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IRRIGATION AND THE DYNAMICS OF ACCESS TO LAND IN THE VILLAGE OF MOUDERY

by

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I. Introduction

The research upon which this report is based was conducted over a one year period, January to December 1988. My time was spent primarily in the village of Moudery, yet I also took trips to Diawara, Bakel and other villages in the department of Bakel. Information was gained through extensive and numerous interviews and discussions with village members, Rural Councilors, SAED officials, other researchers, other team members, and AID employees. Two surveys, one of households of the village, and the other of rice farming men of Moudery I, as well as a census of the fields of Moudery I provided the quantitative data.

The report takes a case-study approach and discusses only one of the 21 villages included in the USAID Bakel Small Irrigated Perimeters (BSIP) project and its successor, Irrigation and Water Management I. As a result, breadth of understanding the widely differing villages of the department of Bakel has been sacrificed for depth of comprehension of the dynamics of land tenure. Yet there is no better village in which to study the topic of this report: equity and productivity on the perimeters in the context of the nationalization of control over land. Not only is Moudery the village the most involved in the Bakel project, it is also the seat of the Rural Community. Moudery is not the same as the other villages in the project, yet it shows signs of what may be the future for them all.

In addition to being limited geographically, this report is also limited in that it discusses only control over land by men in Moudery. Although the perspective on resource control in Bakel presented here applies to women as

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much as men, the specific history of women in Bakel, vital as it is, is not presented. It is hoped that this lack will be made up by other reports in the Land Tenure Project, and by other researchers in Bakel.

Land tenure in the department of Bakel is undergoing enormous change. Local institutions which for hundreds of years have allocated land are being replaced by nationally established institutions. Among the Soninké population in the department of Bakel, until recently land has been distributed primarily through a system of caste whose roots are found in the ancient kingdom of Gadjaaga (see Traore 1987). More than a hundred years of colonization by the French did little to change this system. Yet in the past ten years, the Rural Council and the irrigated perimeters have overturned this stratified structure of control in favor of a more modern system.

This transformation of land tenure has had decided effects on the productive use of land as well as the equity of its distribution. In an earlier report on the Soninké of Bakel and the BSIP perimeters, J.-Y. Weigel argued that the system of distribution of rights in land through caste was not only inequitable, but also unproductive (Weigel 1982). Much of the money remitted by the numerous Soninké migrants in France was quickly spent on social expenses designed to maintain or increase an individual's status. Lavish gifts, imported foods, high brideprices, a whole panoply of practices characterized by Weigel as "ostentation and hoarding" ("pratiques ostentatoires et de thesaurisation") were required for an individual to maintain his position in the caste structure. For the descendants of noble houses, the "xoore," this enabled maintenance of privileged positions from which they could tap the wealth of the descendants of slaves, the "kome." It is because individuals invest in status in order to maintain access to resources in a caste system that more immediately productive investments are forgone, and productivity is lowered.

In Bakel, one of the main roles of caste has been to determine access to land. Land has not been distributed through the market, or by a government using objective criteria, such as the ability to use productively. In the caste system of Bakel, access to land has been gained through personal relationships, mostly kin and patron/client relationships. On the whole, an individual has gotten access to a field because he/she was a member of a house that controlled land, or a member of a client family to a house that controlled land. To a great extent, status, who one was, determined access, not what one did, or could do. It was a society where nobles were no longer rulers, in a region not yet reached by the national government.

The nationally established institutions that now in part determine an individual's rights in land in Bakel were designed to fill this void in government and improve on unproductive local systems of land distribution. By giving control over the distribution of use-titles in land to the local communities, the Law of National Domain[1] was designed to break domination of land control by local elites. By granting these titles on the basis of productive use of land, it would increase land's productive use. The granting of titles itself is supported by neo-classical economic theory, which argues that increased security of land tenure encourages individuals to increase investment in land; the allocation of land titles is the most commonly proposed method of increasing security of individual tenure.

SAED and producer groups, two institutions that, like the Rural Council, were established by the national government, have also strongly affected local land tenure. Their policies may also weaken the role of caste in the allocation of rights in land. In 1982, Weigel argued that SAED's system of distributing land through a lottery assured access to perimeter land regardless of caste. At the same time, it not only ensured more equitable distribution of land, but, because it undermined xoore control over land, undermined the caste system, and encouraged a more productive investment of migration remittances. Because land on the perimeters was outside of xoore control, kome invested heavily in them.

This report considers in turn the Rural Council of the Moudery Rural Community and the perimeter producer's groups of the village of Moudery. It discusses first the organization and procedures of these institutions, then examines how land has been distributed (SAED, because it has no independent role in determining land tenure, is considered only in relationship to the Rural Council and producer's groups). For each institution, the report assesses the extent to which the Soninké caste structure been integrated into the institutions' process of distribution of land. Because the goal is not simply to replace caste as a system of distributing land, but also to replace it with something better, the report assesses the success of the nationally established institutions in impartially distributing land along pre-established criteria, and granting individuals secure rights in land, through title or otherwise. In this way, the report considers the extent to which the new system of land tenure provides a basis for productive investment.

II. The Rural Council and the Rural Community of Moudery

The village of Moudery is central in the newly established Rural Community of Moudery. The Rural Council was created and its members elected five years ago, in 1984. The village of Moudery serves as the community seat, and is one of the most influential of the 8 villages in the community, sending five of a total of 21 councilors, one of whom is the council President (see Bloch 1987).

Local observers, usually xoore, will tell you that nothing has changed: that the xoore still determine allocation of the land, that they have simply moved their base of power to the Rural Councils. People support this argument with the fact that the majority of the council members are xoore. Non-xoore council members, they say, are puppets for the xoore. In the Moudery community, the President is xoore. The vice President is xoore. All contenders for the presidency have been xoore. Of the three xoore councilors in Moudery, two are Presidents of perimeter producer's groups. The third was considered for a planned perimeter, but "because he had too much land already" will be vice President. Neither of the two kome councilors from Moudery have been allocated land or are Presidents of producer's groups. As is shown below, no large allocations of land have gone to kome.

Furthermore, the kome on the council do not vote as a bloc. Four of the Moudery councilors have formed two pairs of alliances, each composed of a kome

and a xoore. The allied councilors tend to take the same positions in debates on the council floor as well as vote together, so kome vote against kome, and xoore against xoore. While one hundred years ago, xoore from Moudery might have challenged outside control by nobles of the kingly line from Tuabou, today the battle lines are not wildly different. One of the two factions of councilors is aligned with the traditional elite of Moudery, as well as the Federation (La Fédération des Groupements Agricoles de Paysans Organisés en Zone Soninké du Département de Bakel). This alliance has supported allocations to relatives of the chiefly line of Moudery, and the inclusion of traditional land holders in perimeters. The other faction is aligned with a National Assembly député from the village and sees itself as the flag bearers for the national government and modernization. It has supported the allocation of land to individuals whose traditional claims are not as strong as claims based on national political and governmental institutions.

Granted these similarities and the fact that caste is still one important factor determining individual potential and influence, there are many indications that, although individual xoore may presently have greater influence in the council, their relationship to the kome of the council is significantly different from the xoore/kome relationships of the past; and, more importantly, the institution of the council itself works against the historic mediation of control over land through caste.

Concerning the relationships between the councilors themselves, they are alliances of choice and mutual benefit. Caste creates differential access to resources. The kome, in part through his affiliation with the higher-status xoore, gains access to the council and in return grants to the xoore his political (and sometimes financial) support. Although the alliances may be across caste lines, the xoore and kome involved are not paired according to the original slave/master ties between families. Indeed, one of the kome is allied against a councilor who, one hundred years ago, would have been his master. Furthermore, although they are based historically on violent capture, caste relationships have evolved, so that now, between the councilors, they are bonds of true friendship. One of the xoore is godfather to the kome's son; the other xoore spends each evening with his kome ally drinking tea.

