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Labor and Tenure Study in Three Village Perimeters:
Bakel, Moudery, and Selling

by

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INTRODUCTION

Since the 1970's drought, the creation of village irrigated perimeters became an important phenomenon in the Sengal river basin. Each village wanted its own perimeter to alleviate food shortages and losses of households revenues induced by drought conditions. In the Bakel area many of the village perimeters were created under the USAID Bakel Small Irrigated Perimeters project (BSIP). If the project was able to resolve the issue of water availability, the village perimeters are still confronted with many constraints which hinder their development. Amongst those problems, there are the weights of the traditional tenure systems, the social organization and the labor shortage. The latter aspect is of real concern because in recent years with better rainfall conditions, there is an increasing competition for household labor between traditional agriculture and irrigated perimeters both of which are carried out during the same period. This competitive situation is worsened by the increased male outmigration and the restructuring of BAED which in its new policy does not provide input credits to the farmers. Thus because of the situation, a series of questions are raised such as: what are the labor allocation strategies adopted by households? Which type of cropping system is prioritized by the farmers? Are women playing a greater role in household agricultural production? Or do ~~the~~ households have other compensating strategies to overcome labor constraints rather than relying on women labor? How do these adaptations affect access to cultivable land and to the tenure arrangements made to develop those lands. There are also other questions that are of importance that we will deal with in the study.

The aim of this study is to take a look at the labor constraints and the different labor allocation strategies undertaken by households. It will be limited however, as the study concentrated in only three villages Bakel, Moudery, and Selling. Nevertheless, these villages will give an indication as to the adaptations by household to the constraints facing the development of irrigated agriculture in three different areas: a urban area (Bakel) , a traditional Soninke village (Moudery) , and a Pulaar village (Selling).

1 Social organization

Both the Pulaar and the Soninke societies are characterized by a caste systems which determine the relationship between man and the land. As such, the social organization of the family differs according to one's status over developed land and forms of land access. In this study, only two aspects will be highlighted: (1) Caste distribution and (2) family organization.

1.1 Caste distribution.

Caste distribution in irrigated perimeters in the Bakel area results from the prior social stratification in the village. As such, caste composition may vary from village to village.

In the perimeter of Bakel/Collengai, the Komé, slave origin, represent 75% of all the farmers involved in the perimeter this year and the noble (Moodi and xoore) 21%. This situation is the result of the policy of the Ndiaye Ganke at the creation of the perimeter. The land, where the perimeter is located, was the property of the noble Ndiaye Ganké residing in Bakel. The Ndiaye Ganke gave their land to the project members under the condition that their former slaves will be the primary beneficiaries. As such the Komé control the perimeter and almost all the presidents of the cooperatives (groupements) are former or related slaves of the Ndiaye Ganke. The only noble president of cooperative is Mamadou Ndiaye, who is also from the Ndiaye Ganke. This situation allows the Ndiaye ganke to retain their social supremacy and safeguard their ownership right over the irrigated land. The caste distribution is shown in the table below.

Table 1 : Caste distribution in the Bakel Irrigation Project (Collengai) in 1988

	Komé		Tegga		Garanke		Jarre		Moodi		Somono		xoore		Total	%
	F	M	F	M	F	M	F	M	F	M	F	M	F	M		
91	5	10		1									2	2	20	10.8%
92	13	18							1				4	2	38	20.5%
93	25	22		1			1						2	6	57	30.8%
94	11	6				1				1		1	2	7	29	15.7%
95	6	10		1							1		3	1	22	11.9%
96	8	5											5	1	19	10.3%
TOTAL	68	71	0	3	0	1	1	0	1	1	0	2	18	19	185	100.0%

The perimeter of Mouderv II was created in 1985 by the willingness of 7 persons. The land where the perimeter is now situated was partly held by the Forestry service and partly cultivated by women. The land was given to the cooperative by the Rural community after being opposed by the village chief who supported the women's claims to the use of the land. Nonetheless, the land was taken and developed as an irrigated perimeter. The perimeter members, in return found a new site for the Forestry Service but they did nothing for the women. As a result, the welfare of the women, who used to cultivate these lands, was not taken into consideration during the redistribution of the land nor in the reallocation. Table 2 shows that the Kome are the majority with 55% of all the farmers and the xoore and moodi represent 18% of all farmers. The prevalence of the Kome in the perimeter may result from the fact that the head of the perimeter is a Kome.

Table 2 : Caste and Land Distribution in the Mouderv II
Irrigated Perimeter in 1988

	Farmers	Area (ha)	% Farmers	% Area	Average size of plots
Baranke	4	2.48	3%	3%	0.62
Kolyadio	18	13.06	15%	16%	0.73
kome	66	44.46	55%	54%	0.67
Mabo	1	0.72	1%	1%	0.72
Mangue	3	2.55	3%	3%	0.85
Moodi	2	0.95	2%	1%	0.48
Somono	2	1.44	2%	2%	0.72
Tegge	4	2.88	3%	3%	0.72
xoore	19	13.52	16%	17%	0.73
	119	82.47	100%	100%	

In the Pulaar perimeter at Selling, only 15 farmers cultivated their irrigated fields. The majority of these farmers are of the noble castes (toroo and Caddo) who represent 60% of all the farmers and the Maccube (slave origin) 39% of the farmers. In this perimeter, the land used to be controlled by the noble Guirobe family. The president is also from that family. As such the Guirobe still retain their traditional status over irrigated land. For example, the president of the perimeter cultivated 2 hectares of land this year whereas all the other members cultivated between 0.25 and 0.75 hectares.

Table 3: Number and castes of farmers who cultivated their irrigated fields in the PIV at Selling in 1988

	Number of Farmers	Area (ha)	% Farmers	% Area
Torodo	7	4.75	47%	56%
Ceddo	2	0.75	13%	9%
Sake	1	0.75	7%	9%
Maccudo	5	2.25	33%	26%
	15	8.5	100%	100%

The caste distribution of the farmers involved this year in the irrigation perimeters of the Soninke villages, Bakel-collengal and Moudery II, showed that the majority (67%) are the Kome. The noble castes (moodi and woone) represent only 20% of the farmers. In the perimeter at Selling, the majority of the farmers are from the noble caste. The Predominance of the Kome in the irrigated perimeters is a consequence of the new opportunity they have to secure land ownership as they used to rent cultivated land under the traditional system. All the Kome who were interviewed responded that they contracted land and payed either the diaka Kandé (1/10 of the production) or the ninan Ciacé (it is an indefinite part of the production given to the landowner to show that he owns the land.) to landowners. This issue will be discussed later.

