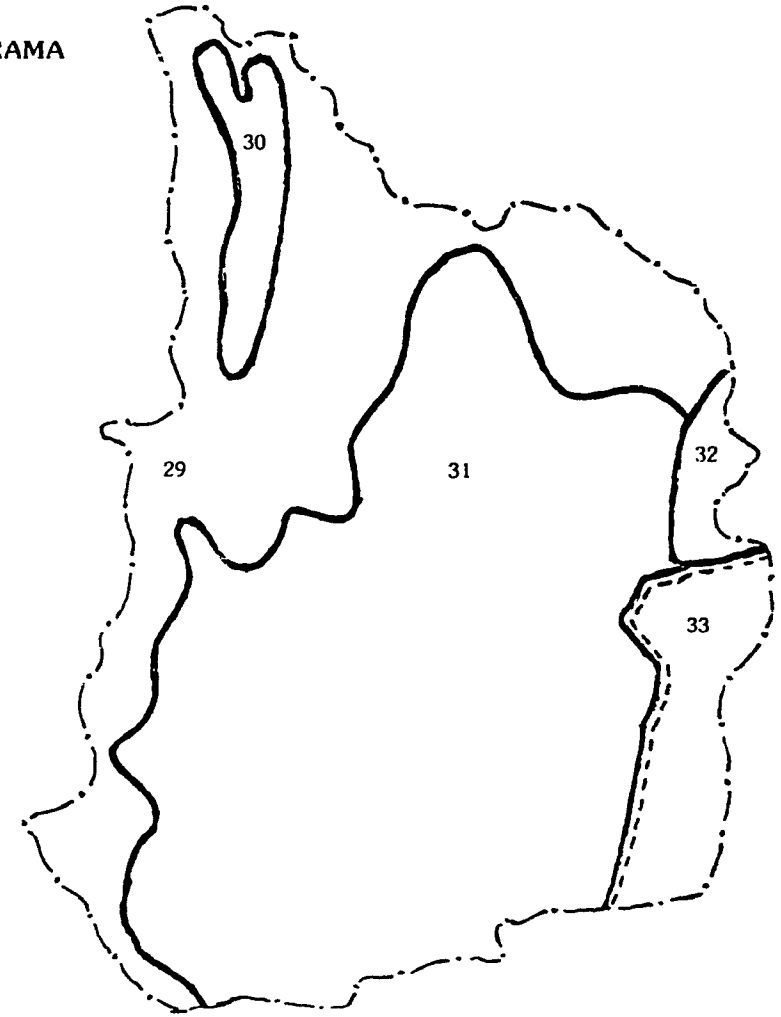
Appendix B

Légende

—•— Limites de préfectures
—— Limites de régions agricoles
----- Limites de paysannats