Another indication of the changing relations between castes in Moudery as important as the relationships between individual councilors themselves is the fact that the Rural Council is a new institution for the allocation of rights in land. The institution of the Rural Council itself, no matter to whom it allocates land, changes the terms of control over land. The factions on the council are not like noble factions of the past deciding who will control what land; they are bringing land into an new system of land tenure. An allocation by the Rural Council takes land out of the traditional system of land control, and in doing so, undermines one traditional basis of xoore control in society, the control over land. Thus, although land may be allocated to a member of the traditional elite, any allocation of land takes a bite out of the traditional system of land allocation. In this sense, even if the council is dominated by xoore, the council undermines the institution that gives meaning to being xoore.

A. The Process of Land Allocation

The process of application for use rights in land is centralized through the council President. Individuals or groups seeking title to land present their request to the President, who then presents it to the body of the council at their general meetings, which are held roughly quarterly. The council members then discuss the application and vote on it, sometimes after changing the terms of the allocation (amount of land, specifying location). If a quorum is present, a simple majority is required to pass a land allocation, though in the Moudery council, the vast majority of such votes have passed unanimously.

Traditional village chiefs have no official role in this process, although they are allowed to sit in on the council sessions, as are other interested parties. Sometimes visitors are invited to talk by the councilors, though they do so at the discretion of the council.

Requests for use title in land passed by the Rural Council as well as those rejected, are reviewed by the prefect. The grantee is then brought a record of the allocation by the government police. The allocation becomes effective on the condition that the land be put into use within a time period specified by the council (in Moudery, it was initially 12 months, later revised to 18 months). A records of the council vote is kept by the council along with minutes of the hearing.

B. Criteria for Allocation of Land

Currently unfarmed land is allocated according to the applicant's ability to develop it for productive use. Both the council and the prefect have established commissions to determine the appropriateness of requests for allocation. These commissions primarily examine two criteria:

1. That the land requested is available in the amount requested. That is, that the land both exists and is not currently being farmed. If some of the land is currently being farmed, or has been farmed within the past 4 years, that amount of land is taken out of the amount allocated. In some cases where the land is being allocated for a perimeter, alternate arrangements are made, and current users wave their rights to the land upon the condition that they are included in the perimeter to be created at that location.

2. That the person or group requesting the land has the necessary resources to put the land into use. Since most large allocations are destined to be perimeters, the principal factors here are the number of individuals who are expected to be included in a producer group and the size of the allocation. Early in its existence, the council established a 50-hectare limit on the size of allocations. Since then, on at least two occasions, the council has required individual grantees to create producer groups when granting large amounts of land. When the prefect reviews allocations, his local delegate, the Chef du Comité d'Expansion Rurale (C.E.R.), requests a list of prospective group members.

In addition to reviewing the list of allocations granted, the Chef du C.E.R. also reviews the list of allocations denied. His explanation for doing this was that the Rural Council is a political body and "can't be allowed to deny allocations on grounds of political party affiliation." This claim that political party affiliation plays a role in the allocation process was supported in conversations with members of the council. The extent to which Senegal's national politics have influenced the allocation of land titles by the Rural Council is difficult to measure, but it is clear it plays a role. The summary of the Rural Council allocations below suggests the choices the council has made in its allocations, and how, for reasons such as party affiliation, it has strayed from being impartial.

C. To Whom Have Allocations Been Made?

As Table 1 shows, of the 59 officially recorded requests for land from the Moudery Rural Council, representing a total of 2514.3 hectares, 53 requests representing 1522.5 hectares have been allocated by the Rural Council in 7 sessions between 1984 and 1987. Allocations have ranged in size between 1 and 200 hectares, with the average size being 29 hectares.

Below is a summary of the characteristics of the major recipients of use-titles in land for the Moudery community. It is based on the sometimes sketchy Rural Council records, yet may begin to show the central conflict of the allocation of land in Moudery: the conflict between traditional claims on land, and claims based on the new nationally established institutions.

1. To Members of the Community

According to the Moudery Rural Council President, the council may allocate up to 25 percent of the community's land to individuals or groups from outside the community. However, only one allocation has been made to an individual from outside of the Moudery community: the case of a SAED administrator stationed in St. Louis, who may have intended to have the perimeter run by his brother, stationed in Bakel. He has since released his claim to the land.

2. For Irrigated Perimeters

Thirty seven of the allocations have been greater than 10 hectares. These allocations were made with the general understanding that they were being made for perimeters. They represent 95 percent of the land allocated. Of these allocations, 22, representing 50 percent of the total area allocated have been to producer's groups. Thirteen, representing 42 percent of total land area allocated, have been to individuals. The remaining 2 allocations over 10 hectares were to SAED. They represented 5 percent of the total land area allocated.

3. To People Living in Moudery

Thirty-one percent of total land allocated. Moudery has gained the most of any village from the Rural Council allocations, yet in some ways, it is the village most in need of land. The lack of traditional rights in local land

Table 1
Moudery Rural Council Land Allocations: March 1985-April 1987

	Area Allocated (ha.)	Number of Requests	% of Total Area Allocated	% of Total Number of Allocations	Area Requested Unallocated	# of Requests Not Fully Allocated
By Village						
Moudery	465	26	30.5	49.1	268	8
Diawara	378	18	24.8	34.0	285	5
Other villages	680	9	44.6	17.0	523	6
TOTAL	1523	53	100.0	100.0	1076	19
Total Requested	2514	59				
By Subgroup						
Youth Groups	105	7	6.9	13.2	0	0
Women's Groups	200	9	13.1	17.0	0	0
Producer Groups	775	22	50.9	41.5	310	4
Individuals	673.5	39	44.2	73.6	585	13
< 10 ha.	42.5	16	2.8	30.2	221	9
> 10 ha.	1480	37	97.2	69.8	855	10
> 10 ha. individual	635	13	41.7	24.5	455	7
> 10 ha. groups	775	22	50.9	41.5	220	2
> 10 ha. SAED	70	2	4.6	3.8	180	1
Rural Council Members	460	6	30.2	11.3	265	4

Notes: Figures are derived from rural council records and must be treated with some caution due to ambiguities in the records. For instance, 85 ha. which were granted do not show up on the list of requests. Village figures, Moudery and Diawara indicate allocations to groups or individuals from these villages. "Rural Council members" include allocations to individuals known to either hold political office or be brother or uncle to a rural council member. Included are instances the author happened to be aware of. It is possible that more exist.

(see Traoré 1987) as well as the substantial loss of farm land in recent years may in part explain why people of Moudery have applied for and been granted so much land for perimeters, and why perimeters as a whole are more successful in Moudery than in other villages in the Department of Bakel. Not only is little of the land surrounding Moudery traditionally held by citizens of Moudery, but the village has also recently lost much land on the other side of the river as a result of conflicts with herders and the Mauritanian government (see Bloch 1989). Compounding this loss, in the past twenty years the river has shifted its course and eaten away much of the residential land in Moudery, forcing the villagers to build their houses on land that once was farmed. Finally, the perimeters have claimed land. All the land on which perimeters now exist was once farmed; much of it would have been farmed this last year even if the perimeters did not exist.

4. To Holders of Rights in the Land on Which Perimeters are Constructed

A review of the caste of user group Presidents to whom land has been allocated in the Rural Community of Moudery suggests than very little land has been allocated to members of the non-land holding kome caste. No kome have been allocated land in Moudery, not even members of the families of the two kome members of the Rural Council. In the village of Moudery itself, a majority of the land has been allocated to producer's groups whose Presidents are xoore or jaagarafu (descendants of a select group of slaves who had been granted land administration rights by the Soninké royal family of Tuabou or other large landowners in the nineteenth century), whose families traditionally had rights in the land allocated. Of the allocations over 10 hectares that have been granted individuals, in every case the family of the grantee had traditional rights in the land allocated.

On the other hand, maintaining historic rights in land has by itself not proven to be sufficient grounds to be allocated use-title. The one case in which the records of the council recorded the grounds on which a request was denied provide an example: The chiefly family of a village requested 40 hectares allocated for a village perimeter. The land involved was land which the family historically "owned." It become clear to the members of the Rural Council through the work of their committees that 10 hectares of the land concerned was being used by another family. In the council session in which the President first presented the request, both kome and xoore council members were recorded as having protested that it was not the role of the Council to legitimize traditional claims to land. The issue has since been resolved. The land was allocated, and the family who was farming there was promised 10 hectares of land on the perimeter once it was created.

5. To Holders of Political Offices

At least 30 percent of the land allocations over 10 hectares has been allocated to Rural Council members and holders of political office or members of their close family (a brother or an uncle). Of Moudery's five perimeters that have been developed on allocated land, one was allocated to a National Assembly député, and one was allocated to the uncle of the President of the Rural Council, who now serves as its producer group President.

6. To "Target Groups"

A certain proportion of the allocations have gone to groups whose members might otherwise be left out of the development process. Six percent of the land has gone to "Youth groups." Thirteen percent has gone to "Women's groups." In Moudery, a perimeter is being planned specifically for members of the village who have less than two plots in existing perimeters.

Even here there are signs of the politicization of the land distribution process. Although the allocation of land to Youth and Women's groups must be to some extent a sign of the concern the council members have for these sectors of their society,[2] as well as, perhaps, a sign that the councilors are influenced by the vote of their constituents, this concern is expressed in the same context as the rest of the allocations. In Moudery, the Youth Group perimeter is generally seen as a gesture to the traditional elite of the village: its President is the son of the effective chief of the village. The President and Vice President of the Women's Group have their own independent political bases and ally themselves with the different factions of the Rural Council mentioned above. The "Youth" and "Women's" groups are not outgrowths of traditional Soninké groups, nor are they abstract groups, but they are rather officially-recognized supporting branches of the national governing party.

D. The Rural Council and SAED

SAED plays no official role in determining the Rural Council's decisions to allocate. Members of SAED are not required to inspect land officially before it is allocated to determine its suitability for irrigation. SAED officials do not regularly sit in on council meetings, nor does SAED have veto power on the decisions of the Rural Council. Nevertheless, SAED does play a role in determining whether allocations that have been made become active. None of the titles to land over 10 hectares are made good until SAED constructs a perimeter on the land, because they have not yet been put into productive use. It is even possible that the Rural Council could revoke past allocations because the land involved was not developed within the time limit established by the council, though this has not yet occurred. Thus, particularly when there are several outstanding allocations of land ready to be made into perimeters, as has been the case in Moudery since 1984, SAED strongly influences the distribution of land; the council itself determines only a fraction of the total set of conditions necessary for the particular individual to farm a particular plot of land under irrigated conditions.

On the other hand, because of problems that have occurred elsewhere along the river when it has not done so, SAED Bakel does have a policy to develop only land which has been allocated by the Rural Council. Thus, SAED relies on the Rural Council to make allocations so that it has enough suitable land to develop to enable it to fulfill its annual land development quotas. One explanation given by an AID technician for the development of the perimeters discussed below was that SAED had no other suitable land to develop.

The case of the perimeter of Djibi N'diaye may serve to demonstrate the extent of SAED's influence in determining rights in land. It also shows how,

because the Rural Council and SAED are recently-developed institutions of a young government in which much is not yet institutionalized, a certain amount of "extra-institutional" behavior goes on. Official roles and personal interest join, as individuals use claims supported by local traditional institutions as well as newly-established national ones to gain access to developed irrigated land. Barely regulated conflict involves overlapping allegiances to villages, families, SAED and the Rural Council; and, in this case, resulted in the abandonment of one perimeter for at least one year, as well as the unmeasurable expense of the social cost of this conflict's resolution.

In 1985 the Rural Council allocated 50 hectares to "Djibi N'diaye, Gallade." In a session when several allocations were made, this one stood out and was defended by a the President of the Rural Council. Although the grantee was not from the community, because he was an administrator with SAED, it would be valuable to have him as the President of a perimeter in the community because of the expertise he would bring with him. The allocation was passed, but the next year, when the construction of the perimeter began, it was located, not near Gallade where councilors had thought it would be located, but between Moudery and Diawara. A women's perimeter which had been allocated land by the council between Moudery and Diawara was moved to land of lower quality on the other side of Moudery to make room. Although the shift in the location of the perimeter caused a great outcry on the council floor, it is not known what formal steps members of the Rural Council took or could have taken to formalize their opposition to this change. In any case, with the President supporting the new arrangement, the council took no formal measure to block it.

Still, the allocation of the land by the Rural Council <u>was</u> challenged, along with the allocation of land for two contiguous perimeters, by a coalition of traditional land holders spearheaded by the Saakho of Diawara. The case eventually went to Senegal's Supreme Court, who sent a commission to investigate the allocation and returned a decision in favor of the Rural Council. The Supreme Court ruled that the land had been left un-farmed for an amount of time sufficient to allow the Rural Council to reallocate it to someone whom they reasonably expected to put it into productive use. The procedures the Council followed to allocate the land were investigated and approved, though it is not known what the Supreme Court made of the fact that a location different than the actual one was clearly marked on the allocation.

Defeated in court, the coalition continued to press their case with the President of Senegal and the Minister of Rural Development (a native of the Bakel area). Eventually an arrangement was made and N'Diaye released his claim to the land, submitting a letter to the council on April 13, 1986. The construction of the perimeter is complete, yet this past year it lay unused by the producer's group of Diawara which now has title.

E. Conclusions About the Role of the Rural Council

Although the majority of the Rural Council members are xoore, and the greatest part of land allocated goes to members of landholding castes, a social distinction more important than caste is developing in the Moudery

Rural Community. The strong politicization of the process of the allocation of land along the lines of national political conflict, and the high rate of allocation of land to political officeholders and their relatives, indicate that divisions of caste, whether one's ancestors were among the elite of the kingdom of Gajaaga, are becoming less important than contemporary distinctions: whether or not one is of the new elite of the government of Senegal.

It will be shown in the next section that land allocated by the Rural Council is land taken out of the traditional system of tenure, and thus, almost anything the xoore of the council do will help to break down the institutional control over land through caste. Yet, although the new system may be replacing the institution of caste, it is not clear that it serves as a more impartial allocator of land. The Rural Council is charged to allocate land on grounds of the potential for productive use. It may be that it has done this. Because of the existence of the irrigated perimeters project, most land is allocated in sections larger than 10 hectares to producer groups or their Presidents. It is possible that the members of the emerging and traditional political elite are the people the most able to mobilize cash and followers, and thus the most fit to be producer group Presidents. Yet if this is not the case, the system does not seem able to test it. If it is the case, USAID, by supporting the project, is financing the acquisition of rights to irrigated land by a limited, already empowered, section of the population.

The Rural Council is a young and constantly changing institution. Each year the procedures of the Rural Council are refined and the authority of the Council is extended, yet no refinement in the Rural Council's procedures is going to result in allocations of land to the majority of farmers. The council does not grant individual title to land; the majority of perimeter users are most immediately granted land through their families and producer groups, which are discussed below.

III. Producer Groups

A. Organization, Membership and Rights of Members

1. The Organization of Producer Groups

Perimeter producer groups have existed in Moudery for over ten years, since the establishment of the first perimeter in 1975. They are directed by boards of officials generally including a President, Vice President, Treasurer, Water Manager, and sub-group leaders. These positions and their responsibilities are not regularized, however, and sometimes other positions are included (for example, technical advisor) or responsibilities are combined (for example, some Presidents act as Treasurer). There is no uniform system of electing Presidents, and no official system of appeal beyond the Presidents of groups. Perimeters are locally referred to by the name of the President of the producer groups, and he or she usually carries great authority in the group, though the amount of authority Presidents hold and the responsibilities they claim vary widely from group to group, depending on the popularity and status of the President and the composition of the group.

2. Membership in Producer Groups

The criteria for membership in producer groups in Moudery change over time, and often respond to extra-village influences. Most recently they have been strongly influenced by the Rural Council.

The first perimeter was established under guidelines in large part set by SAED and development workers involved in the development of irrigation in the region (see Weigel 1982). It was conceived of as a village perimeter, with membership open to all residents of the village, male and female. The second perimeter seems to have been created largely on the initiative of members of the village themselves, yet its character was strongly influenced by the man who eventually became President of the Rural Council, who had recently returned from a position with the national Socialist Party in Dakar. Its membership was limited to male heads of households not holding plots in the first perimeter. The criteria for membership for the next five perimeters in Moudery, each of which was developed on land allocated by the Rural Council, were in large part established at the level of the Rural Council. They include a perimeter for women, one for youth, one for members of the Al Fala Muslim order, and two whose members were largely selected by their Presidents chosen by the Rural Council, and to some extent determined through negotiation with the council.

3. Official Rights of Members

a. Rights to Land. Officially, all members are equal. Plots are distributed by lottery, and water by rotation. Use rights in land are assured by community recognition, and secondarily by having one's name on the membership list. Continued access is dependent upon paying fees and fines, by contributing labor when necessary, and through continuous use of one's land.

Once a person becomes a member, he or she is allocated one or more plots. All producer grup Presidents state that plots are allocated through a lottery system. This system of distribution is required by SAED, and has received support from producer group Presidents. Some Presidents claim that the lottery is necessary, if only to avoid conflict because of the varying quality of the irrigated land.[3]

b. Rights to Inputs. Along with access to a plot, the producer group provides water (pumped into the perimeter by diesel-fueled pumps) and access to inputs such as seeds, fertilizer and pesticides. There is no official hierarchy for the distribution of water and other inputs, and, also officially, they are equitably distributed following pre-establisned rules. The distribution of water, for example, follows the pattern of the plots in the fields. Members either pay in advance or repay the producer group for the inputs and water they use.

Policy on plot transactions, such as inheritance, renting or sale, has not been articulated by all producer groups. It varies somewhat from one producer group to another where it has been articulated.[4]

B. Membership and Distribution

1. What is a Member?

Although individuals put their names on membership lists, ownership in Moudery is not individualized. Male members in producer groups in Moudery are usually representatives of extended families with an average size of about 10 working adults. Almost all of the land allocated to individual men in Moudery is farmed by the males of the household as a part of the total collection of the house's fields. For the most part, the direction of work, and distribution of produce is the same on irrigated land as it is on the non-irrigated "te xore" fields; the men of the household (the "ka") work the land together, and the produce goes into the household granary (the "mara"). Thus the man whose name is on the membership list does not own the plot as an individual, but rather as the representative of the family which uses it together. If the eldest of the household dies, the next man in line inherits the status of being manager of the household (the "kagumme"), and with this, manager of the family's land (see Pollet and Winter 1971 and Weigel 1982).

Despite this tendency to continue family management of land on the perimeters, it is not rare that one of the brothers in a household will "specialize" on the irrigated fields, while another brother (or brothers) will spend most of his (or their) time working or directing work in non-irrigated fields. Nevertheless, only one case was found in Moudery in which the produce was not harvested for the house granary; and even this case seems to prove the rule, in that it concerns a man who is farming 10 hectares specifically for commercial sale. In fact, his brother works another irrigated field whose produce is destined for the house granary.

Even plots assigned to young men in the youth perimeter are often farmed by the family as a whole. Sometimes arrangements are made with the young man, and he is given a portion of irrigated field or part of the produce as his own in exchange for being the family's means of access to the plot. Often entrance and water fees (i.e., for the purchase of diesel fuel) are paid from the household savings managed by the eldest male of the house, and not paid by the youth.

2. Who Has the Land?

The lottery method of distribution of perimeter plots is an attempt by SAED to limit conflict and to ensure an equitable distribution of perimeter land. It is stated in the contracts between SAED and the producer groups (Contrat Perimetres Villageois) that the distribution of land is to be done in the presence of an official from SAED, yet it is clear that, even if this policy has been followed, it has not resulted in an equitable distribution of land, either at the time of initial allocation, or over time. In the first place, the fact that there is a lottery does not ensure free access to membership to the perimeters; some people are excluded before the lotteries are run and some individuals are included in many lotteries. Second, a certain amount of land is usually not included in the lottery and simply granted to specific individuals. Finally, the lottery does not regulate transactions in land on the perimeters after the initial allocation.

As a result, distribution of land on the perimeters is skewed. As Table 2 shows, 95 percent of the people who hold land in the Moudery perimeters own less than 2 hectares. Their holdings account for 72 percent of the total irrigated land. The remaining 5 percent of the members hold 27 percent of the land, with an average holding of 5.4 hectares. In strict terms of land area, (not considering quality and management of land), and excluding the land of the two villagers who own 10 and 30 hectares, the distribution of irrigated land is not dramatically skewed. The eleven people who own between 2 and 10 hectares own 11 percent of the total area and represent 4 percent of the total membership. Yet the simple distribution of quantities of land does not show the true distribution of productive potential of land on the perimeters: one must also consider location and management of land. Of these eleven men, many are in positions which enable them to affect the location and management of their perimeter land. This will be discussed further in the following sections.

Table 2
Size Distribution of Moudery Perimeter Land

Holding (ha.)	Members	Area	% of Total Area	% of Total Membership	Ave. Area per Member
Less than .75	140	73	28.4	57.1	0.52
.75 to less than 2	92	114	44.4	37.6	1.24
2 to less than 10	11	29	11.3	4.5	2.64
More than 10	2	41	16.0	0.8	20.50
TOTALS	245	257	100.0	100.0	1.05

Notes: Figures from perimeter membership lists. Women's and Youth perimeters not included.

C. Explanation of the Distribution

Five factors which have affected the distribution of perimeter land in Moudery are considered here. They are the material resources of households, traditional social relationships, historical claims on land taken by perimeters, political considerations, and technical knowledge.

1. Availability of Cash and Labor

Lack of cash or labor cannot be considered determining factors in deterring male heads of households from joining at least one producer group. At present, virtually every household in Moudery has at least one plot in a perimeter, or has decided to become a member of a planned future perimeter. It is unreasonable to assume that the houses joining perimeters recently or houses with no or only one other plot have only recently gained the cash and labor allowing them to join a producer group. It is more likely that these houses either decided that they had more interest in joining this particular perimeter, or that this was the first perimeter to which they felt they were allowed entry. Further, in some producer groups, individuals have the option to abandon a plot temporarily, to farm without irrigation water (thus not paying for diesel fuel), or to loan their plot in years when the cash to pay for diesel is not available. In these cases, a lack of cash or labor limits the productive use of the plot by the member, but not membership in the producer group.

Nevertheless, cash and labor may play a role in the amount of irrigated land a household attempts to farm. Several of the heads of households farming more than one hectare with whom I spoke clearly felt that they were reaching the limits of their financial and labor resources. Heads of households not farming more than one or two plots often told me "on irrigated fields, one must have a lot of money to farm a lot of land."

Houses with more adults who are able to work in the fields appear, on the average, to own somewhat more perimeter land. Our village survey was stratified by apparent house size (based on informed judgment of our research assistants) into large and small households. The average holding of irrigated land for households of above average size in Moudery is 1.138 hectares. For below average size households it is .823 hectares, or 28 per cent less. As Table 3 shows, looking more rigorously at the data gathered in the village survey confirms the fact that large households tend to hold more irrigated land. On the other hand, including another variable which may reflect household financial resources makes the effect of family size disappear.

In Regression No. 1, there is a significant positive relationship between the number of adults and the amount of irrigated land held by the household. Every additional adult raises family holdings by a (modest) .023 hectares. This effect disappears, however, when the number of migrants, considered a proxy for cash resources, is included (Regression No. 2). Family size becomes insignificant, and the each additional migrant in a family raises irrigated holdings by about 0.1 hectare. A strict reading of these results suggests that it is the availability of cash, and not the availability of labor, which determines the amount of irrigated land a family can obtain and farm, although the simple statistical technique used here can only be suggestive. Regression No. 3 adds another variable with implications for family resources: access to falo land. One might have presumed that houses farming the scarce and productive falo would be less interested in irrigation, but this is clearly not the case: the positive and significant coefficient means that houses farming the falo have significantly more land on the perimeters (.284 ha. more) than families which do not. The other regressions in Table 3 will be discussed in the following section.

Table 3
Alternative Explanations of Household Holdings of Irrigated Land
Least Squares Regressions

Dependent Variable: hectares of irrigated land

(t-statistics in parentheses--a value of about 2 or more denotes statistical significance)

Explanatory Variables	Regression number 1	2	3	4	5	6
Constant	.766	.683	.599	.543	.521	1.005
Family size	.023	.003	.001			
	(2.40)	(0.23)	(0.08)			
Migrants		.095	.089	.094	.094	
		(2.34)	(2.23)	(3.13)	(3.16)	
Farming Falo			.284	.257	.306	
			(1.99)	(1.68)	(2.13)	
Caste: Kome				.131	.136	.009
				(0.77)	(0.97)	(0.05)
Jaagarafu				.177		.213
				(0.73)		(0.82)
Other				-.148		-.313
				(-.600)		(-1.25)
Adjusted R^2	.052	.099	.129	.130	.138	.002

Sample size: 88 households, all those sampled in village survey.

Variable definitions:

Family size: number of members aged 20 or more.
Migrants: number of migrants (all destinations).
Farming Falo: whether respondent farms falo (yes=1).
Caste: as elsewhere in this report. Dummy variables with yes=1. As is required by statistical procedure, one category must be excluded (we chose xoore); thus coefficient implies difference between included castes and xoore.

2. Membership in Existing Village Groups and Castes

To a large extent membership in producer groups is mediated by existing social ties. An individual's willingness and ability to join a producer group is strongly influenced by his or her relationship to the person or group who directs or organizes a group; perimeters are based on previously existing social organization. For example, the leadership of the youth perimeter of Moudery and its core members evolved out of a youth soccer group. The producer group for the women's perimeter was founded on the basis of a women's group which farmed a dryland collective field, among other functions. The President of the original women's group became the President of the producer group, and its membership is composed primarily of the members of the original group. In Moudery III, the President selected the members himself, mostly from his family. On Moudery II, the choice of a kome President reportedly discouraged many xoore from joining the perimeter. Thus the social relationships of Moudery become incorporated into the producer groups; although a producer group may be called a "village group" or a "women's group" a certain number of villagers and women are excluded or disadvantaged from the outset.

As was shown on the level of the Rural Council, the structure of alliances within perimeter producer groups is pyramidal: Presidents work with supporters. This is a partial explanation of why members of the village with higher status have not clearly dominated membership of the perimeters (see Table 4). Nor do they have a disproportionate representation from the village population as a whole. Kome have a smaller amount of irrigated land per member, yet their houses are considerably smaller on the average than xoore houses. Table 5 corrects for the number of working adults per household, and shows a substantial evening out of the distribution by caste. This can be explained historically: the relationships between xoore and kome were relationships between xoore houses and the kome who were allied with them and did service for them. Today, some of the strongest friendships and alliances between men are inter-caste, and the overt competition in the society is among leading xoore, not between xoore and kome. To the extent that the traditional asymmetrical relations between xoore and kome still exist, they have been incorporated into the organization of the perimeters, and not a point of division between member and non-member. Kome are supporters, friends and junior colleagues of xoore, and, thus far at least, not an underclass being left behind.

The distribution of irrigated land by caste has been on the whole rather equitable. As Regression No. 6 in Table 3 shows, none of the castes has significantly more or less land than do xoore. Even once the number of migrants and access to falo land have been taken into account, none of the castes has significantly different holdings of irrigated land. In Table 5, only in the case of the jaagarafu do we see a substantially larger amount of land per person. Also, when considering the extent to which caste determines access to irrigated land, this is the exception which proves the rule. Jaagarafu are of intermediate status. They do not own land, but rather administer it for nobles outside of the village. They do not marry with xoore, nor do they marry with kome. An alternate name for jaagarafu is "waokounko:" people who refused to be slaves. Thus the explanation for the fact that members of jaagarafu families have gained greater amounts of land

Table 4
Distribution of Moudery Perimeter Land by Caste

Caste	Area (ha.)	Members	% Area	% Members	Area/Member
Xoore	69	61	25	22	1.13
Jaagarafu	62	32	23	12	1.94
Kome	109	128	40	47	0.85
Naxamala	14	19	5	7	0.74
Other	21	32	8	12	0.66
TOTAL	275	272	100	100	1.01

Notes: Figures from perimeter membership lists; excludes women's perimeter. "Other" includes members of other ethnic groups, somono (fishermen), and perimeter members whose caste status is not known. If the holdings of the President of the Rural Council (xoore--10 ha.) and the National Assembly député (jaagarafu--30 ha.) are excluded, the distribution by caste is practically uniform.

Table 5
Distribution of Moudery Perimeter Land by Caste, Adjusted to Average House Size

	(A) Area (ha.)	(B) Number of Houses	(C) Average No. of Adults	(D) Average Area/Adult (A/B*C)
Xoore	69	59	12	0.10
Jaagarafu	62	21	11	0.27
Kome	109	123	9	0.10
Naxamala	14	18	7	0.11
TOTALS*	254.3	221	9.8	0.12

* 0.3 ha. of land is allocated to "others."

Notes: Column A is derived from perimeter membership lists and includes all the Moudery perimeters but the Women's perimeter. Column B is from a village census/map created for the project. Column C includes men and women who farm and is derived from a village survey conducted for the project.

than members of other castes involves not so much caste as the fact that it is a small group of people who have control over one perimeter, Moudery III.

3. Historical Claims to Land

The fact that, at least in Moudery, kome are integrated into the perimeters, does not mean that historical claims on land, so closely tied to caste, do not play a role in the composition of producer groups. Of the seven existing perimeters in Moudery and the three that have had land allocated but are not yet developed, six have been built or are planned on land in which the family of the President or Vice President of the producer group historically had claims, either as a xoore or as a jaagarafu. In other cases, individuals have been able to use the argument that they have traditional claims to the land to gain greater amounts of perimeter land. And in some isolated cases, on perimeters created before the Rural Council began allocating land, claims of use by kome and women were used as grounds for granting them greater access to land in perimeters.

Yet traditional claims have also limited family membership in perimeters. The families most tempted to invest their energy in traditional fields to the neglect of irrigated fields are those with access to high-value river-bank land suitable for flood-recession farming (the "falo"). Only a few Moudery families own large fields along the river. One of these, with possibly the largest falo field, did at first decide against becoming involved in irrigation. In the early stages of irrigation in Moudery, the eldest man of the house decided that the family had enough land to farm without participating in the perimeters. It is possible that several factors went into this decision, but he was able to make it more comfortably because of the family's claim on good non-irrigated land. Nevertheless, the next year, a junior member of the house (a migrant on a long vacation, in preparation for retirement) joined one of the perimeters. The new demands on the family's labor was made up by giving the perimeter land to the wives of the house. The men of the house have since become members of other perimeters, and one of the members of the house has applied for and been granted land by the Rural Council, which the family intends to use as a perimeter.

The older man of the house still farms only the falo and the younger men of the house help him, yet they argue that soon the dam at Manatali will make these fields useless. The option of farming the falo is becoming less and less attractive. In fact, falo owners and people who farmed falo land they did not own had higher than average amounts of perimeter land, as Table 3 shows.

Thus, traditional rights in land did influence xoore family participation in the perimeters, yet not all in the same direction. Families who had traditional rights on land where perimeters where installed sought and gained greater allocations of land on those perimeters, while some xoore who did not have traditional claims on that land relied on their access to falo land, or attempted to get their own perimeters.

Table 6
Officer Land Holdings and Council Member Membership in Moudery's Perimeters

Perimeter	Total Area (ha.)	No. Male Members	Avg. Holding (ha.)	President of Group	Other Officers	No. Council Members
I	43	65	0.66	1.50	1.50	3
II	70	116	0.60	1.80	0.97	2
III	42.75	28	0.65*	30.00	1.00	1
IV	50	78	0.64	3.00	1.00	4
V	49.25	65	0.76*	10.50	?	1
VI	16.38	39	0.42	0.42	0.42	0

* Average holding on Moudery III and Moudery V were calculated excluding the holdings of the presidents.

Note: Table includes only land farmed by males in the perimeters.

4. Political Office and Producer Group Officers

The 5 Rural Council members and the national député are all among the 13 people who own more than 2 hectares. While the average male member in Moudery holds 1 hectare, the average office holder owns over 8 hectares. With the national député's and Rural Council President's holdings of 40 hectares excluded, the other four members hold an average of 2.6 hectares.

One means through which Rural Council members gain more irrigated land than other village members is through membership in several perimeters. As Table 6 shows, Council members belong to all perimeters except Moudery VI. None of the Rural Council members holds membership in fewer than two perimeters. Some have membership in four. This may in part be explained by the fact that having a Rural Council member in the group is a means of securing rights in the land for the whole group. Perimeters which will include council members are simply more likely to get the support of those members, before and after the allocation. This may explain why there are five Rural Council members in the Al Fala perimeter, whose allocation was strongly challenged in court by the traditional owners of the land. Significantly, the average amount of land held by office holders is substantially lower in the

two perimeters created before the council was established than in those allocated by the council: 3.3 hectares per perimeter as compared to 9 per perimeter.

Factors which result in unequal initial allocation of plots within perimeters also explain how Rural Council members have gained more land than other villagers. It is an unwritten rule that Presidents and officers of producer groups are granted a larger amount of land than other members. Rural Council members may be asked to stand as officers in producers groups for some of the same reasons that they are asked to become simple members. All the council members are officers in producer groups.

5. Technical Knowledge

Having prior knowledge of irrigation or technical knowledge relevant to irrigation has influenced membership in the perimeters. Of the 17 men of Moudery holding at least 2 hectares, only five are neither holders of political office or their close relatives, nor holders of traditional rights in the land on which the perimeters were built. Of these five, two were granted land in perimeters because of their technical expertise. One was made President of a perimeter, and now is the only kome President in Moudery. The other was granted 2 hectares in Moudery I, as well as land in Moudery IV, in part because he is considered a "village technician." These are only the most obvious cases. Other men have gained land or reductions of fees because they are the perimeter pumpist or mason. Successful irrigated farming requires much new knowledge. Farmers who speak French and therefore are able to talk to SAED extension agents and attend seminars not only farm their own plots more profitably, but also make themselves more valuable to the other members of the producer group.

D. Changes in Land Distribution Over Time

The terms under which perimeter land is held are as important as the distribution of the land. Admittedly, the greatest challenges to secure tenure of perimeter plots occur at the level of the perimeters as a whole. Irrigated farming in Bakel remains a risky form of agriculture (see Sella 1989). The technical and organizational difficulties involved are new to the farmers and to the agents of SAED. In the 1988 season, major portions of several perimeters were flooded by the rains. Many perimeters have been abandoned with debt problems. Few of the producer groups have made more than the initial contribution towards the amortization of their pump. Nevertheless, although these difficulties are manifested at the level of the perimeter as a whole, many of them can be resolved through the combined efforts of individuals. And one important factor in an individual's willingness to participate in resolving the problems of a perimeter is his or her control over his or her own plot.

Only the first perimeter in Moudery has been in existence long enough to provide sufficient data for a study of transactions in plots within a perimeter. Moudery II was founded in 1985, and the others more recently. Thus, outside of the first perimeter, only a few isolated transactions have taken place. Although all the perimeters of Moudery are organized

differently, the study of Moudery I can give a suggestion of the dynamics of land transactions on BSIP perimeters as compared to traditional tenure.

Moudery I has not experienced a great number of transactions in land, many fewer than on traditional land. Once people get a plot, they tend to keep it. The few transactions that do occur are centralized, controlled by the production group President.

1. Borrowing

On the perimeter, a much higher percentage of Moudery's farmers cultivate fields which they own than is true on non-irrigated lands. In a census of 86 percent of the plots cultivated on Moudery I in the rainy season of 1988, it was found that only 6 percent of the surveyed plots cultivated were being farmed by people who were not the members to whom the plot was allocated. By comparison, 72 percent of farmers borrowed their rainfed fields in 1988.

This may not be the whole story. Despite the fact borrowed land is a greater percentage of the total on non-irrigated than on irrigated land, the minority of people who farm their own non-irrigated land considered themselves to have more secure control over that land than did the members of the perimeter. This is reflected in the terms farmers on Moudery I use to describe their relationship to their perimeter fields (see Table 7). Of 24 men farming rice on the perimeter, although every man considered himself the owner of the field, or "te gumme," only one of them considered himself the owner of the land, or "nyinigumme" (for more on the distinction between "te gumme" and "nyinigumme," see Traore 1987). The men answered that the owner of the land was either the family who had traditionally owned the land (the response given primarily by xoore), or the government, the producer group, or the perimeter President (answers given primarily by kome). On the other hand, as Table 8 shows, the people who had not borrowed the land they farmed outside the perimeter (on rainfed fields 27 percent, collenga 13 percent and falo 56 percent) consider themselves to be the "nyinigumme" of that land.

Table 7
Perceived Ownership of Land in Moudery I

	Himself	President of Group	Council President	Senegal Govt	Producer Group	Traditional Owners
xoore	1	2	0	0	0	5
jaagarafu	0	0	0	0	0	3
naxamala	0	0	0	0	0	1
kome	0	4	0	2	4	1

Table 8
Borrowing of Non-Irrigated Land by Moudery Residents
(percentage)

Land Type	Residence of Nyinigumme: Another Village	Residence of Nyinigumme: Moudery	Not Borrowed	Total No. of Respondents
jeeri	41	32	27	59
kollanga	87	0	13	46
falo	11	33	56	36

Notes: Borrowed land is land for which respondents say that they are not the nyinigumme. Not Borrowed land is land for which respondents say that the nyinigumme is themselves or someone from their house.

Although the relative security of tenure on irrigated land and tenure on rainfed land is very hard to measure, there may be some truth to the distinction made by the farmers. On rainfed land, as long as it rains and you have labor, the land is yours. On irrigated land, although one can farm when there is no rain, there are nevertheless other conditions which must be met for secure tenure, conditions involving the health of the perimeter as a whole. Perimeter members who are not among the producer group officers, that is, the vast majority of the people farming on the perimeters, are thrice removed from total ownership of their plots. For them, use of their plots is to some extent dependent upon the actions and policy of the producer group, the Rural Council, and SAED. Conversely, the more influence an individual has in any of these institutions, the greater the security of tenure.

The exact reasons why there is so much less loaning of plots on the perimeters than on traditional fields could be found only through more research. Nevertheless, several tentative explanations can be offered. First, of course, is the fact that irrigated land is scarce and valuable and individuals want to use it themselves. This is a much more likely explanation for perimeters other than Moudery I, however. In the 1988 season, 16 percent of the plots of this perimeter were abandoned. This does not include the large proportion of plots within the perimeter that were farmed but not irrigated. It is possible that the land abandoned was in such poor condition that it was not profitable to farm with any method. Yet it is more likely that a certain number of Moudery I members let their viable land lie fallow and did not loan it. This leads us to our second explanation: people are afraid that their claim on land will be weakened if someone else uses it. The Law of National Domain recognizes individuals' access to land as long as they use it productively.

Individuals have told us that this was their understanding of land tenure on the perimeters. Whether they are right or not is impossible to say. The Law of National Domain is not clear on the issue of tenure on land held under these conditions. The third explanation is perimeter plots take a lot of work to build. Every year, dikes must be rebuilt and plots leveled. It is possible that individuals maintain a sense of property for their land and are afraid that plot quality would deteriorate if it was loaned.

Whatever the reason for the significantly reduced amount of field loaning on the perimeters, the fact that individual families farm the same plots for long periods of time may increase individual investment because of an increased sense of interest in the plot. On the other hand, the lack of flexibility on the perimeters may have a negative effect on production. The labor available to families in Bakel varies greatly from year to year. Migrants come and go, and family sizes increase and decrease. The allocation of traditional fields reflects this. Each year, field sizes change. Individuals pace off the amount of land they expect to use for that year, according to the labor they have available. If the perimeter system cannot adapt to these changes in the labor availability of individual houses, some fields or portions of fields will go unused for lack of labor, and in other cases, family labor will go unused.

2. Turnover

Sixteen percent of Moudery I plots farmed by their owner are not farmed by their original owner. On the average, Moudery I plots are 7 years old. For the most part, in 70 percent of the cases, these transactions have been regulated, not through individuals, but through the producer group. When an individual makes it known that he or she is leaving the perimeter, the field is given to the President to redistribute. This authority held by the President is not unlike the authority held by xoore in the traditional land system, in which it is their responsibility to reallocate land after a family leaves it. Nevertheless, the parallel stops there. No cases were found in which the President of the user's group attempted to alienate a field from a perimeter member. By contrast, even recently on non-irrigated fields, xoore occasionally attempt to assert latent claims on land, demanding that kome or naxamala leave the land. Of fifty people who had shifted traditional fields in the last ten years, 8 percent said that they had been obliged to leave by the nyinigumme. Of people who said that they were required to find new fields less often now than twenty years ago, a much higher percentage of kome than of xoore said it was better now: 36 percent as compared to 62 percent. Twenty-five percent of the kome respondents attributed this change to the perimeters, as opposed to only 4 percent of the xoore.

Although tenure over individual plots is not threatened by other individuals as in the past, the majority of turnover of plots on Moudery I have resulted not from transactions between individuals, or between individuals and the group, but in periods of general transition for the perimeter as a whole, often under the direction of production group officers and SAED. Much of the turnover recorded above is accounted for by changes in the size of the common field and the experiment in fish-farming on the perimeter. The greatest turnover in Moudery I occurred in its early stages, in one exodus of members. The perimeter started out in 1975 as a "village

perimeter" and all were invited to join. At that point the land was farmed by all the members as a common field. There are reported to have been 500 members at the beginning. After a few years, many of the members abandoned the perimeter. Various explanations are given for this loss of members: from "it was not well organized" to "the big fish ate the little fish." For the individual member, the perimeter, a mere 5 hectares in 1977, held little incentive. This, combined with a lack if confidence in its leadership, seems to have resulted in its abandonment.

Other perimeters in Moudery may develop different regulations for the exchange and turnover of fields, and may encourage a higher rate of exchange as well as a market not centralized by the directorship of the producer group. Some, like Moudery II which allows sale of plots, have already taken steps in this direction (see Ngaido 1989 for comparable data on Moudery II). Nevertheless, it is unlikely that individual discretion will be the most important factor in an individual's continued use of a particular plot. The security of a kome family's control over a plot is probably greater than on traditional rain-fed land; yet, as with traditional land, security of tenure varies. Irrigated farming is risky for every one, yet some people are able to lessen the risk involved for themselves. In the case of Moudery I, the President and his officers have been able over the years to gain the best land on the perimeter, and thus decrease the risk of a poor harvest.

E. Perimeter Management

The research on which this report is based focused on access to land on the perimeters, and not on access to control over the management of the perimeters. Nevertheless, the institutions that determine the distribution of land itself also determine the distribution of water, credit and other inputs on the perimeters. The people who have the most land also have the most control over perimeter management. In Moudery I at least, just as the redistribution of abandoned land is centralized, so is the distribution of management-determined benefits. On the benign side, this may mean that producer group officers get greater leniency in paying their fees, or more regular care for the canals where their fields are situated, or easier access to SAED technicians. At the extreme, this has meant that officers are assured water when there is not enough to go around, more than their share of Food for Work food, and opportunities to "eat" from the group funds.

Although all extension agents know that these benefits that accrue to management exist, they are difficult to measure. What is not obvious is the extent to which they make irrigation a more productive venture for those who have more land and are producer group officers. It is likely that they are a large reason why investment of time, labor and money is attractive for these households.

IV. Case Studies: The Député and the President of the Rural Council

Many of the points made above can be demonstrated in a case study of the two perimeters in Moudery where the evidence of access to land through political influence is the strongest: the perimeters of the National Assembly Député and the Rural Council President. The history of the perimeters of the President and the député, as briefly outlined below, suggests that these two great promoters of the privatization of commercial rice production in Moudery may be at the same time be its greatest beneficiaries. The case also shows that, although these men may use the most modern techniques on their perimeters, they may have the lowest yields per hectare. Most importantly, the histories suggest that although they exist under the guise of privatization of agriculture, these two perimeters are heavily dependent upon public support.

That the President and the député are the strongest promoters of commercial, private irrigation in the department of Bakel is indisputable. They run their perimeters with the intention of marketing the rice they produce, and they are the primary disseminators of new techniques of irrigation in Moudery. Through their contacts in Dakar, they are usually the first to be aware of changes in law and SAED's policy. Theirs are among the first perimeters to experiment with extensive use herbicides and mechanized tilling of the soil. They are also among the first to take advantage of the new agricultural bank in Matam (the CNCAS, Caisse Nationale de Credit Agricole du Senegal), and plan to purchase a tractor themselves for use on their perimeters. As for the privatization of the distribution of inputs, the député himself has arranged to be the local distributor for a national chemical company. The efforts of these two men in introducing new techniques are so far matched only by the Federation, which promotes a less commercialized and less individualized organization of agricultural production.

Before describing the history of the two perimeters these two men manage, it should be noted that although they have gained a disproportionate amount of access to irrigated land in Moudery, these two men have also played a role in extending irrigation to individuals who might otherwise be left out of the development process. During his tenure, the Rural Council President has supported the allocation of land to perimeters for women, youth, and one in Moudery for people who have no more than one or two plots in existing perimeters.

The land for the perimeters of these two men was allocated in the second meeting of the Rural Council in which land was allocated, in March of 1985. The député requested and was allocated 50 hectares. He made explicit to the council that what he wanted was land for himself and his family to use as a perimeter. The council granted him the land on the condition that he create a producer group, because it did not have confidence he could put all the land into cultivation himself. The député constituted a producer group, composed, as he told us, mostly of his family and friends. He gave them 20 hectares and retained 30 hectares for himself.

Of his 30 hectares, he farmed 9 the first year (1987), and 12 this last year. The remaining 18 hectares which he has not allotted to producer group

members was loaned out. The law with regard to this land is not clear (OMVS 1985). Whether these people would be able to apply for title in it if they farmed it for several years is unknown. The député says that he will farm this land when he is capable of doing so, and that in the mean time it is being farmed under unclear and insecure tenure, no more secure than under the traditional system, even though it has been allocated by the Council.

The député is of the jaagarafu caste, and traditionally his family collected land fees from these fields and brought them to the nyinigummes in Diawara. The fact that a disproportionate amount of land on this perimeter was given to jaagarafu in part accounts for why, on the whole, jaagarafu have gained a disproportionate amount of land on the perimeters village-wide.

The President of the Rural Council was not allocated land in his own name, but in the name of his uncle. Nevertheless, it was said to have been clear that the land was to become a perimeter under the President's direction, which it since has. As the President says, the land was not allocated to him, but his name is "on the [SAED] blueprint." The initial request was for 150 hectares, which was reduced to 50 hectares by the Council. Like the député, the President had plans to create a perimeter for his family, and, like the député, he was required to form a producer group. He was explicitly requested by the council to include some of the former nyinigumme of the land on which the perimeter was to be built. The President distributed 40 hectares to others and farms 10 hectares himself. This is one instance in which traditional claims on land have undercut a potentially greater inequity in the distribution of perimeter land.

Both of these men have invested great amounts of time and money in their perimeters. The President spent over 450,000 F.CFA (US $1,500) for land preparation alone. The député has housed and fed 12 migrant workers for the season, and pays them 16,000 F.CFA (US $53) per month. Yet both of them have had difficulties in keeping up with the work necessary to run a large commercial farming operation. Not only are they both required to spend much time outside of Moudery preforming their official duties, but even when they are there, management, particularly management of labor, is too centralized. The migrants who work for the député are supervised by his brother and have a work chief among them. Nevertheless, it takes constant surveillance to ensure that work is done. The President hires labor by the day, assembling work groups as he needs them. Both men argue that these forms of labor contract are not efficient, and try to reduce the amount of money and time spent on laborers through the use of herbicides and the rental of tractors. Of the money the President spent on preparing the soil, 350,000 F.CFA went to pay for the use of tractors.

Even perimeters constructed on level land require much labor to make the plots hold and drain water effectively. Shaping the fields is a process that takes years. With the labor management problems the député and President have, they have not been able to do or have this work done. The spottiness of their harvests is evident to the untrained eye. For this as well as other reasons neither of their fields have been highly productive in terms of output per hectare. In 1987, the député harvested 7,500 kg on 1.5 hectares he attempted to farm in rice.[5] The President's harvest this year was virtually a total loss. In November 1988, he predicted a harvest of 100 to 150 100-kg. sacks of rice from his 10 hectares (1000-1500 kg./ha.).

These are just the first two years of farming on these perimeters. The député's harvest was much greater this year than the one before. Over time, with the continued support of the government of which they form a portion of the elite, these men may make their perimeters productive.

V. Conclusion

In recent years the Senegalese government has taken steps towards the privitization of agricultural production. Central to the New Agricultural Policy has been the policy of the withdrawal of the state and the encouragement of entrepreneurial activities. SAED Bakel is in the process of this deperissement. However, as this report shows, the recent history of land tenure in Bakel is one of increased, not decreased, control over land by nationally established institutions. Not only have the perimeters been a major vehicle for the extension of governmental control over the allocation of rights in land, but the law of the National Domaine itself was not designed to promote the privitization production.

With the introduction of irrigated perimeters in Bakel, USAID and SAED have introduced a system of agriculture which makes it possible for single individuals to control, farm, and gain the profits from large sections of land, while leaving others landless. On the whole, this has not yet happened, and one reason it has not is that the stratification of control over land by caste has not been incorporated into the perimeters.

One of the reasons caste has not been a significant factor in allocation of land on the perimeters. is, as Weigel suggested in 1982, the lottery established by SAED has to a great extent prevented it. Perhaps a more important reason is the growth of a competing and increasingly influential system of determining access, one not maintained through investment in status--the system which assures greater access to individuals with influence in the three nationally established institutions, the Rural Council, SAED, and the producer's groups.

Although these institutions have to a great extent supplanted caste as the means through access to land is determined, this report has not found indications of the development of the privitization of control over land. A market of securely titled plots of land impartially regulated by the government has not developed. It is true that control over land in Moudery is becoming commercialized; the figures presented in this report indicate a high correlation of use of perimeter land access to migration remittances. Yet the figures on land transactions on Moudery I do not suggest that a market in land is developing. On the perimeters, transactions in land are much fewer than on traditional fields.

Perhaps a more important indication that the form of privitization with which we are familiar is not occurring is the fact that the introduction of these new institutions has not resulted in the distribution of land through impartial criteria. The Rural Council does not allocate land strictly on the basis of potential productivity of the individual farmer. Although they

distribute titles to land, their use-titles for the most part are not allocated to individuals. SAED's lottery, has been bypassed by those with influence, and members of SAED themselves have influenced the distribution of land. Nor have the local producer groups, for their part, proven impartial in their distribution of land and management benefits. As a result, these institutions are not contributing to the development of a privatized, market oriented system of land distribution, but instead have become platforms through which politically enfranchised individuals gain access to land.

The developing system of land distribution is not like the traditional system described by Weigel. Great amounts of money are not invested in maintaining status. At the level of the perimeters as well as at the level of individual plots, productivity does assure access to a great extent. Although political status may influence access to land, individuals don't maintain that status through the extreme forms of investment Weigel described. Thus, the combination of the land law and the perimeters may be promoting more productive base for investment, but at least as far as land is concerned, the laws and institutions of Senegal have not proven amenable to commercial production as it is characterized in much of our development policy.

Endnotes

1. For more on the development of the Law of National Domain, see Elise Hardy Golan, An Economic Analysis of Tenure Security in West Africa: The Case of the Senegalese Peanut Basin. Unpublished Ph.D. dissertation, University of California at Berkeley, 1989 (written under a Land Tenure Center research project).

2. And well founded; in Moudery, many women walk up to three hours to their traditional fields.

3. Among Soninké women, at least, a lottery system was sometimes used to distribute traditional land. See Adams 1985, page 22.

4. For specifics of producer group rules in each of the Bakel perimeters existing in 1987, see Bloch and Sella 1987.

5. A yield of .5 tons/ha. By comparison, according to SAED's figures, the average yield for the department of Bakel for the 1986-1987 season was 4.2 tons/ha.

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