1.2 Family Organization

The families among the Soninke and the Pulaar are found to fall under two structures: (a) the extended family and (b) the nuclear family. The study deals only with these two aspects as they determine: (1) the different adaptations of the family with regard to land holding; (2) the different tenure arrangements made by the family to develop their lands; and (3) the labor strategies adopted by family members. Table 4 shows that among 45 families, the village of Moudery has the biggest average family size with 15 members, Bakel with 13 members and Selling the smallest average family size with 11 members.

To avoid confusion in this study, the Ka or family was used for extended family and household for nuclear family. This distinction is of importance as the Ka is a flexible concept that means both household and extended

family. Tables 4, 5, and 6 deal with the composition of family members among 45 families.

Table 4 : Family size distribution by caste among 47 cases

Caste	Moudery	Bakel	Selling
Jaare		4	
Garanke			27
Kolyadio	18		6
Kolvadio	36		9
komé	6	4	4
komé	6	5	6
komé	9	5	8
komé	6	7	
komé	24	9	
komé		10	
komé		16	
komé		17	
komé		21	
komé		10	
Mangue	9		
Mangue	34		
Moodi		11	
Moodi		16	
Moodi		9	
Somono		21	7
Tegge		26	10
xoore	24	10	6
xoore	27	3	6
xoore		9	10
xoore			11
xoore			16
xoore			17
xoore			22
Total	199	213	165
Average	15	13	11

Table 5 : Distribution of members relation to the Kagume among 45 families

	Bakel	% Bakel	Moudery	% Moudery	Selling	% Selling	Total	% Total
Aunts	4	2%	0	0%	5	3%	9	2%
Brother	7	3%	23	12%	15	9%	45	8%
Brother in Law	0	0%	0	0%	2	1%	2	0%
Daughter	31	15%	4	2%	5	3%	40	7%
Daughter in Law	6	3%	12	6%	17	10%	35	6%
Female cousin	0	0%	0	0%	0	0%	0	0%
Grand Daughter	2	1%	0	0%	3	2%	5	1%
Grand Son	3	1%	14	7%	5	3%	22	4%
kagume	19	9%	11	6%	15	9%	45	8%
Male cousin	12	6%	3	2%	3	2%	18	3%
Mother	6	3%	0	0%	2	1%	8	1%
Mother in Law	0	0%	0	0%	1	1%	1	0%
Nephew	20	9%	18	9%	11	7%	49	9%
Niece	5	2%	2	1%	1	1%	8	1%
Sister	3	1%	0	0%	1	1%	4	1%
Sister in Law	14	7%	42	21%	17	10%	73	13%
Son	48	23%	49	25%	36	22%	133	23%
Uncles	2	1%	0	0%	1	1%	3	1%
Wives	31	15%	21	11%	25	15%	77	13%
	213	100%	199	100%	165	100%	577	100%

Table 6 : Distribution of Family Members: relation to the Kagume by Caste among 45 families

	Kolyadio	Garanke	Tegge	koné	Mangué	Moodi	Jarre	Somono	xooré	Total	%
Aunts				1				3	5	9	2%
Brother	2		11	8	4			1	19	45	8%
Brother in Law	1								1	2	0%
Daughter	0	1	1	15	3	10	1	1	8	40	7%
Daughter in Law	2	7	1	4	3	1			17	35	6%
Grand Daughter				2					3	5	1%
Grand Son	1		12						9	22	4%
kagume	3	1	3	18	2	3	1	2	12	45	8%
Male cousin				1				12	5	18	3%
Mother	1		4	1	2					8	1%
Mother in Law	1									1	0%
Nephew	3		10	12	5	2		1	16	49	8%
Niece	1		4	1	2					8	1%
Sister		1		2					0	3	1%
Sister in Law	3		20	12	9	3			26	73	13%
Son	13	14	3	62	10	9	1	3	18	132	23%
Uncles				1				1	2	4	1%
Wives	4	3	6	32	5	6	1	2	18	77	13%
	35	27	75	172	45	34	4	26	159	577	100%
	6%	5%	13%	30%	8%	6%	1%	5%	28%	100%	

(a) The family (Ka)

These families constitute the basis of the lineage because they include all the people who have claims to the lineage holding. These families control lands and the different tenure arrangements made on their lands. Land control gives them also a political power as they define the relationships with landless families and households. The Ka is composed of many households whose heads are generally brothers with the same father. Here, it is the oldest person of the family, Kacume, who controls the lands and at the same time provides food to all the family members. The other heads of households, Maxamba - Kacume, are just available labor force for the family. They have to work for the Kacume in the family field, tekoore, from 7 A.M to 2 P.M five days a week. It is only after their work in the tekoore that they can work in their own fields, Saipumo. However, in some cases, the brothers may split into many Ka if brothers of the same mother decide to take their own share of land. But, these newly created families will work in the same manner as the family that is not split.

The important aspect of the Ka is the retention by the Kacume of all the decision making within the family. However it is important to make clear that the Kacume plays this important role only if the family owns the land. In the case where the family does not own land, each individual head of household makes his own decision as to where to find land and under which contract. This explains why in many Kome families, who are generally landless, brothers do not live together. Table 6 shows that among 45 brothers, 42% are koore whereas 18% only are Kome.

(b) Households.

The households of the family constitutes generally the labor force of the family. They can be granted fields to cultivate by the Kacume. However this grant can be taken away in the case where the Kacume judges that the common family field is not sufficient to sustain the family. For example, both Samba Diale Camara and Yero Dia took the fields of their family members (Saipumo) this year because of inundation in their other fields. As such we cannot say that they are economical units as all the decisions of the family are made by the Kacume. However, when the household takes its own decisions as in many casted households, the oldest person of the family only has an honorary status.

2 Land Tenure

The land tenure system among the Pulaar and the Soninke are complex systems. Samba Traore in his study tried to give an understanding of the Soninke tenure system. This study will deal essentially with three aspects: (1) the status over land, (2) the differences between male controlled fields and female controlled fields, and (3) the dynamics of the irrigated perimeters.

3.1 Status over cultivated fields

The study does not go into detail as to the types of ownership rights held by the farmers. It concentrates on two major aspects: owners and Leasees.

The 45 sample families in the three perimeters own 75% of the cultivated fields. Only 25% of the fields were leased. Table 7 shows that the majority of the owned fields are jeri and Irrigated fields. This reflects that there are more ownership rights on these types of fields as they are easier to obtain.

Table 7: Distribution of Fields by Type

	Owned	%	Leased	%	Total	%
Faio	5	3%	5	12%	10	5%
Fonde	7	5%	3	7%	10	5%
Irrigated	66	45%	15	37%	81	43%
Jeri	69	47%	15	37%	84	44%
Walo	1	1%	3	7%	4	2%
Total	148	100%	41	100%	189	100%

All the rented fields paid some form of land tax to the landowners. In Moudern however, the prevalent land tax was the ninan ciace. Table 8 shows that among 14 men who controlled fields, 12 paid the ninan ciace whereas only two fields paid a tenth of the production (diaka). The ninan ciace is not a fixed amount that is to be paid by the leasee. Rather, the leasee has the freedom to give whatever he can. For example, the field rented by Samba Ngolo Diarra from Hamidou Ndiaye yielded 2 tons of sorghum. However, Samba Ngolo gave to Hamidou only 25 kgs of sorghum.

In addition, there are other types of land taxes paid by the leasees to landowners in the reseeded fields (walo). For example, Samba Djele Camara, the land tax collector of the Baccili family in Diawara, said that he pays 2000 FCFA each year for the 80 fields of the Gong Xooré and the Gong Tugune as Ndioldi (type of licence to cultivated the reseeded field). Even though many of the leasees refuse to pay the tax, Camara does it to conserve good relationships with the Baccili family and to retain the control over these fields.

Table 8 : Land taxes paid by rented fields in Mouderv

	Male controlled fields		Female controlled fields		Total	%
	Diaka	Ninan Ciade	Diaka	Ninan Ciade		
Faio	1	1	0	0	2	5
Fonde	0	3	0	0	3	8
Irrigated	0	5	0	2	7	18
Jeri	1	3	0	21	25	66
Walo	0	0	0	1	1	3
Total	2	12	0	24	38	100
%	5	32	0	63	100	

2.2 Men and women fields

This sexual difference in land holding is a key aspect in land holding in the Bakel area. Women have always been discriminated against with regard to land access and we expect that there will be more leasees than owners among women.

2.2.1 Men and their fields

Among the 189 fields cultivated by 45 families, 121 fields (64%) are controlled by men. 88% of these fields are owned and only 17% of the fields were leased. This indicates that men have easier access to cultivated land as they sustain the family. Table 8 reflects that the irrigated fields owned by men represent 46% of the owned fields.

Table 9 : Distribution of men controlled fields by village among 45 families

	Owners			Leasseees		
	Moudery Fields	Bakel Fields	Selling Fields	Moudery Fields	Bakel Fields	Selling Fields
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
Falo	0	1	4	2	2	1
Fonde	0	1	6	2	0	1
Irrigated	20	15.34	17	5	2.34	1
Jeri	8	8	25	1	2	0
Walo	0	0	1	0	0	2
Total	28	27	45	10	6	5

Table 8 shows also that 68% of the fields cultivated by the Bakel and Moudery are irrigated fields whereas irrigated fields in Selling represents only 20%. In addition, 50% of the fields cultivated by Selling are rainfed. The situation in Selling came about because of the non-participation of the village of Guinobe in the perimeter this year due to better rainfall conditions.

The data suggests that the priority is given to irrigated fields in the villages of Moudery and Bakel. Indeed, irrigation constitutes a more secure agricultural system both at the level of production and tenure. Moreover, as land was distributed to family heads, the fields received in the irrigation perimeters were considered as texocré. As such, the heads of families mobilize all their labor for irrigation. The case of Moudery reflects better this situation as the Kagume are able to do intercropping of sorgnum in the high lands and rice in the low lands.

Another important aspect to consider when dealing with men controlled fields is the dualism between family fields (texocré) and individual fields (saloumo).

2.2.1.1 The texocré is the common field of the family. Whether the field is owned or rented by the family, it is considered as common field as long as all the members of the family help to develop it. The field is always controlled by the oldest male member of the family. The texocré is not necessarily one field. It is all the fields that are cultivated and controlled by the Kagume for family consumption. The texocré has the priority over all the remaining fields.

3.2.1.2 The saloumo are individual fields cultivated by the heads of households and male members within the family. It is granted by the Kagume. the production of the saloumo is used directly by the household or the male member for their needs. However, in the case where the Kagume feels that the taxone is not sufficient to feed the family, he can always take over the production of the saloumo.

3.2.2 Women and their fields

Access to cultivable land for women has always been a critical issue as both the Soninke and the Fulaar societies in this region do not give to women their shares on family holdings. This discrimination stays from the fact that there is the possibility of the women marrying outside the family. As such to avoid land fragmentation, women are discriminated against concerning the right to ownership of family holdings. They can be granted land to use but only on a temporary basis. Table 10 shows that among 12 women in Moudery, 75% received their fields from their family heads and the majority of these fields are irrigated fields (83%). Fields received from brothers or fathers by women is rare.

Table 10: Rented field from family members among 13 women in Moudery

	Father	Brother	Kagume	Total	%
Falo	0	0	0	0	0%
Fonde	0	0	0	0	0%
Irrigated	0	2	8	10	83%
Jeri	1	0	0	1	8%
Waic	0	0	1	1	8%
Total	1	2	9	12	100%
%	8%	17%	75%	100%	

In addition, table 11 shows that among 48 women 65% owned rainfed lands and 47% owned irrigated plots. The interesting case is that in the villages of Moudery only three women members of the women perimeter owned fields. In Salling none of the women owned an irrigated plot as they were not considered during the time of land allocation. However, in Bakel where both women and men were considered, women were able to have access to a plot. Only one woman in Moudery owned a rainfed field that she received from her father. Table 11 shows also that in Moudery, 92% of the women leased the rainfed land (jeri) they cultivated. None of

the women in Moudery and Bakel leased lands.

Table 11 : Land tenure Arrangements among 43 Women .

Types of Lands	Owners				Leasees			
	Moudery Fields	Bakel Area (ha)	Bakel Fields	Selling Area (ha)	Moudery Fields	Bakel Area (ha)	Bakel Fields	Selling Area (ha)
Faio	0		0		0		0	
Fonde	0		0		0		0	
Irrigated	2	0.6	17	4	7	0.66	0	0
Jeri	1		15		12		0	0
Walo	0		0		1		0	0
Total	4		32		20		0	0

The differences between Moudery and the other villages in ownership right results from the quality of the land and the distribution policy in irrigated perimeters. In Moudery, the rainfed lands cultivated by the women are generally fondé or low-lying lands which are owned by some families in Diawara and Gallade. Each woman pays land taxes, Ninan grace to the owner of the land. In Bakel, all the women rainfed fields are part of the Bakel Uroan extension Scheme. As such, they cultivate these lands which belongs to the Mayoralty without paying anything. In Selling where the lands cultivated by women are sandy soils(Jeri);any woman can have access to those lands.

Table 11 shows also that women in Bakel are better off as they have ownership right on the irrigated fields they cultivated.

2.3 Dynamics of tenure in village perimeters

Since their creation, the villages perimeter went through a lot of changes that affected positively or negatively their productivity. But as the sample perimeters are different, each case will be discussed separately.

2.3.1 The perimeter of Moudery II

In this newly created perimeter land allocation was according to families. Each family received a field in the perimeter. There was however, a discrimination among members in the size of fields.

Table 12: Plot and area distribution in the Moudery II perimeter

Area of field	Number of members	Total area	% Area/ total Area
0.35	1	0.35	0.4%
0.4	3	1.2	1.5%
0.45	16	7.2	8.6%
0.5	7	3.5	4.3%
0.56	1	0.56	0.7%
0.64	2	1.28	1.6%
0.72	71	51.12	62.2%
0.8	5	4	4.9%
1.04	7	7.28	8.9%
2.8	1	2.8	3.4%
2.88	1	2.88	3.5%
Total	115	92.17	100.0%

Table 12 shows the distribution of plots in the perimeter of Moudery II. There are 115 members and 115 fields. The number of fields is not important in this perimeter as there was some discrimination in land allocation. The people who received from 2.88 ha to 0.8 ha are the 14 members who participated in the creation of the perimeter. The majority of the members received 0.72 ha (62%). Nevertheless, we found cases where the Kacume allocated small plots (saloumo) to the members of their families, brothers, wives and sons.

There is an important aspect to consider in the village of Moudery with regard to land holding. The village has seven irrigated perimeters and many members hold lands in two to three perimeters. This requires a lot of labor from the household and more so in a village with a high migration rate. In addition, there are no new members in the perimeter. If a farmer leaves the perimeter, his field is allocated to another Kacume who is capable of developing it. For example, when Sada Dia, one of the founders of the perimeter, left to create his own perimeter, his field was taken over by Manthia Ndiaye. In the long run, if many members leave the perimeter, we may witness the concentration of land into fewer hands.

Moreover, prior to the creation of the perimeter, 78 women used to develop rainfed rice in those lands. After a lot of discussions where the head of the village refused to allow the implementation of the project, the members of cooperative were able to convince the head of the village to change his mind and thus finally received that land. Women not only lost access of their rainfed rice fields but also did not get plots in the

perimeter. Some of those women received land but from their husbands. The latter aspect is an important one as women do not control the field loaned by the husband as opposed to the previous situation when she had control over the lands she herself used for rainfed rice cropping.

2.3.2 The perimeter of Bakel/Collengal.

At the beginning of the perimeter, every household received between one to three plots of land depending on the size of the family. From the SAED list in 1986, there were 539 farmers involved in the project. This year, only 185 farmers cultivated. This may be the result of two primary factors: (1) the disengagement of the SAED who no longer provide input credit to the farmers and (2) the better rainfall condition which diverted farmers from irrigation. The trend of land holding in the perimeter of collengal is very characteristic. Table 13 shows that the area held by the 185 farmers increased 40.3 ha in 1986 to 70.8 ha in 1988. In average also, the area held by individual farmers increased from 0.2 ha to 0.4 ha. Moreover, there are lot differences across castes. The highest increase is among the Somono (fishermen) where one man control by himself 2.8 ha. In the land tenure aspect the different types of land acquisition will be discussed. An important point is that the land holding characteristics and the new SAED policy may affect the small farmers who due to the lack of input credit and with the increasing rainfall, will be obliged to turn toward a lesser costly cultural activity.

This increase in the size land holding among farmers is the result of land purchase that have occurred during these last years. Table 8 shows that 32.7 of all the plots cultivated this year were purchased. The purchase of a plot of land (0.20 ha) in the perimeter of Bakel amounts to 10,000 francs. This situation allows merchants, entrepreneurs, and government agents to acquire land and to have it cultivated by external labor or by tractors. This issue will be discussed latter.

Table 13: Distribution of castes and plots in the bakel perimeter (Collengal)

CASTES	Farmers	Plots 1986	Plots 1988	AREA 1986	AREA 1988	Average 1986	Average 1988	% 1988/1986
JARE	1	1	1	0.2	0.2	0.2	0.2	100%
kome	139	145	216	29.0	43.2	0.2	0.3	149%
MODI	2	4	16	0.8	3.2	0.4	1.5	400%
SGMONG	2	2	17	0.4	3.4	0.2	1.7	850%
TEGE	3	3	7	0.6	1.4	0.2	0.5	233%
xocré	37	48	92	9.6	18.4	0.3	0.5	192%
Garanke	1	1	5	0.2	1.0	0.2	1.0	500%
Total	165	204	354	40.3	70.8	0.2	0.4	172%

In the Bakel Perimeter, the dominant tenure arrangements are purchase of land (82%) and loans (8%). The concept of land purchase in the irrigated perimeter is a loose one. Indeed, all the village perimeters have a system of plot acquisition where all new members have to pay an entrance fee. In Bakel the entrance fee is equal to 10,000 FCFA; This applies to new members as well as to old members who wanted to get more land. This allowed the old members to increase the number of their plots that they hold within the perimeter. Also it allowed old members on certain cases who wanted to leave the perimeter to sell out their fields to other people, even though this practice was forbidden by perimeter members.

In addition, as SAED does not now provide input credits, a major incentive in irrigated perimeters, it can be expected that in the future there will be a lot of sales of land by small producers and women.

Table 14: Tenure Arrangements in the perimeter of Bakel-Collengal

	61	62	63	64	65	66	TOTAL	%
Gifts	0.5	0	0	3	1	2	6.5	1.3%
Loan	3	0	1	1	2	1	11	3.1%
Inherited	1	0	0	0	0	0	1	0.3%
Purchased	9.5	10.5	23	20	38	15	116	32.7%
Losses	0	6.5	1	1	1	0	9.5	2.7%
Sold	0	2.5	0	1	0	0	3.5	1.0%
Unchanged	20.5	44.0	75.5	40	11.5	15.75	207.25	58.4%
TOTAL	34.5	63.5	100.5	69	53.5	33.75	354.75	100.0%

The increases in area reflected by table 13 shows that there are a lot of

changes in land holding in the perimeter over these last two years. There are farmers who lost their lands and others who bought more land or who are new members. Tables 15 & 16 deal with the different categories of farmers in the perimeter.

Table 15: Distribution of farmers who have plots in different GPs

Size of plots (ha) 1986	Number of plots	Number of men	Number of women	Area 1986	Area 1988
0.2	13	9	4	2.6	9.8
0.4	3	3	0	1.2	1.8
0.6	3	2	1	1.8	3.5
0.8	1	1	0	0.8	0.4
	20	15	5	6.4	15.5

Table 16: Distribution of plots and new members in the Bakel perimeter

Number of plots	number of farmers	number of men	number of women	Total plots	Area (ha)
0.5	1	0	1	0.5	0.1
1	24	10	14	24	4.8
2	4	4	0	8	1.6
2.75	1	1	0	2.75	0.55
4	1	1	0	4	0.8
5	1	1	0	5	1
	32	17	15	44.25	8.85

3 Agricultural labor

The matrix of social relations of production in traditional and irrigated agricultural systems can be conceptualized into two broad categories: (1) family or household labor and (2) external labor.

3.1 Family labor

The family or household labor encompasses all the different members of the household or family. This labor work all the fields that sustain the family. Whether it is only a nuclear or an extended family, the only difference is the amount of land that is held and the different strategies adopted by the family to develop that land. Their access to land is in relation to the role they play within the family. For example, a young brother who is not working in the taxoore cannot pretend to a salcuma.

The differences in fields cultivated by the various members of the family leads to the distinction between the family fields controlled by the Kacume, the salcuma controlled by the head of household within the family, and the women's fields. Each of these actors have a different relationship with the labor of the family.

Table 17: Sources of Labor among 44 kagume

Source of Labor	Moudery (N= 13)	Bakel (N= 16)	Selling (N= 15)	Total	%
Brother	10	1	4	15	7.4%
Sister	0	1	0	1	0.5%
Son	31	30	23	84	41.4%
Daughter	0	8	0	8	3.9%
Female In Law	2	2	3	7	3.4%
Male In Law	0	0	3	3	1.5%
Resident cousin	2	12	3	17	8.4%
Niece	0	0	1	1	0.5%
Nephew	10	22	8	40	19.7%
Grand Daughter	0	1	0	1	0.5%
Grand Son	12	0	0	12	5.9%
Mother & Aunt	0	4	0	4	2.0%
Wives	4	4	2	10	4.9%
Total	71	85	47	203	100%
%	35%	42%	23%	100%	

Table 17 shows that the major source of labor of 44 Kagumé (Head of nuclear or extended family), are their sons (41%) and their nephews (20%). The participation of the family members in the development of the texcoré may be marginal such as the help of women though, all members within the family help to some extent the Kagume in the texcoré. This help may be different from village to village depending on the social organization and the status over cultivated land. For example, in the village of Moudery where the predominant family organization is the Ka, brothers help more their family heads as compared to the case in the urban area of Bakel, and that of the Pulaar village of Selling.

Table 18: Sources of Labor among 15 Heads of Households

Source of Labor	Moudery (N= 11)	Bakel (N= 1)	Selling (N= 3)	Total	%
Brother	0	0	0	0	0.0%
Sister	0	0	0	0	0.0%
Son	2	0	3	5	62.5%
Daughter	0	0	0	0	0.0%
Female In Law	0	0	0	0	0.0%
Male In Law	0	0	0	0	0.0%
Resident cousin	0	0	0	0	0.0%
Niece	0	0	0	0	0.0%
Nephew	0	0	2	2	25.0%
Grand Daughter	0	0	0	0	0.0%
Grand Son	0	0	0	0	0.0%
Mother & Aunt	0	0	0	0	0.0%
Wives	0	1	0	1	12.5%
Total	2	1	5	8	100%
%	25.0%	12.5%	62.5%	100%	

The same tendency was noticed in among the heads of household who generally do not profit from family labor other than from their sons or nephews. Table 18 shows that 62% of their labor are their sons and 25% their nephews. None of the other members of the family help the heads of households. The reason for this attitude toward the head of household is that generally all the members of the family have their own fields to cultivate and helping the head of household is not obligatory as it is in the texcoré. Moreover, their access to land depend on their relationship with the Kagume.

Women on the other hand rely heavily on their daughters (29%), sons (24%), and nephews (10%). The important aspect to consider among women is the

fact that they receive the help of all the members of the household. Table 19 shows that none of the 43 women received the help of their grand daughters. In addition, the data confirmed the hypothesis that women's source of labor was principally their sons and daughters.

Table 19 : Sources of Labor among 43 women

Source of Labor and the other means used to Develop the land	Mouderv		Bakel		Selling		Total	%
	Women of the Ka (N= 13)	Women heads (N=0)	Women of the Ka (N= 12)	Women heads (N= 6)	Women of the Ka (N= 12)	Women heads (N= 0)		
Brother	0	0	1	0	0	0	1	1.25
Sister	3	0	2	0	1	0	6	7.50
Son	3	0	10	5	1	0	19	23.75
Daughter	9	0	4	8	2	0	22	28.75
Female In Law	0	0	0	1	1	0	2	2.50
Maie In Law	0	0	1	0	0	0	1	1.25
Resident cousin	0	0	0	0	0	0	0	0.00
Niece	0	0	2	0	3	0	5	6.25
Nephew	0	0	7	0	1	0	8	10.00
Grand Daughter	0	0	0	0	0	0	0	0
Grand Son	0	0	4	1	0	0	5	6.25
Mother & Aunt	0	0	6	1	0	0	7	8.75
Husband	3	0	0	0	0	0	3	3.75
Total	18	0	37	16	9	0	80	100
%	22.50	0	46.25	20	11.25	0	10	

The data suggested that the Kagume receives more help from the family than the heads of household and women. This situation is the result of the supremacy of the taxone, where all male members are required to work over all the other family fields. The different labor requirement of all cultivated fields by the family members leads to a dependency on external labor.

3.2 External labor

The external labor encompasses all the different people who are not members of the family and who provide labor either under the form of help or under the form of wage laborers. The use of the latter type of labor compensation strategy is increasing in recent years to offset male family members outmigration. Free labor and paid labor are different in their relationships with the family that

they serve and their access to land.

3.2.1 The helpers are all the people who are related to the family but outside the Ka and who are not paid for the services rendered. Their relationship to the family may be determined by their use of the family land as in the case at Selling where Samba Guiro received the help of two cousins and two friends who cultivate on his lands under the form of a gift (Dokal). In the other villages, only one woman received this type of help from her friend. It is very important to differentiate these two types of help as the woman did not have land to grant to her helper. In any case, the data suggests that this type of labor compensation strategy is marginal.

3.2.2 The paid laborers encompasses what might be considered a more independent agricultural laborers whose productive relationship with the family is restricted to wage labor. In addition, there is no relationship between the laborer and the land. They can be differentiated under two categories: (1) local laborers and (2) migrant laborers.

3.2.2.1 Local laborers are the new associations created at the village level to carry both agricultural and non agricultural activities. This type of organization was found only in the village of Moudery. Two organizations, Egnincono and Kimbaka, were created by young people between 15 and 24 years of age in 1988. They are composed of both male and female members. Egnincono is composed of 50 women and 61 men; and Kimbaka is composed of 63 women and 24 men. The interesting aspect of these organizations is that all their agricultural activities take place in the afternoon as they have to work in the family fields in the morning or in their salcuma their other free mornings. Each association charges for any agricultural task 15,000 FCFA for two hours (8 P.M to 5 P.M).

In addition, these two associations are trying to unite in order to compete better with migrant laborers. Indeed, the day I visited them, they were having a meeting for possible unification. Their argument was that there was a lot of services that can be provided in Moudery once there is an organization in place. For example for any construction work, the association can be contacted by the village migrants. This will permit them to make money and at the same time help in the development of the village. However, only one aspect struck me during that meeting was that the money that was earned all year was just used for a big feast after the cropping season.

3.2.2.2 Migrant laborers are composed of Malinkes from Mali. Most of them transit through Senegal where they work for a while to make enough money to buy their tickets for Europe or other African countries. They represent 98% of all external labor used by the family. This category of laborers are composed of resident migrants and temporary migrants.

The resident migrants are the laborers who live with the family and who have a three-day contract with the family. They work in the family fields from 7 A.M to 3 P.M. They are lodged and fed by that family. On the other days of the week they are free to provide services either to the host family or to other families on the basis of 500 FCFA for the afternoons and 1000 FCFA for the mornings. These migrants do not contract land. Hence they are independent from the family. In many cases, they are used by the heads of households and women to cultivate their fields. In such case, all their services are paid whereas in the case of the tekoué, they are only paid if the Kagume decides to use them other than their required days of work. The resident laborers represent only 3% of the total external labor used by the family.

Temporary migrants represent all the laborers who do not reside with the family for whom they work. However, they can be a resident laborer in another family. In Seling, all these laborers are from a Malian neighbouring village. Temporary migrant labor is more often used by farmers as shown by the following data. Tables 20, 21, and 22 summarize the labor sources among 44 families. The temporary migrant workers represent 78% for the Kagume, 87% for the heads of households and 97% for the women. These percentages confirm the hypothesis that women use a lot of temporary labor as the help they receive from the members of their families is marginal.

Source of labor	Moudary (N= 13)	Bakel (N= 16)	Seling (N= 15)	Total	%
Non Resident Cousin	0	0	2	2	0.7%
Friends	0	0	2	2	0.7%
Women Associations	0	0	0	0	0.0%
Young People Associations	4	0	0	4	1.4%
Temporary Hired Labor	78	143	1	222	77.3%
Resident Hired Labor	13	12	7	32	11.2%
Other sources of Labor	0	22	0	22	8.1%
Total	95	178	12	285	100%
%	33.3%	62.5%	4.2%	100%	

Table 21: Other sources of Labor among 15 Heads of Household

Source of Labor	Moudery (N= 11)	Bakei (N= 1)	Selling (N= 3)		
Non Resident Cousin	0		0	0	0%
Friend	0		0	0	0%
Women Associations	0		0	0	0%
Young People Associations	0		0	0	0%
Temporary Hired Labor	12	5	2	20	67%
Resident Hired Labor	3		0	3	13%
Other sources of Labor	0		0	0	0%
Total	16	5	2	23	100%
%	69.6%	21.7%	8.7%	100%	

Table 22 : Other sources of labor among 40 women

Source of Labor and the other means used to develop the land	Moudery		Bakei		Selling		Total	%
	Women of the Ka (N= 12)	Women heads (N=0)	Women of the Ka (N= 12)	Women heads (N= 6)	Women of the Ka (N= 10)	Women heads (N= 0)		
Non Resident Cousin	0	0	0	0	0	0	0	0
Friend	1	0	0	0	0	0	1	0.61
Women Associations	1	0	0	0	0	0	1	0.61
Young People Associations	1	0	0	0	0	0	1	0.61
Temporary Hired Labor	31	0	54	42	32	0	159	96.95
Resident Hired Labor	0	0	0	2	0	0	2	1.22
Other sources of Labor	0	0	0		0	0	0	0
Total	34	0	54	44	32	0	164	100
%	20.73%	0%	32.93%	26.83%	19.51%	0%	100%	

Table 23: Summary of labor uses among 44 families

Family Labor	Kagume Heads of Household Women	Moudery	Bakei	Selling	Total	%
		71	85	47	203	70%
		2	1	5	3	3%
		18	53	9	60	27%
	Total	91	139	61	291	
	%	31%	46%	21%	100%	
External Family Labor	Kagume	95	172	12	285	60%
	Heads of Household	16	5	2	23	5%
	Women	34	96	32	154	35%
	Total	145	281	46	472	62%
	%	31%	60%	10%	100%	

In conclusion, the data suggests that among the 44 sample families, external labor plays a greater role in the development of the fields. Family labor represents only 31% of total labor among which 70% of that labor was used by the Kagume. External labor represents 62% of total labor. In this case also, the Kagume uses 50% of that labor. Table 23 suggest also that women in Bakel uses more family labor and external labor than women in Moudery and in Seiling.

In addition to the uses of external labor, the family is obliged in some cases to use other compensating strategies. Such compensating strategies are all the other forms used by the family to develop their fields other than labor, for example herbicides or animal traction. The village that used most these compensating strategies is Bakel. All the three categories considered, Kagume, Heads of household, and women used to some extent these strategies. In the village of Moudery only one head of household used tractors and herbicide. This is an isolated case as the farmer controls 15 ha of lands. Moreover, as a head of household, he does not benefit from the family labor. He is obliged to uses both external labor and labor compensating strategies. In the village at Seiling, none of the farmers used these compensating strategies.

Table 24: Compensating labor strategies among 44 Kagume

Source of Labor to Develop the land	Moudery (N= 13)	Bakel (N= 16)	Seiling (N= 15)	Total
Tractor	0	199845	0	199845
Animal traction	0	18000	0	18000
Herbicide	0	96000	0	96000
Total	0	313845	0	313845

Table 25: Compensating labor strategies among 15 Heads of Household

Source of Labor	Moudery (N= 11)	Bakel (N= 1)	Seiling (N= 3)	Total
Tractor	353500	3500	0	353500
Animal traction	0	0	0	0
Herbicide	127150	7150	0	127150
Total	470650	10650	0	480650

Table 26: Compensating Labor Strategies among 40 women

Source of Labor and the other means used to develop the land	Moudery Women of the Ka heads of HH (N= 12)		Bakei Women of the Ka heads of HH (N= 6)		Selling Women of the Ka heads of HH (N= 10)	
	Women	Women	Women	Women	Women	Women
Tractor	0	0	3750	0	0	0
Animal Traction	0	0	9000	0	0	0
Herbicide	0	0	0	0	0	0
Total	0	0	12750	0	0	0

Other than the constraints posed by the shortage of labor, it is important to understand the quality of the labor involved in agricultural production and their participation in the development of the family fields.

3.3 Labor quality

The issue of labor quality is an important one in agricultural production. Many people can be involved but the question is: "are they capable of developing and cultivating the fields?"

Table 27: Labor quality among 45 families

AGE	Female			Male			Total Male	Total female	Total
	Moudery	Bakei	Selling	Moudery	Bakei	Selling			
10--15	5	19	7	23	31	12	71	31	102
16--20	11	19	13	13	20	14	47	43	90
21--25	29	20	23	22	26	27	75	72	147
26--30	24	17	13	16	11	15	44	54	98
31--35	5	17	9	12	6	5	25	31	56
36--40	5	6	7	13	2	9	23	18	41
41--	1	5	6	12	14	7	33	12	45
	91	103	77	118	112	86	315	261	576

Table 27 shows that the majority (42) of the members among the 45 sample families are between 21 and 40 years of age. This seems to indicate that the quality of labor is good in these families. If that is true

case, we could miss understanding the social organization of the Boninke and Fulani and also the trend of male outmigration. Hence to better understand the issue of labor quality within agricultural production, it is important to know the people participating in the development of the taxone.

3.4 Participation in the development of the taxone

Participation on the commonly developed family fields, taxone, is an important issue in the Boninke region as these fields sustain the families and require the participation of all family members. However, as women are generally discriminated against in their access to family lands, levels of participation in the development of the taxone between male and female could be addressed separately.

3.4.1 Women participation in the development of the taxone

Women participation is a very important aspect of the household labor allocation as this region witnesses a large male outmigration. The general hypothesis is that "men are gone and women have taken over agricultural activities" to sustain their families. This of course is a very important point as women are the remaining labor force within the household and as such are expected to replace emigrant men in farm activities. But, this hypothesis does not consider the social organization of the Boninke and Fulani living in the Bakel area. There are a lot of differences among villages and ethnic groups which result in different women's attitudes with regard to family fields. The two tables below deal with the participation of women in the development of the taxone.

Table 28: Percentage of non-participation of women in the taxone

AGE	M-F-H	B-F-H	B-F-H	Average
10-15	100%	39%	100%	76%
16-20	100%	43%	92%	85%
21-30	100%	75%	100%	92%
31-40	100%	55%	100%	88%
41-50	100%	59%	100%	86%
51-60	100%	33%	100%	74%
60---	100%	100%	100%	100%
Average	100%	76%	99%	92%

Table 29: Participation of women in the taxone

AGE	M-F-YES	B-F-YES	S-F-YES	Average
10--15	0%	11%	0%	4%
16--20	0%	37%	3%	15%
21--30	0%	25%	0%	8%
31--40	0%	35%	0%	12%
41--50	0%	41%	0%	14%
51--60	0%	17%	0%	6%
60---	0%	0%	0%	0%
Average	0%	24%	1%	8%

M = Moudery
B = Bakel

S = Selling
F = Female

No = Non Participation
Yes = Participation

Tables 28 and 29 show that the involvement of women in the development of the taxoune is very small. Among the 47 interviewed households, there were 215 women and only 8% participated in the development of the taxoune. The only villages where we find women involvement in the taxoune are the village of Bakel (24%) and the village at Selling (1%).

In Bakel, the participation of women is the result of the prevalence of the nuclear family as the main social organization. As such, women play a greater role in helping their husband in agricultural activities such as planting and gathering during the harvest period. The women who are involved are between the age of sixteen and fifty. After that the participation declines and becomes nil at the age of sixty and above.

In Moudery, the overall needs of households, from the perimeter of Moudery II, claimed that women in their households did not participate in the taxoune activities and that women cultivated only their own fields with the help of their daughters. This fact was hard to believe; but when we went to the perimeter, women who were in the perimeter cultivated their own field with the help of their daughters and sons in the afternoon. However, in the second phase of the study, some of the Waguma responded that women helped them during the harvest. Their main activity was to gather the harvested rice of sorghum. In return, each woman receives a sandiana Kouwe which is a gift given by the field owner to the people who assisted him during the harvest. The same type of gift is given to women and outside help who have assisted the farmer all along during the agricultural season. For example, Samba Ngolo Diarra gave to each of the four women of his household who helped him 10 Kgs of sorghum daily for 5

days.

In Seling, the participation of women in the family fields was marginal: only one class age (16-20) helped their family heads. We suspect that in Seling contrary to Moudery it is the daughters that help their fathers as married women cultivated their own fields where they generally planted peanuts.

The differences in the women's participation in the taxcone may reflect the status of women over family lands. In the villages of Moudery and Seling, all the people and even women who were interviewed affirmed that they did not inherit family holdings. The only land they themselves cultivated were developed by them or received from their mothers or mothers in law as a gift or as an inheritance. In some cases, women received plots in the family irrigated fields through their husbands. This type of occurrence takes place only when the family have a large field as it is the case in the perimeter of Moudery II. The important aspect that one must always consider is that women retain that access to land only if they stay within the family. Once they are divorced, they loose access to that field. Bakel is the only village among the three that were studied where we found cases of women inheriting their husbands lands and owning their own irrigated plots. Is this due to the breakdown of the extended family and the prevalence of the nuclear type of organization?

Women's participation in the taxcone also gives an indication as to sexual division of labor and land access over the family fields. Women are both discriminated with regard to access and work on those lands. Nonetheless, this does not mean that women do not play an important role in sustaining their families. The issues of participation in the taxcone and the role played by women in sustaining their families should be addressed separately. Male family members can migrate but the taxcone will always stay under male domination while women may increase their household revenues by getting involved in more agricultural activities out on their own fields. Thus, we will retain that the involvement of women in the development of the taxcone depends on the socio-economic organization of the family, whether it is nuclear as in the case of Bakel, or extended as in the case of Moudery. We should not infer that women are taking over male activities in the Bakel region as their participation may not be very significant in some of the villages. Nonetheless, in the urban area of Bakel we may expect the women to take over all the farm activities with

the help of their children in Bakel as they are the only remaining labor force within this nuclear family household.

3.4.2 Men participation in the development of the taxone

The taxone are perceived in this region as men's fields. As such the men are the only one, among both the Soninke and the Fulaar, who have access to those fields. It is in the taxone that the oldest person of the family, Kacouma, has the right to make decisions on land and household matters. All the other members of the family whether married or single are considered only as labor available to the family. They can hold individual fields but are required to work on the taxone five mornings a week. However, with male outmigration and the insignificant participation of women in the taxone activities, how does the Kacouma develop these fields when confronted with labor shortage? What are the periods where the household may witness labor constraint.

Table 30: Non-participation of men in the taxone

AGE	M-NO	B-M-NO	B-F-NO	Average
10--15	11%	6%	3%	8%
16--20	8%	15%	0%	8%
21--30	66%	27%	41%	45%
31--40	83%	27%	37%	66%
41--50	65%	50%	40%	58%
51--60	48%	50%	0%	32%
60---	33%	50%	29%	37%
Average	46%	32%	29%	36%

Table 31: Participation of men in the taxone

AGE	M-F-YES	B-F-YES	B-F-YES	Average
10--15	89%	94%	92%	92%
16--20	92%	85%	100%	92%
21--30	33%	73%	55%	55%
31--40	17%	73%	13%	34%
41--50	17%	50%	50%	42%
51--60	54%	50%	100%	68%
60---	37%	50%	71%	65%
Average	51%	66%	71%	64%

M = Mouderv

B = Bakel

B = Belline

M = Male

No = Non Participation

Yes = Participation

Table 31 shows that in average the participation of men in the development of the taxooné (64%) is predominant. However, the scope of their participation is correlated with their age. In the three villages, there are two levels of participations: (1) from the age of 10 to 20 years old and (2) over 51 years old. This shows that, the period of greater non-participation is between 21 to 50 years old. This poses a real problem as the quality of the labor present in those fields is low in some cases. This situation may impact negatively on the production. There is however, a significant differences between villages in the participation of the three groups of men.

In the Perimeter of Moudery II, 52% of all the 181 male members of the families participated in the taxooné activities. All the 48% were absent and did not participate. This village witnessed a big male outmigration from the age of 21 which is the period of maturity. The dire shortage of labor in this village is between 31 to 50 years old where only 17% participated in the taxooné activities.

In the village of Bakel however, 68% of the 112 male members of the families participated in the taxooné activities. The other 32% did not participate because they were absent. Their participation is more homogeneous.

In Selling, a Pulaar village, the non-participation is lower than in Moudery (29%). The lowest point of participation is at the age of 31 to 40. In all the other age levels, the percentage of participation is above average. Moreover, we have two periods of total household participation: (1) between 16 and 20, and between 51 to 60 years old. At the first level, all the young people who did not succeed in school are involved in agricultural activities and start to work and save for their migration. And this can be seen in the rapid drop of participation from 100% to 59% of the over 21 age group (21-50). The other change in level occurs due to the return of village migrants and their subsequent involvement in agriculture. In the village at Selling there is another explanation for this change which is due to the 1980 French policy of giving to all the migrants who wanted to go back home some capital to start a farm in their own village. This was the reason for many returns and all these people were involved in agriculture.

Overall, the issue of participation showed that the texcore was the men's fields and that women participation was marginal. The important aspect that this participation poses is the quality of the labor that participate in the work of the texcore . From our interviews, the majority of the heads of households relied on external labor, tractors from SAED and the Federation, and from animal traction.