Échelle . 1/500 000

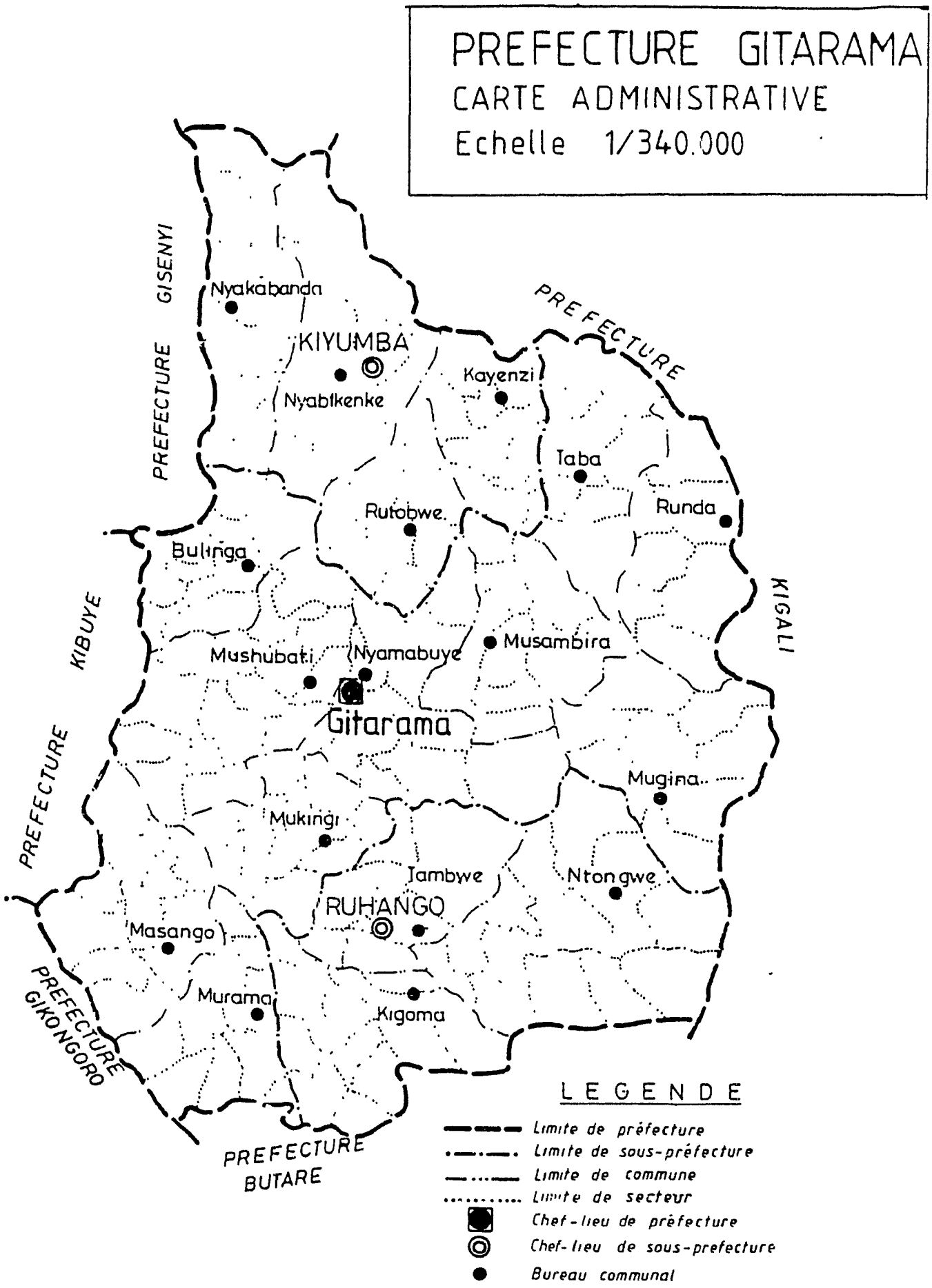
GITARAMA



Strates

29 Plateau central
30 Hautes terres du Buberuka
31 Dorsale granitique
32 Plateau de l est
33 Mayaga-paysannat

Appendix C


PREFECTURE GITARAMA
CARTE ADMINISTRATIVE
Echelle 1/340.000
PREFECTURE GISENYI
PREFECTURE
Nyakabanda
KIYUMBA
Kayenzi
Nyabikenke
Taba
Rutobwe
Runda
Bulinga
KIBUYE
KIGALI
Musambira
Mushubati
Nyamabuye
Gitarama
PREFECTURE
Mugina
Mukingi
Jambwe
Ntongwe
RUHANGO
Masango
PREFECTURE GIKONGORO
Murama
Kigoma
PREFECTURE BUTARE
LEGENDE
Limite de préfecture
Limite de sous-préfecture
Limite de commune
Limite de secteur
Chef-lieu de préfecture
Chef-lieu de sous-prefecture
Bureau communal

Appendix D

QUESTIONNAIRE

A- IDENTIFICATION

1) Nom de l'enquêteur:_____

2) Date de l'enquete :_____

3) Commune :_____

4) Secteur:_____

5) Groupement ou individu (encerclez un des deux)
S'il s'agit d'une association, spécifiez: PRESIDENTE, TRESORIERE, MEMBRE

==========

6) Nom de l'enquêtée:_____

7) Situation matrimoniale:

1-célibataire
2-mariée
3-divorcée
4-veuve

8) Age: _ _

9) Chef d'exploitation:

1-elle-même
2-conjoint
3-père
4-autre (précisez) _____

10) Nombre d'enfants vivants: _ _

11) Nombre de personnes permanentes sur l'exploitation: _ _

12) Niveau de scolarisation de l'enquêtée

1-aucun
2-primaire
3-secondaire
4-CERAI
5-Autre (spécifiez)

13) Niveau d'alphabétisation

1-ni lire, ni écrire
2-lire seulement
3-lire et écrire

14) Activités principales de l'enquêtée au cours de l'année: Classez par ordre d'importance par rapport au temps requis et au revenu annuel généré.

Importance de l'activité:

	Temps	Revenus
1-		
2-		
3-		

a- labourer
b- semer
c- sarcler
d- récolter
e- cuisine
f- ménage
g- eau
h- bois
i- transformation alimentaire (bière de banane, sorgho)
j- soins des enfants
k- élevage
l- artisanat
m- commerce
n- école
o- "umuganda" (travaux communautaires)
p- autre (précisez)

B- BESOINS (cette partie a été soumise au femmes non-membres et aux associations sous forme de discussion en groupe)

1- Qui s'occupe de la planification du travail:

a) femmes non-membres:
   1- moi-même
   2- mon mari
   3- conjoints
   4- parents
   5- autre

b) associations féminines

   1- chaque membre du groupe
   2- un représentant du groupe
   3- une personne extérieure au groupe
   4- personne ne s'en occupe

2- Rencontrez-vous des problèmes pour vous procurer les matières premières suivantes:

	toujours	souvent	rarement	jamais
1-semences (spécifiez)				
2-outils de travail				
3-engrais chimiques				
4-terre (suffisante)				

3- Votre groupement (ou votre famille, dans le cas d'une femme non-membre) a-t-il déjà utilisé ou utilise-t-il des crédits:

1- oui 2-non

si oui, la provenance

1-banque
2-famille
3-amis
4-commercants
5-coopérative d'épargne
6-groupe d'entraide
7-églises
8-autres (spécifiez)

sinon, pourquoi:

1-pas besoin de crédit
2-demande de crédit refusée
3-crainte de tomber en faillite
4-on ne sait pas si on peut demander

4- Bénéficiez-vous d'une aide technique et de vulgarisation externe pour vous appuyer dans vos activités:

1-oui
2-non

si oui, qui ou quelle organisme?

5- Avez-vous besoin d'avantage d'information sur le plan technique pour améliorer vos activites:

1-oui
2-non

si oui, quel type d'information:

6- Quel usage faites-vous de la production (en proportion):

1-consommation %
2-commercialisation %

7- Qui s'occupe de la commercialisation:

a) femmes non-membres:
   1- moi-même
   2- mon mari
   3- parents
   4- autre

b) associations féminines
   1-chaque membre du groupe
   2-un représentant du groupe
   3-une personne extérieure
   4-distribution par un organisme (spécifiez)

8- Rencontrer vous des problèmes de commercialisation:

1-oui
2-non

si oui, lesquels:

1-transformation
2-stockage
3-transport
4-bas prix
5-manque d'acheteurs
6-autres (spécifiez):

C- ALLOCATION DES REVENUS

1- Par qui sont gérés les revenus de la famille

1-moi-même
2-mon mari
3-mes parents
4-conjoints
5-autre (spécifiez)

2- A quoi sert l'argent gagné et en quelle proportion:

1-besoins personnels:
2-besoins du ménage:
3-réinvesti dans l'exploitation
4-autre (précisez)

3- Quelqu'un a-t-il un contrôle sur vos revenus (à la maison):

1-non, personne
2-oui, mes parents
3-oui, mon mari
4-oui, autre (précisez)

D1- MOTIVATIONS (pour les femmes membres d'associations)

1- Voyez-vous des avantages à travailler en groupe

1- non
2- oui, lesquels

2- Quels sont les trois éléments les plus importants pour adhérer à un groupement (choisir trois dans l'ordre):

1-confiance entre les membres
2-bonne organisation
3-accès au crédit
4-aide technique
5-confiance au gérant
6-confiance au C.A.
7-mise en marché facilité
8-obtention de terres
9-ne pas être seule
10-peut échanger
11-autre (spécifiez)

3- Votre mari ou vos parents voient-ils des avantages au fait que vous fassiez partie d'un groupement:

1-oui,lesquels:_____

2-non,pourquoi:_____

4- D'après vous, est-ce que les associations se femmes produisent plus (pour une même culture et une aire égale) que les femmes qui cultivent seules? (expliquez)

D2- PARTIE POUR LES FEMMES QUI NE SONT PAS MEMBRES D'ASSOCIATIONS

1- Avez-vous déjà appartenu à un groupement:

1-oui
2-non

si oui, lequel?_____

pourquoi avez-vous quitté:_____

si non, seriez-vous intéressées à faire partie d'un groupement

1-oui (pourquoi):
2-non (pourquoi):

2- Quels sont les trois éléments les plus importants pour adhérer à un groupement (choisir trois dans l'ordre):

1-confiance entre les membres
2-bonne organisation
3-accès au crédit
4-aide technique
5-confiance au gérant
6-confiance au C.A.
7-mise en marché facilité
8-obtention de terres
9-ne pas être seule
10-peut échanger
11-autre (spécifiez)

3- D'après vous, est-ce que les associations se femmes produisent plus (pour une même culture et une aire égale) que les femmes qui cultivent seules? (expliquez)

Appendix E

FICHE GROUPEMENT

A- Identification

1- Nom de l'enquêtrice:
2- Date de l'enquête:
3- Commune:
4- Secteur:
==========
5- Nom du groupement:

6- Nombre de membres:
a)Femmes b)Filles c)Hommes

7- Année de création:

8- Type de groupement
a)agricole d)commerce
b)artisanat e)service
c)élevage f)animation

9- Activités principales (décrire):

10- Activités secondaires (décrire):

11- Qui a initié le groupement:
1)Femmes
2)Bourgmestre
3)Encadreur
4)autre (spécifiez):

12- Le groupement est situé à combien de kilomètres du marché:
Nom du marché:

B- Organisation interne

1- Y a-t-il des règlements internes:
a)oui
b)non

2- Par qui sont prises les décisions:
a)la présidente
b)le comité de gestion
c)toutes les femmes
d)autre, spécifiez:

3- Y a-t-il des élections:
   a)oui
   b)non

4- Comment est organisé le travail (le nombre de rencontres par semaine et les jours)

5- Par qui sont gérés les revenus du groupe:
   a)les membres
   b)les responsables du groupe (spécifiez):
   c)autre (spécifiez):

6- Comment sont utilisés les bénéfices de votre groupement et en quelle proportion:
   a)Partagés entre les membres
   b)réinvestis
   c)Epargne
   d)Autre (spécifiez):

7- Y a-t-il une tontine:
   a)oui
   b)non

8- Le groupement possède-t-il un compte en banque:
   a)oui
   b)non

9- Y a-t-il déjà eu des détournements:
   a)oui
   b)non

C- Appuis externes

1- Votre groupement fait-il partie d'un inter-groupement
   a)oui
   b)non

2- Votre groupement a-t-il bénéficié d'une aide externe:
   a)oui
   b)non

   Si oui, spécifiez la nature de l'aide (outils, terrains, crédits, cours de formation, encadrement d'organismes, etc.)

3- Observations, commentaires: