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**AN ANALYSIS OF LAND TENURE AND WATER ALLOCATION ISSUES  
IN THE SHALAMBOOD IRRIGATION ZONE, SOMALIA**

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by

**Land Tenure Center  
University of Wisconsin-Madison:**

**Michael Roth  
Harold Lemel  
John Bruce  
Jon Unruh**

**Department of Land and Water Resources  
Ministry of Agriculture, Somalia:**

**Ali Aidid**

**Department of Economics  
Faculty of Agriculture, Somalia:**

**Halima Ismail**

**Field Enumerators:**

**Abdi Abdullahi Suliman  
Osman Ahmed Said  
Mohamed Said Ayanle**

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### EXECUTIVE SUMMARY

- (1.01) USAID/Mogadishu is evaluating a proposal to rehabilitate the irrigation infrastructure of approximately 8,500 hectares in the area of Shalambood on the Lower Shebelli. Concerning the proposal, the Land Tenure Center (LTC) at the University of Wisconsin agreed to study land and water resource issues in the Proposed Project Area (PPA).
- (1.02) This study's objectives were to analyze issues pertaining to land and water resources in the PPA, specifically: 1) evaluate security of land tenure, systems of land registration, and mechanisms for dispute resolution; 2) evaluate the economic size of land holdings and the willingness and ability of farmers to take advantage of the economic opportunities posed by the scheme's rehabilitation; 3) provide information on the current system of water distribution, and effects of that allocation on agricultural productivity; and 4) analyze problems related to damage to canals and irrigation infrastructure from livestock watering and grazing on the scheme.
- (1.03) Information for the study comes from informal discussions with government officials and village authorities; key-informant interviews with owners, foremen and laborers of large commercial farms on the scheme; and discussions with small holders and representatives of farmer associations. A formal survey using structured questionnaires and a random sample of 56 small farmers was also used to collect detailed information on production constraints, and perceptions of farmers toward land and water resource issues and proposed changes for the scheme.

### LAND TENURE STRUCTURE AND ORGANIZATION

- (2.01) The Shalambood PPA is located on the lower Shabelli river, 8 km. inland from the coastal city of Merca. Within the boundaries of the PPA lie 63 formerly Italian-owned *aziendas*. Since the departure of the Italians, landholdings have been transferred to small holders, state farms, cooperatives, or large private farms.
- (2.02) Irrigation water is taken from the barrage near Genale at the northwest border of the PPA. The water stored in the barrage is distributed by gravity flow, first through the Dhame Yassin primary canal, and then through the Second, Third, Fourth and Fifth secondary canals. Tertiary canals feed off the secondaries, delivering water to farmers' fields. The irrigation infrastructure is in a state of disrepair; the barrage is badly silted, gates are broken, canals are clogged and land levelling is poor. Water control has greatly deteriorated.

- (2.03) Two earlier studies, by TAMS (1986) and McGowan, et al. (1986), provide information on land tenure in the PPA. The TAMS study has detailed information on size and number of farms for a narrowly defined PPA. According to the TAMS survey, the project area encompasses 1,600 farms spread over 4,451 hectares. The McGowan study provides data for a revised, larger PPA, now being used by the Ministry of Agriculture (MOA) and USAID/Mogadishu. Despite the larger PPA studied, McGowan, et al. report a total area of only 3,866 hectares and 1,742 farms, due to missing data.
- (2.04) The LTC survey constructed a Land Tenure profile of the revised, larger PPA with a total area of 8,543 hectares, nearly twice as large as the TAMS estimate. Independent smallholder areas make up 46.4 percent of the revised PPA, while smallholder Agricultural Cooperatives comprise another 13.7 percent. The remaining area is divided fairly evenly among large commercial farms: large cooperatives (14.0 percent), state farms (10.2 percent) and large private farms (15.7 percent).
- (2.05) Fifteen percent of the land held by large commercial farms has been given to their laborers for personal use. If this figure is combined with lands of independent smallholders, and small farmers in the Agricultural Cooperatives, then small farmers personally cultivate 66.3 percent of the land resources in the PPA.
- (2.06) The average family size of households in the LTC survey is 8.3 persons. Male-headed households average 9.0 persons and 2.61 hectares, while female-headed households average 6.5 persons and 0.87 hectares. A comparison of land-per-resident ratios (0.3 ha./person for male-headed households compared with 0.1 for female-headed households) indicates that land endowments are more restricted for women.
- (2.07) Farms with only 1 parcel of land are the most common, although 32.1 percent of LTC survey respondents have 2 or more parcels. Small holders state that: 1) fragmentation due to inheritance; 2) the need for additional land because of fragmentation; and 3) the use of multiple parcels to increase the likelihood of getting irrigation water somewhere, are the main reasons for having multiple parcels.
- (2.09) Despite the small size of farms, land endowments appear to be adequate to meet family subsistence needs. Net production per-resident is 240 kg., given sample averages of 2.24 ha. per farm, 8.3 persons per household, and yields of 10.3 quintals of maize per hectare, less 13.5 percent for losses. This estimate compares favorably with the FAO minimum standard of 180 kg./capita/year for subsistence. The estimate, however, allows little margin for improved welfare or marketed surplus, and ignores food deficiencies of the more land-constrained households.

SECURITY OF TENURE AND LAND REGISTRATION

- (3.01) The frequency of disputes in the lower Shebelli has been rising since 1982. Court and MOA officials, however, indicate that disputes over usufruct rights of land holdings are less frequent in Shalambod, compared to other newly developing frontier areas. Disputes over usufruct rights are more predominant than boundary disputes. Officials also note that more disputes concern unregistered than registered land.
- (3.02) Only 3 of 56 LTC survey respondents have ever had a dispute over usufruct rights to land. One boundary and one inheritance dispute were reported. Despite the low incidence of disputes, a quarter of the respondents perceive that land disputes are more common now than in the past, and most respondents express concern over the growing incidence of land grabbing.
- (3.03) Many disputes over usufruct rights originate in rental arrangements in which the renter utilizes someone else's unregistered land and then resists returning it after the rental term expires. Fear of this happening has made people wary of rental agreements, although land rental is common in the PPA.
- (3.04) The issuance of documents assigning land to individuals, by the Ministry of Agriculture in Mogadishu, is another commonly cited source of disputes. Two types of documents are involved. One assigns a given plot of land, the other instructs the regional MOA officer in Genale to locate "unclaimed" land for someone. This appears to be the major form of land dispute in the lower Shebelli, although it arises infrequently in Shalambod.
- (3.05) Many small farmers mention outsiders from Mogadishu and elsewhere armed with documents entitling them to unregistered land (currently being used) as the most common source of disputes and the one farmers find most unsettling. The head of the Small Farmers Association of Shalambod ranks the "land grabbing" phenomenon as the primary problem small farmers face in the area, ranking it even above irrigation problems.
- (3.06) Small farmers would like to have documented title to the lands they are cultivating, yet few actually have their land registered. About 45 percent of the LTC survey respondents feel they have some measure of tenure security. Of this number, 64 percent feel so because their land is registered in the name of a cooperative, although legally, farmers have no title to cooperative land. The remaining 36 percent (16 percent of the total sample) hold individual 99-year leases establishing leasehold rights. An additional 7 percent of the total sample are in the process of registering their land.

- (3.07) An examination of the Land Registry at Genale revealed that very few of the approximately 350 cases of registration in 1986 (in the region as a whole including Shalambood) involve parcels smaller than 1 hectare; most are significantly larger. The average total land holding for individually registered respondents in the LTC survey is 5.5 ha. compared to 1.6 ha. for unregistered farmers. Women are the least likely to register their land.
- (3.08) Of those LTC respondents not currently having registered land, 38 percent mention lack of familiarity or the complicated nature of the registration process as the reasons for not registering their land. Another 33 percent mention the high cost of registration procedures as the primary factor. Women mention lack of information, and discomfort in personally dealing with a male-dominated bureaucracy as important factors.
- (3.09) High registration charges reportedly stem from steep prices charged for drafting maps, frequent trips to the local land registry office, and costly trips to Mogadishu to try and circumvent the slow procedures. The Minister of Agriculture currently makes final decisions on all applications for leasehold titles. Some farmers in the sample have already experienced delays of 2 to 4 years waiting for approval from Mogadishu.
- (3.10) According to the 1975 Somalia Land Law, a farmer is allowed only one registered title per household, although multiple parcels are common. Land transactions, either by sale, leasing or renting, are not allowed, even though transactions are common in the Shalambood PPA. Differences between the 1975 Land Law and the realities of land holdings and transactions appear to exist.
- (3.11) Recommendations:
- a. The number of steps for registering land should be reduced and consolidated within a special Land Registration Office, perhaps located in the district seat, i.e. Merca, or in Shalambood. Autonomy should be given to registering land at the regional level to avoid the time delays associated with the highly centralized procedures currently used.
  - b. If additional resources are not allocated to land registration activities by the government, other approaches should be considered to reduce the burden on the already strained administration. Farmer committee representatives, for example, could assemble relevant information on farmers' parcels in their aziendas and serve as liaison with government officials.

- c. The task of land registration should not involve a technically sophisticated cadastral survey. Such programs often involve a long time horizon for completion and may increase the incidence of land grabbing by speculators. Emphasis should be placed on speed of implementation, and utilizing existing institutions and procedures already in place. Land titles based on rough-sketch plans could later be upgraded using more sophisticated methods.
- d. Ways should be sought for reducing the inconveniences and costs associated with map drawing. A government office that provided map drawing services would reduce direct costs of land registration. Alternatively, the training of more draftsmen should reduce the high prices that are reportedly charged on the private market.
- e. Currently, registered land must be re-registered following inheritance using the same procedures as the initial registration process. This process of re-registration by heirs threatens to degrade the validity of existing registered parcels over time. It may be advisable to have the courts (in collaboration with the district office of Land and Water Resources), already charged with succession settlements, also reissue registration documents reflecting the settlement.

#### WATER ACCESS AND DISTRIBUTION

- (4.01) Agriculture in Somalia follows two cropping seasons. The first season accompanies the Gu rains which normally start in late April or early May, and run through August. The second season, extending from around September to December, accompanies the Der rains. From December to the end of March marks the dry season, or the Jilal. The Gu rains, being relatively abundant and reliable, normally provide sufficient water for rainfed cultivation. The Der rains are less plentiful. In a normal Der season, only irrigated agriculture is feasible.
- (4.02) The MOA's Land and Water office at Genale sets water schedules for the secondary and tertiary canals up to an individual azienda. Water is scheduled according to land area; larger aziende receive more irrigation water, smaller ones receive less. The water schedule is enforced by canal guards employed by the MOA.
- (4.03) Water allocation, within aziende, is done by farmer committees. In the Gu season, those farms furthest out on the tertiary canal get water first, with each preceding azienda toward the secondary or primary canal getting its water in turn. In the Der season, water allocation works in reverse. Those closest to the canal get water first then each succeeding farm (within an azienda) further away receives water in turn.

- (4.04) Farmers are not charged for irrigation water used although they bear indirect costs for cleaning and maintaining the canals within their azienda. Other costs of dam, gate, bridge and canal maintenance and upkeep are not included or recouped through water charges. The results are: 1) inadequate revenues are generated to maintain the irrigation system; 2) the cost of water to users is heavily subsidized; and 3) price ceases to be an allocative mechanism. Thus, the amount of water demanded by users at subsidized prices exceeds the water available.
- (4.05) Respondents were asked to list the most critical problems they face in the Gu and Der by choosing among certain pre-set responses. Over half (54%) of the respondents in the survey cite poor timing and inadequate water as their most critical problem in the Gu. The fact that 56 percent of survey respondents grow their maize crop under rainfed conditions or with only 1 irrigation, when 2 to 3 irrigations are considered optimal, demonstrates the magnitude of water shortages that exist. Women face more restricted access to water than men. While 4.7 percent of the men's parcels remained unirrigated in the 1986 Gu season, the figure for women's parcels was 33.3 percent.
- (4.06) Water problems are worse in the Der season. While 47.8 percent of male farmers cite both timing of water and inadequate amount received as the most critical problem in the Gu season, 86.3 percent cite this as the most critical problem in the Der season. The percentage of women farmers with the same response increases from 76.9 percent to 100.0 percent. While farmers have the option of shifting to rainfed agriculture in the Gu if irrigation is not possible, this alternative does not exist in the Der. Virtually no rains fell during the 1986 Der season. This explains why more than half (52.7%) of irrigable parcels remained uncultivated. Only 9.1 percent of farms were left uncultivated in the 1986 Gu season.
- (4.07) Water scarcity does not appear to be a critical problem for large cooperatives, state, and private farms adjacent to the Dhame Yassin, except during the Jilal season. Laborers on the farms state that they take as much water from the canals as they like, except when the canals are empty (December through March). Economic theory and this observed behavior suggest that any additional water made available by the project during the Gu and Der seasons should primarily benefit smallholder irrigated parcels further out on the periphery.

- (4.08) Project benefits largely stem from the improved availability of water to farmers. Little empirical evidence has been presented to date on the functional relationship between water and on-farm yields. To estimate this relationship, the sample was split into two strata: relatively abundant water users, and farmers with relatively little access to water. Abundant water users are those farmers who either said they experience no water problems or receive 2 or more irrigations during the course of the season. The group with little access to water either relies entirely on rainfall or has at most 1 irrigation. Use of modern inputs by both groups is low. Maize yields for the water abundant group average 13.6 quintals/ha. Maize yields for the limited water access group average 7.0 quintals/ha. Thus, increasing water to farmers mainly on the periphery who currently have restricted access, should result in a sizable production response.
- (4.09) Not receiving irrigation water in the Der results in high costs, not just in terms of foregone production, but also in terms of sunk production costs borne in the expectation that water will arrive. In discussions with farmers, many state that labor and sometimes money are spent preparing the land for cultivation. Cases were reported in which payments for land preparation were So. Sh. 800/ha. to So. Sh. 5,000/ha., even though water was never received.
- (4.10) Farmers are very aware of the physical disrepair of the scheme. In addition to the physical problems of the silted-in dam, broken gates, clogged canals, and poor land levelling, large and small farmers alike emphasize the poor state of water management and allocation, both on-scheme and in the greater Shebelli region. Many note that a comprehensive water use plan that sets clear priorities and goals for the management of the Shebelli's water resources is lacking. The continued expansion of irrigated lands upstream from Shalambood, when water is already scarce downstream, and the ad hoc procedures used to allocate water at Shalambood are indicative of the problems with water management and planning that exist.
- (4.11) The MOA's capabilities to better manage water in the Shebelli river valley is constrained by limited resources, particularly manpower. The Land and Water Resource officer at Genale has, in addition to his responsibilities of water scheduling, the tasks of land registration and handling land disputes. When water schedules are set, enforcement is difficult because of the lack of vehicles, personnel and funds for fuel, wages, etc.

(4.12) Farms taking water out of turn or ignoring water schedules drawn up by the MOA are growing problems. Banana farms in the area have recently pooled So. Sh. 300,000 to hire a man from the MOA, a driver and a car, and 2 soldiers to patrol the scheme and identify the parties illegally taking water. Someone found cheating is fined So. Sh. 20,000 for the first offense, So. Sh. 40,000 for the second offense, and is jailed for the third offense.

(4.13) Farmers were asked their opinions on alternative proposals for generating funds to ensure upkeep and maintenance of the irrigation system. Of the 56 respondents, 54 percent would be willing to pay higher land taxes, 18 percent would be willing to pay higher water taxes, and 14 percent would be willing to pay either higher land or water taxes. Farmers repeatedly say that they are willing to pay for water services, but only as long as improved water management is positively demonstrated. Otherwise, farmers would be reluctant to pay any taxes.

(4.14) Recommendations:

- a. A special Shalambood Rehabilitation Board should be established, and given authority and resources for management of water on the scheme. Its responsibilities would include setting water allocation priorities, water use planning, setting and enforcing water schedules, and collecting and reinvesting scheme revenues. Once established, its authority could be expanded to a Shebelli-wide authority.
- b. Revenue from land or water taxes should be generated to ensure that water delivery is sustained in the long run. Plantations could pay for water through an excise tax on bananas. Smallholders could pay based on the number of irrigations and duration of water received. These systems would assign water charges directly or indirectly according to water use, with the costs of identifying water users being borne by local institutions other than the government.
- c. Actual collection of tax revenues should be done by the MOA to avoid over-burdening organizations like the farmer committees. Tax levels should not be oppressive. On the other hand, they need to be adequate to ensure that sufficient revenues are generated. Whether taxes result in economic disincentives for producers will depend on the quality of water services provided.
- d. Taxes on water services should be kept separate from the land taxes currently collected. The latter go to the municipality to support public works, roads, schools, etc., with none reinvested in the irrigation scheme. Management decisions concerning water distribution and use, planning, levying and collection of taxes, and reinvestment of scheme revenues should be handled by a Shalambood Rehabilitation Board.

- e. Farmers will have to be given technological alternatives to the traditional agricultural practices they are now following. Improved agronomic practices -- more efficient methods of applying irrigation water, better integration of crops and livestock, improved cropping practices -- and on-farm experimentation to demonstrate the viability of new technology adapted to the area are needed.
- f. Alternative sources of fresh water are needed by the laborers of the large plantations who live in the relatively few villages located within the PPA. Digging wells or piping in water are two alternatives that should be considered.

#### LIVESTOCK INTEGRATION WITH IRRIGATED AGRICULTURE

- (5.01) Livestock numbers in the PPA vary by season and type of animal. There are as many as 10,000 cattle, 10,000 sheep and goats, and 500 camels in the PPA during the dry season. In the wet season these numbers dwindle to 3,000 cattle, very few sheep and goats, and almost no camels, due to the availability of grazing areas off-scheme.
- (5.02) Generally, farmers consider 1-5 animals as a suitable number to keep in the vicinity of the household, while 6 or more animals are regarded as a herd, which must be driven, grazed and watered. One-third (34%) of the LTC respondents report owning livestock, predominantly cattle. Of households having livestock, 10 (53%) have herds of 5 animals or less, while 9 households (47%) have herds of more than 6 animals. The average number of livestock holdings per household for the entire sample is 3.0 animals.
- (5.03) During the Gu rainy season, 37 percent of livestock owning households keep their animals on the PPA. The percentage of livestock owning households keeping animals on the scheme increases to 58 percent during the dry Jilal season. Households graze their animals either at the house, on fields, or around the canals.
- (5.04) Livestock presence on-scheme reflects seasonal precipitation. Because low precipitation during the Jilal season reduces pasture in surrounding rainfed areas, animals are brought into riverine areas. During the rainy Gu season more animals can be grazed off-scheme, reducing potential conflicts with crop agriculture. During the Der season, herds begin their migration toward the river as water and fodder grow scarce.

- (5.05) Livestock damage to the canals seems to take place when animals move from one area to another, not from intentional grazing at the canals. The wide seasonal variation in livestock presence on-scheme, and the fact that the animals must travel to watering points from grazing areas, suggest that considerable livestock movement on the scheme takes place.
- (5.06) Farmers were asked their opinions concerning proposals for limiting livestock damage on the scheme. While the majority of the small farmers sampled (66%) own no livestock, only one member of this group approves of a suggestion that livestock be banned. The argument most often given is that livestock are the backbone of the Somali economy. Farmers state that livestock provide meat and milk to supplement diets, manure for construction of houses, and hides and leather products.
- (5.07) Building watering points for livestock on-scheme is supported by 90 percent of the animal owners, and 84 percent of the non-animal owners. Maintaining grazing areas for livestock is a less popular option, presumably because this would mean some loss of cultivatable land. Only one-third (32%) of sample respondents approve of this option.
- (5.08) None of the animal owners and few non-animal owners support imposing fines on constant violators. Farmers repeatedly emphasize that fining animal owners for having their herds on-scheme would be unjust if there exist no alternative water or grazing areas. Maintaining grazing areas off-scheme is the least favored option. This option is most impractical for the small herd owners (comprising 53% of all animal owners) who gain the most from immediate access to livestock by-products from grazing and watering their animals in the vicinity of the household.
- (5.09) Recommendations:
- a. Livestock bridges should be built over canals, along frequently traveled routes.
  - b. Fixed watering points should be constructed on-scheme. These might include wells and/or concrete water basins along canals and the river.
  - c. Fences could be built along especially vulnerable sections of canals, i.e., sections of canals which run alongside (or under) roads and other livestock routes.

- d. Many farmers rent fallow land from large landowners for use as pasture. Temporary water 'stations' consisting of small hand pumps and watering troughs would reduce the need of driving animals elsewhere in search of water. This apparatus could then be moved when the farmer wants to cultivate his fallow land. Wells to pump water for bananas already create considerable headaches for farmers at present. Hence, an affordable and durable technology is needed. Since land holders already receive rents and livestock by-products, and demand for grazing areas greatly exceeds supply, the incentive for private investment is low.
- e. Arrangements that emphasize locating grazing and watering areas together should be given priority. Watering points should be located off-scheme and in off-scheme grazing areas to reduce the number of livestock on-scheme. The farmers' objection to fining those watering animals in canals when no alternatives exist, would seem to equally apply to nomadic groups who require feed and water for their livestock during the Jilal. Sources for this water might include wells, delivery of irrigation water, or trapping rainfall and runoff in underground cisterns.
- f. Fines for constant violators could be imposed if violations persist after watering and grazing alternatives are made available. However, any policies to ban, restrict or fine livestock owners because of damages should be done with sensitivity to the integral link between crop and livestock agriculture.

## INTRODUCTION

### Background

USAID/Mogadishu is considering a proposal to rehabilitate the irrigation infrastructure of approximately 8,500 hectares in the areas of Shalambood on the Lower Shebelle. In preparation for the proposal, the Land Tenure Center (LTC) at the University of Wisconsin agreed to study land and water resource issues in the Proposed Project Area (PPA).

Research for the study was done in two stages. First, LTC director John Bruce and staff agricultural economist Michael Roth visited Somalia from November 12 to 30, spending a week on the Shalambood scheme. Key-informant interviews were held with city and regional authorities, district village water committees, the regional office of Land and Water Resources and tax office at Genale, laborers and foremen of several state farms and several farmers. An Issues Paper/Scope of Work (SOW) was prepared (November 22, 1986) which outlined the research agenda for a second visit in January/February.

Four broad sets of issues dealing with access to land and water resources on the scheme were identified in the Issues Paper/SOW. The purpose of this study is to: 1) evaluate security of land tenure, systems of land registration, and mechanisms for dispute resolution in the Shalambood PPA; 2) study the demographic composition of households, with respect to the economic size of land holdings and the willingness and ability of farmers to take advantage of the opportunities offered by the scheme's rehabilitation; 3) provide information on the current system of water distribution, and effects of that allocation on productivity and supply response in agriculture; and 4) analyze problems related to livestock damage to canals and irrigation infrastructure from watering and grazing on the scheme.

An LTC team revisited Somalia January 15 to February 15, undertaking the second stage of the research. The team included Michael Roth, Harold Lemel (Consultant Sociologist) and Jon Unruh (Development Associate in the LTC). Prior to the team's departure, an effort was made to become familiar with relevant background materials and research publications, and synthesize their findings regarding access to land and water resource issues. Two of those studies, McGowan et al. (1986) and TAMS (1986), are frequently cited throughout this report.

Several Somali Institutions collaborated with the LTC in Somalia. During November, LTC staff were accompanied by Ali Aidid from the Department of Land and Water Resources in the Ministry of Agriculture.

During the second visit in January, in addition to Ali Aidid, the LTC team was joined by Halima Ismail, Assistant Professor in the Faculty of Agriculture and three enumerators. All of the enumerators are associated with the Academy of Sciences in Mogadishu. They included Abdi Abdullahi Suliman who was chief enumerator and Osman Ahmed Said and Mohamed Said Ayanle.

All eight members of the research team visited the Shalambood PPA from January 22 to 31. Another two weeks were spent in Mogadishu on key-informant interviews and write-up. The LTC team departed February 15, with a draft of this research report submitted to USAID prior to departure.

#### Research Methodology

The research approach involved informal discussions with village authorities, key-informant interviews with owners, foremen and laborers of large commercial farms, and discussions with farmers and heads of villages in the PPA. A list of contacts made in the course of the research is given in Annex 1.

Interviews with farmers involved both informal discussions and a formal survey using structured questionnaires. Because of the emphasis given to smallholder development in the proposed project, special attention was given to gathering information on production constraints, socio-economic behavior and perceptions of small farmers related to land and water resource issues.

The questionnaire (refer to Annex II) was developed in Madison, and received several revisions before the LTC team departed for Somalia. Originally, the LTC had hoped that a Somalia language version could be ready by the time of departure. But this proved to be impossible due to time constraints and inability to locate a Somali capable of making the translation. This concern later proved to be needless, as all the enumerators had adequate verbal and reading skills.

The formal structure of the questionnaire proved to be effective in gathering information on household demographics, land holdings, land transactions, land registration and incidence of disputes, irrigation practices and viewpoints of farmers on various proposals for improving land and water use on the scheme. Informal discussions were also held with key-informants in the village, including farmers and representatives of farmers associations and village committees, for a more comprehensive overview of farmers attitudes and perceptions on land and water resource problems.

After arriving in Somalia, the questionnaire was tested in three stages. The first stage involved discussing the questionnaire with the enumerators, and incorporating their comments and suggestions. This step provided a test of the enumerators' ability to work with the

questionnaire in English. After corrections were made, questionnaires were thoroughly reviewed with the enumerators to ensure they understood the motives for a specific question, and any nuances that may have been associated with the way the question was asked. Difficult concepts such as tenancy, sharecropping and questions eliciting farmers' suggestions for scheme improvements received special attention. Other issues such as using standard measures for land and agricultural products were also discussed. Finally, the questionnaire was tested in the field with all enumerators present. This provided a final opportunity for answering any questions, and helped to reduce enumerator bias.

A random sample of 56 small farmers was selected from a list of farms provided by TAMS from their 1985 population census. The list, containing names of heads of households with small private holdings in TAMS PPA (excluding large private and parastatal operations), represented the most complete and accurate list of households known to the LTC in the area. Unfortunately, the PPA covered by TAMS was smaller (refer to Chapter 2 for elaboration) than the current PPA being considered for rehabilitation by the Ministry of Agriculture and USAID/Mogadishu. Consequently, in using this list for selecting the sample of households, farmers from the CRASH program areas north of the Second and south of the Fourth secondary canals (both fed by the Dhame Yasin primary canal), were excluded from the sampling design, although some farmers in the sample mentioned having some land in these areas. Despite this limitation, TAMS list was very useful. Without it, the selection of a random sample within the tight time frame required for the study, would have been impossible.

Once farmers in the random sample were selected, the head of the Small Farmers Association in Shalambood (Adan Nur Hussain) was recruited as a facilitator to locate farmers and arrange a schedule for interviewing. This system worked well because nearly all independent smallholders in the Shalambood PPA live in either Shalambood or Buffow. Following each days interviews, questionnaires were reviewed with all enumerators present. This procedure helped standardize enumerators' interviewing procedures and allowed the opportunity for questioning and exchange of information among team members.

Although certain members of the team were primarily responsible for the informal interviews of large farmers in the PPA and formulation of a general land tenure profile of the area, all members worked with the formal and informal interviewing of smallholders, and with data compilation and interpretation of results. This procedure enabled a broader interpretation of the data, specifically with regards to the linkages between large plantations and smallholders in the area, than what might otherwise have taken place. The analysis of survey results began midway during the course of the interviews, with results being updated as new data became available. The bulk of the analysis was completed by the time of team's departure from the field.

After the interviews were completed, a meeting with the heads of azienda committees and farmers was organized to discuss findings of the research, and elicit comments on various proposals for better organizing water distribution and use on the scheme. The meeting provided a final opportunity for the team to clarify discrepancies pertaining to research findings, and to give feedback to farmers on the survey results and the significance of those results for addressing land and water resource problems on the scheme. It also provided farmers the opportunity to ask the team questions about the research endeavor. The two main questions asked were "What is all the questioning about?" and "When will USAID get the project underway to improve the availability of water on the scheme?". Farmers were particularly confused by all the teams that have visited the area over the past several years, and are uncertain where matters currently stand. Future teams can expect similar questions when working in the area. It should be emphasized, however, that farmers throughout the study were very cooperative and pleased when asked for their viewpoints on proposed changes.

One other aspect concerned with interviewing women in the survey merits mentioning. Attempts to use male interviewers to elicit responses from women in field surveys can result in incomplete or inaccurate information being given. In this survey, Halima Ismail, a female assistant professor in the Faculty of Agriculture performed the womens' interviews, with instructions to elaborate on problem areas that may be of particular importance to women.

#### Organization

The remainder of this report is organized into four sections. Chapter II develops a land tenure profile for the PPA. Included in that profile is a typology of farms with estimates of area and number of farms associated with each. The organizational structure of each farm type is described, with special attention given to the characteristics of smallholders. The emphasis shifts in Chapter III to land disputes and registration. Land disputes and dispute resolution by azienda committees, regional courts and the Ministry of Agriculture is elaborated in detail. This discussion is followed by a description of the incidence of land registration in the PPA, and registration procedures. The analysis examines characteristics of both registered and non-registered farmers, and seeks to explain why some register and others do not. Chapter IV concentrates on water use and distribution. It describes current procedures for allocating water at the government and azienda level, the parties involved, irrigation practices and their effect on agricultural performance. Issues dealing with the watering and grazing of livestock on the scheme and their destructive effect on the canals are examined in Chapter V. Each chapter attempts to identify key problem areas, with recommendations offered for their resolution.

## LAND TENURE STRUCTURE AND ORGANIZATION

### Geographical Location

The Shalambood proposed project area (PPA) is 8 km. inland from the coastal city of Merca, the seat of Benadir district (Figure 2.1). It lies along the lower Shabelli river, bounded by the upstream edge of the project zone, the Fifth Secundario, the Dhame Yassin canal, and the paved road from Shalambood to Mogadishu (Figure 2.2). Three major towns lie at the extreme corners of the PPA. Shalambood at the southern end has a population of 22,240 inhabitants. Populations of the other two towns, Genale to the north and Buffow to the east, are smaller, but exact populations are unknown. Enclosed within these boundaries (denoted by the shaded area in Figure 2.2) are 63 of the formerly Italian-owned *aziendas*. Since the departure of the Italians, landholdings have been transferred to small holders, state owned farms, state cooperatives, or large private farms.

### Irrigation Infrastructure

Irrigation water for the Shalambood scheme comes from a barrage located near Genale at the extreme northwest border of the project area. Water is distributed by gravity flow through primary, secondary, and tertiary canals which comprise the irrigation system. Water is elevated in the barrage by gates in the Ganale dam. The water flows into the Dhame Yassin primary canal, and from there into the Second, Third, Fourth and Fifth secondary canals. Tertiary canals feed off the secondaries, delivering water to farmers' fields. Since the level of water is higher than the surrounding farmlands, water is obtained by unplugging canal walls, allowing water to flow into the fields. In theory, the quantity and location of water in the system is regulated by water levels in the barrage and by raising and lowering canal gates. As noted by TAMS (1986) and McGowan et al. (1986), however, the irrigation infrastructure is in a state of disrepair, and water control has badly deteriorated.

### Legal Framework for Land Tenure

Land tenure relations in Somalia are governed by the Agricultural Land Law (No. 73) of 1975 and subsequent decrees, notably, law No. 23 of 1976. Because the 1975 law is so central to understanding the nature of land transactions, title security, incidence of land registration, land disputes and mechanisms for dispute resolution in the Somali economy, a basic knowledge of the law's provisions is essential.

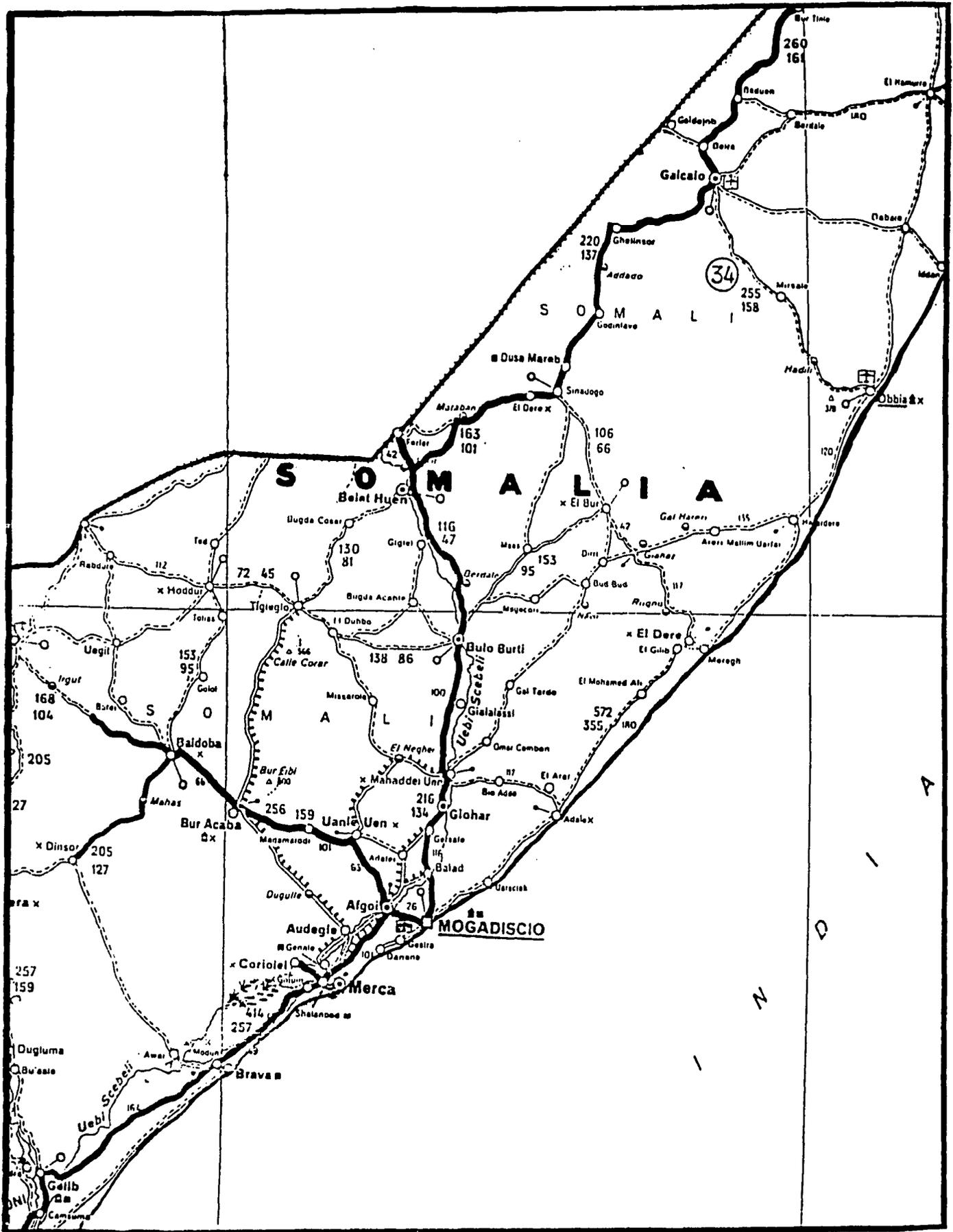
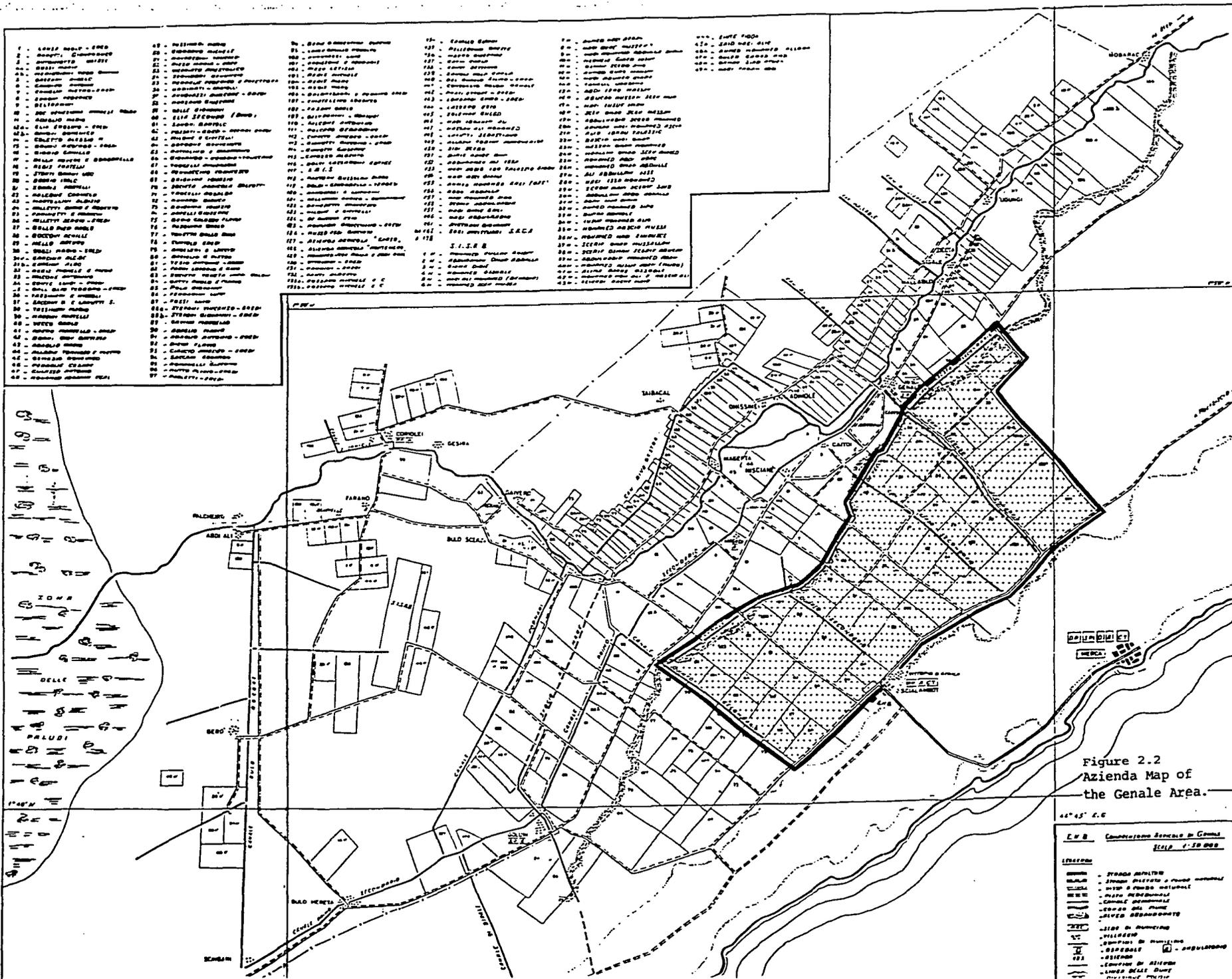


Figure 2.1 Map of Central Somalia



Best Available Document

A central element of the 1975 land law is the establishment of State control over all of the country's land resources (Article 2) with the distribution and management of land being the responsibility of the Secretary of Agriculture. Access rights to land are in the form of variable-term leases which differ in their length and degree of restrictiveness depending on whether the leasee is an individual, family or corporate body, either public or private. Individuals and families can use land on the basis of 50-year renewable leases. These lease rights are inheritable by the immediate kin of the leasee. Public agencies including cooperatives have no time limit imposed on their lease (Article 7). Ceilings on leaseholds are also specified, being lowest for individual families (i.e., 30 ha. for irrigated land, or 50 ha. for rainfed land). The ceiling is raised to 100 ha. for banana plantations leased by a family or individual. Corporate organizations, public agencies, or private organizations are under no size limit restrictions.

The 1976 presidential decree excludes national agencies from being bound by provisions of the Land Law. The same decree defines the entity "special agency" as one in which the government is part owner. These are subject to the limitations on leaseholds set by the Secretary of State for Agriculture. This special agency category is notable because it evidently encompasses agribusiness companies such as Somalfruit which have a prominent presence in the Shalambod area.

The State reserves the right to nationalize lands in excess of the limits described above (Article 9) and to repossess land of a current user who fails to meet the conditions set forth on a lease, or fails to cultivate the land for a successive two year period. Article 10 also establishes public domain rights of the state to nationalize lands "...for the benefit of the economy in general." Registration and use of land by absentee landlords in Shalambod (see TAMS, 1986) suggests that the provision annulling leases does not require direct use by the leasee. In operational terms, the key seems to be that the land is managed and not left idle.

The evident desire of the government to better control and utilize its land resources is indicated by the emphasis placed on land registration, and by enforcement of the conditions of the leaseholds. Official use-permits can also be issued by the Secretary of State for lands used for agricultural purposes. Individuals may register the lands they are farming or wish to farm, by means of a process which begins with an application to a district level Ministry of Agriculture officer and filters up to the Ministry of Agriculture office in Mogadishu. (See Chapter III for details on this process.) According to Article 5, Section 2, "permission to use lands not registered will terminate at the end of six months...". This implies that the large number of farms currently unregistered are in a legal netherland. It would seem to leave open the possibility of individuals or companies being able to register a piece of land currently being farmed by someone else who lacks a legal

permit. While civil courts are charged with the responsibility of deciding civil issues concerning land rights, it will be seen in Chapter III that unofficial, informal dispute resolution mechanisms, using long term use of the land as a precedent for deciding usufruct rights, plays an important role.

Article 17 of the Land Law establishes authority to tax land based on land quality (i.e., whether the land is irrigated or rainfed). The government can determine rates and tax regulations as it deems fit. The issue of land taxation is important in view of proposals that have been put forward for the Shalambod project requiring that the scheme's operation be sustained over the long run with self-generated revenues.

Perhaps the most restrictive elements of the law are those dealing with land transfers whether temporary (i.e., rent, sharecropping) or permanent (i.e., sale, inheritance). Transfer either via sale, sub-letting, or renting does not appear to be legal. Partitioning of land does not seem to be categorically ruled out, probably to allow for the operation of inheritance; Article 14, Section 2 states that "the farmer should not unnecessarily partition his land" (Somali Land Legislation Translation, Land Tenure Center, 1985).

The 1975 law does permit lease rights to be bequeathed to close kin. Although the definition of "close kin" remains vague and ill-defined in the 1975 law, interviews by the LTC team of district court officials revealed that the rules of the Civil Code are operative and these lay out in great detail who the rightful beneficiaries are, the shares due them, and the procedures needed to settle division of an estate (See Chapter III). Article 16 of the 1975 law which deals with inheritance, leaves ample leeway for heirs to work out mutually acceptable arrangements.

#### Estimates of Area and Number of Farms: Previous Studies

TAMS (1986) and McGowan et al. (1986) provide the most comprehensive description of land tenure in the PPA. Both provide valuable information on number and size of farms, management status and organizational structure.<sup>1</sup> However, differences in methodologies used

<sup>1/</sup> The well defined layout of *aziendas* and canals comprising the scheme, plus maps like figure 2.2, would seem to suggest that formal area measurements probably do exist somewhere. If such estimates do exist, their location was unknown to any of the authorities contacted.

by the two studies create problems in comparing and interpreting results. These differences fall into two main categories: terminology for subdividing the PPA into groups of farms, and boundary definition.

TAMS subdivides its PPA area into irrigation zones. A single farm or group of farms may comprise one zone. The zone is distinguished by the canal from which it receives water -- e.g. whether mainly from the Dhame Yassin primary canal, or the Second, Third, or Fourth secondary canals -- and the relative position of the land along the canal's length, e.g., the beginning, middle or end.

For larger commercial enterprises, TAMS irrigation zones generally coincide with the farm's borders. For small holdings, an irrigation zone may coincide with an azienda. In other instances, several aziende may be lumped together to form one irrigation zone.

McGowan, et al. (1986) subdivide the PPA according to aziende, and thus remain consistent with the old Italian maps and subdivisions. Farms or groups of farms are identified by azienda numbers. Irrigation zones have no local recognition by farmers in the PPA. The old Italian aziende are still recognized by farmers, although many are now referred to by Somali names.

Another major difference between the two studies concerns the set of geographic boundaries used to define the PPA. TAMS places the southern boundary of the project area on the paved road halfway between the Fourth and Fifth secondary canals (i.e., the road from Shalamood that intersects the Dhame Yassin and paved road to Genale); the northern boundary is situated along the Second secondary canal.

The PPA used by McGowan, et al. (1986) was expanded at the request of the Ministry of Agriculture and USAID/Mogadishu. In this case, the southern boundary runs along the Fifth secondary canal, and the northern boundary is extended roughly one kilometer further northeast beyond the Genale to Buffow road. East and west boundaries of the project area coincide in the two studies.

TAMS (1986) typology of 31 irrigation zones encompasses 37 of the formerly Italian owned aziende. For this area, TAMS information on size and number of farms is quite comprehensive. The McGowan, et al. (1986) report, with the expanded project area, encompasses 63 aziende including all those covered by TAMS. But their information on size and number of farms is more spotty due to the short time frame imposed on their study.

TAMS (1986) estimates of area and number of farms are reported in Table 2.1. As noted earlier, the total area of the PPA is subdivided into irrigation zones. The term B-1 denotes that the Petroleum Cooperative gets water from the Buffow canal and is located at the canal's head. Small farms in B-5 also get water from the Buffow canal,

Table 2.1: TAMS 1986 estimates of Number of Farms and Area  
by Farm Type in the Shalambood PPA

Zone	Name	Small farms <sup>a</sup>		Large farms <sup>b</sup>		State Farms		Total	
		No.	Ha. <sup>c</sup>	No.	Ha.	No.	Ha.	No.	Ha.
B-1	France (Petroleum Coop)					1	340	1	340
B-2	Atmet					1	400	1	400
B-3	Melo-2	45	43					45	43
B-4	Buffo (Large Farmers)			12	359			12	359
B-5	Buffo (Small Farmers)	65	150					65	150
DY-1	CADCEED (Charcoal Coop)					1	140	1	140
DY-2	Tisinaro (Police)					1	60	1	60
DY-3	Dayax Coop	41	52					41	52
DY-4	Peraglie			2	90			2	90
III-1	Gemesio			1	140			1	140
III-2	Vecco (PLO)					1	320	1	320
III-3	Asluubta (Prison)					1	310	1	310
III-4	Maero	98	130					98	130
III-5	Bordi	78	118	1	10			79	128
III-6	Grasiolo			1	150			1	150
III-7	Alas Yero	40	44					40	44
III-8	Alas Weyn	56	95	1	11			57	106
III-9	Adaglio	45	130					45	130
III-10	Ramiro (MOA Project)					1	100	1	100
III-11	Mahadey Franco			1	60			1	60
III-12	Melo-1	24	39					24	39
IV-1	Ahmed Gaas			1	172			1	172
IV-2	Matrico Coop	156	161					156	161
IV-3	Urbunati	166	213					166	213
IV-4	Marzani			1	45			1	45
IV-5	Murale	65	82					65	82
IV-6	Manfredini-1			1	60			1	60
IV-7	Manfredini-2	270	68					270	68
IV-8	Biiso	178	146					178	146
IV-9	Vicariato	131	136					131	136
IV-10	Duray	113	77					113	77
Totals		1571	1684	22	1097	7	1670	1600	4451

a. 0.1 to 10 ha.

b. Greater than 10 ha.

c. Land as reported by respondents.

Source: TAMS (1986), Genale Irrigation Rehabilitation Study, Annex I, p. I-71.

but are situated at the canal's end. Likewise, DY-1 indicates that the CADCEED (Charcoal Cooperative) is one of the farms drawing its water directly from the Dhame Yassin; the Gemesio large private farm in III-1 is located at the head of the Third secondary canal; and IV-1 refers to the Ahmed Gaas large private farm situated at the beginning of the fourth secondary. The Fifth secondary canal lies outside TAMS PPA.

According to the TAMS (1986) survey, the total project area encompasses 1,600 farms spread over 4,451 ha. Of this total, 1,571 are small farms (less than 10 ha.) with a total area of 1,684 ha., 22 large farms (greater than 10 ha.) with an area of 1,097 ha. and 7 state farms with a total area of 1,670 ha. Areas close to the Dhame Yassin are controlled by larger commercial enterprises, with a shift to small holdings further away from the Dhame Yassin, toward the end of the secondaries.

Data from McGowan, et al. (1986, 76) on area and farm size distribution can be found in Annex III. Even though their defined PPA is larger than TAMS, they report a total area of only 3,866 ha. due to missing data. Of this total, 2,219 ha. are held by 1,724 smallholders, and 18 large farms (state farms included) with a total area of 1,647 ha. While McGowan et al. (1986) covers more area of smallholder lands than TAMS, it is less complete in its coverage of larger holdings.

#### Methodology for Large Farm Surveys

Both the TAMS (1986) and McGowan, et al. (1986) studies provide valuable starting points for constructing a land tenure profile of the area. McGowan, et al. (1986) suggest that "there are doubtless many inaccuracies in..." their farm survey, and that "future teams will have to double check the area and status of each azienda to determine how many families have cultivation rights on each." There is in fact disagreement between the McGowan et al. and TAMS studies on the size and location of both large commercial farms and smallholdings.

Following the advice of McGowan, et al. (1986), the LTC re-surveyed the area, contacting as many of the large private farms, cooperatives and state farms as possible. Finding knowledgeable people who could provide accurate information on the farm's size and organizational structure was not easy. Even in the wet season when agricultural activities are at their peak, many owners are away, living in Mogadishu. At the time of the Jilal, when the greatest portion of the LTC survey took place, farm activities were at an ebb. Farm managers were either away for lack of work, or were at the water office in Genale trying to find water to sustain their banana plantations. The failure of the Der rains has created a severe water crisis for those cultivators lacking well-pumping

capacity. Plantation laborers were also contacted whenever possible, but were rarely knowledgeable of the farm's organizational structure, or even total farm size.

The Jilal season worked to the teams's advantage for smallholder interviews. Without water, smallholder agriculture was at a lull, and most farmers could be contacted easily in Shalambood, Buffow or strolling near their fields. While most farmers knew the size of their individual plots and the name of the azienda within which their parcel was located, few could offer accurate information on area or number of farms within the boundaries of the azienda. In the course of the LTC smallholder survey, heads of water committees for each smallholder azienda were contacted in order to locate farmers in the LTC random sample. This opportunity provided further information for many aziende.

Current information from the LTC survey on size, number of farms and organizational structure of farms in the Shalambood PPA can be found in Annex IV. Data are broken down by azienda to remain consistent with maps of the area (Figures 2.2 and 2.3). Question marks indicate that no information could be obtained for a respective azienda; a superscript 'T' means that no information for a particular azienda was located by the field survey, but an estimate was available in TAMS; and 'M' has the same interpretation as 'T', except the estimate was taken from McGowan, et al. Area information for 43 aziende are known with some certainty; area for the remaining aziende will have to be deduced. (More will be said on this shortly.)

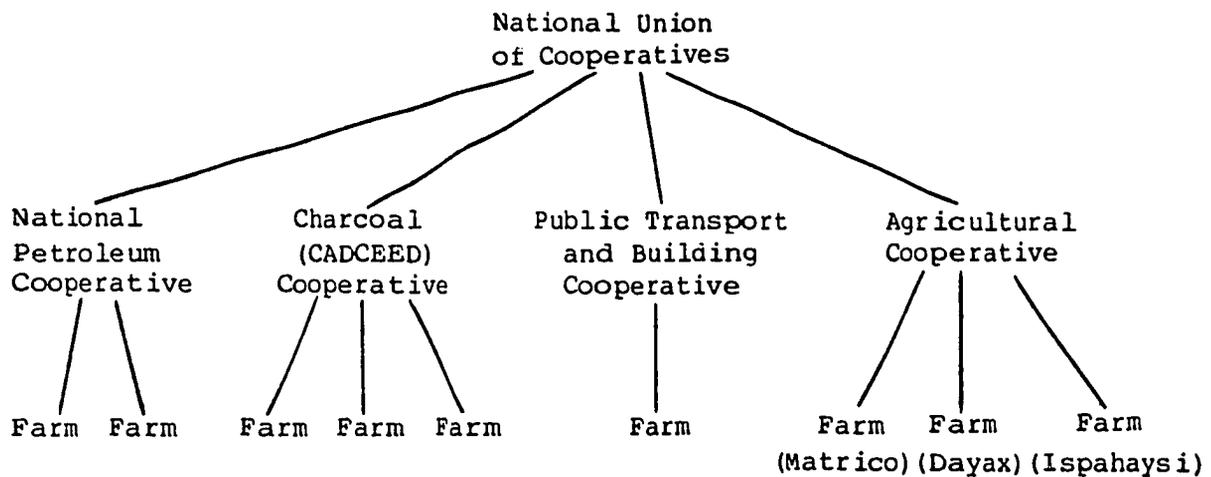
More complete information on the organizational structure and operation of large cooperative, state and private farms in the PPA are provided in Annex V. A brief description is written for each farm describing crops grown, number of workers employed, land cultivated by the plantation and by its laborers, nature of irrigation and water problems, attitudes of farmers and laborers on a variety of issues, and other information related to life on a plantation or farmer cooperative. Similar information for smallholders were collected via both formal and informal questionnaires. Some of this information will be presented below and in remaining chapters. First, a land tenure profile map and summary information related to data in Annex IV will be dealt with briefly.

#### Organizational Characteristics of Cooperatives

There are two common definitional problems that lead to misconceptions of landholdings in the Shalambood PPA: land ownership, and cooperative. According to Somali law, land is owned by the State. Citizens and institutions hold only usufructary rights. Thus any

reference to land ownership in this paper should bear this definition in mind (an earlier section provided a more elaborate explanation of the Land Law).

Use of the term cooperatives in the Shalambood context is also misleading. Notions of a group of individuals taking collective action on input procurements, selling, or cropping decisions is clearly not present in the Shalambood scheme.



Of the 4 cooperatives mentioned in Annex IV and in the above diagram (several of the cooperative farms lie outside the PPA), 2 belong to the National Petroleum Cooperative, 3 to the Charcoal Cooperative, 1 to the National Association of Public Transport and Buildings Cooperative and 3 to the Agricultural Cooperative. As far as could be ascertained, all four cooperatives are linked at the national level with the National Union of Cooperatives.

In reality the organizational structure of the four cooperatives bears little resemblance to each other. The nature of the link between the National Petroleum Cooperative and the National Petroleum Agency could not be ascertained. The team was told that it has no members and operates as a state farm, with profits going to the National Union of Cooperatives. Possibly, a group of investors from the petroleum profession decided to invest in the farm, but transferred all control to the National Cooperative after the enterprise failed, or due to inadequate investment.

The Charcoal Cooperative operates as a limited partnership. It has 114 members, whose investors have contributed equal capital in financing the development of the farm. Profits are shared equally with a fixed

percentage shared by the National Union of Cooperatives. The organization of the Public Transport and Building Cooperatives is similar to the Charcoal Cooperative. Investors contributed capital to the farm's development, but due to inadequate investment total farm size has shrunk from its initial holdings of 1,000 ha. to its current size of 50 ha. The current director maintains that farmers on the remaining 950 ha. are members of the cooperative, although there appears to be a dispute with the Agricultural Cooperative over control of the land. Generally speaking, it does not appear that either of these 3 cooperatives has significant smallholder participation, and perhaps are better classified as state farms or limited partnerships.

The Agricultural Cooperative is distinct from the previous 3 cooperatives in that its members are primarily small holders. Its membership includes small farmers from the Matrico, Dayax and Ispahaysi Cooperative farms. The Agricultural Cooperative provides some assistance with fertilizers, pesticides, seeds, and tractors. But in response to the team's observation that some farmers in the cooperative get inputs, but others do not, management responded that "...inputs had to be distributed based on priorities." The cooperative has to rent tractor services and buy inputs with credit, and limited resources constrain the amount of modern inputs or services that can be provided.

TAMS (1986) assertion that land under the Agricultural Cooperatives is privately owned by the farmers who cultivate it appears to be erroneous. Management of the Shalamood Agricultural Cooperative clearly maintain that the land is registered in the name of the Cooperative and owned by the Cooperative, not by the member farmers. The Cooperative's management further reserves the right to tell smallholders what and when to plant, although this fact seemed to be of little importance to smallholders. Farmers from the Matrico Cooperative seemed to have only minimal dealing with, or coordination from the cooperative itself. Farmers of the Ispahaysi Cooperative, however, appeared to be pleased with the Agricultural Cooperative's performance. Since being taken over by the cooperative, individual smallholdings have increased in size, and inputs have been received. Their only reservation concerned a desire for individual title. However, officials of the Cooperative clearly stated that land belongs to the State and the transfer of individual leasehold rights to smallholders was neither planned nor likely. Apparently, the National Cooperative has decreed that all ex-CRASH program areas should be taken over by the Agricultural Cooperative, although the cooperative has not yet been able to do so.

An unanswered question from the survey is "What does the Agricultural Cooperative get out of running or attempting to run smallholder cooperative farms?" From the above discussion, it is clear that the the Cooperative's central management has ambitions of expanding the Cooperative's sphere of influence, but to what end? Several possible answers were suggested in the study. First, the Agricultural Cooperative

appears to be pursuing National Directives promoting smallholder development. However, the organization is also an extension of the government's cereals marketing operations, since participation in the cooperative is tied to official commodity procurements. Whether the cooperative simply facilitates the government's search for sellers of grain, or whether farmers are obliged by Cooperative participation to sell grain to the government, was never made clear in the course of the survey. It might be speculated that in return for services and benefits, the Agricultural Cooperative enjoys some control over the use of the land and at least theoretically production.

### Farm Typologies

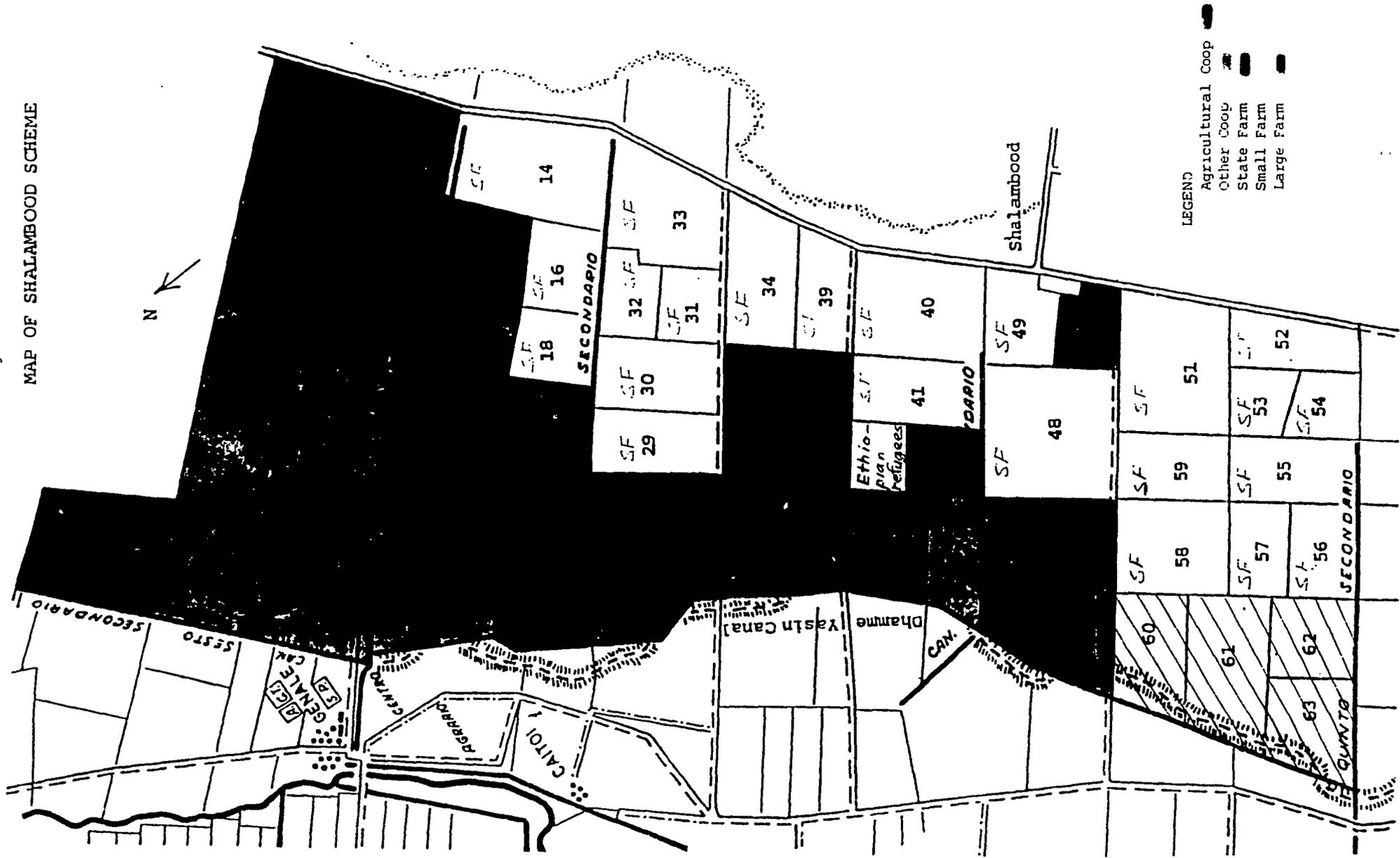
The characteristics of farms in Annexes IV and V, suggest 5 general types of land holdings or organizational structures:

1. Independent smallholders who individually hold and cultivate the land;
2. Smallholders in the Ispahaysi, Matrico and Dayax Agricultural Cooperatives;
3. Large farm cooperatives, including the National Petroleum Cooperative, Charcoal Cooperative and Public Transport and Buildings Cooperative which administratively come under the National Union of Cooperatives.
4. Large state farm projects under the Ministry of Agriculture, including AFMET and the Kamiro farm, and other governmental departments including the Merca Prison farm and the Police farm.
5. Large Private farms owned and operated by individuals or organizations like the PLO.

The location of farms corresponding to these types are represented by names and shaded areas in Figure 2.3. Estimates of size and number of farms in Table 2.2 are summarized from Annex IV. Figures in the category 'Surveyed Areas' come from the LTC survey of owners, farm managers, staff and laborers of the large commercial farms, well-informed farmers and heads of *azienda* committees for smallholder *aziendas*, and official data for CRASH program areas. Data collection would have been easier if agricultural census information existed for the area. Since it does not, a key-informant approach was used. In some cases it was not possible to find any data, even after frequent visits to a location. These estimates

Figure 2.3

MAP OF SHALAMBOOD SCHEME



LEGEND  
Agricultural Coop  
Other Coop  
State Farm  
Small Farm  
Large Farm

Table 2.2: Area and Number of Farms in the Shalambod PPA,  
LTC Survey, 1987

	Number of Farms	Total Area (ha.)	Land Allocated To Laborers (ha.)
1. Independent Smallholders:			
Surveyed Area <sup>a</sup>	1,386	3,370	n/a
Est. for Remaining Area <sup>b</sup>	2,567 <sup>c</sup> (639) <sup>c</sup>	595	n/a
2. Smallholder Cooperatives:			
Surveyed Area <sup>a</sup>	1,007	1,168	n/a
Est. for Remaining Area <sup>b</sup>	0	0	n/a
3. Large Cooperatives:			
Surveyed Area <sup>a</sup>	5	1,198	255
Est. for Remaining Area <sup>b</sup>		0	0
4. State Farms:			
Surveyed Area <sup>a</sup>	4	870	92
Est. for Remaining Area <sup>b</sup>		0	0
5. Large Private Farms:			
Surveyed Area <sup>a</sup>	14	867	93
Est. for Remaining Area <sup>b</sup>		475	92
6. Total		8,543	532

a/ The term 'Surveyed Area' denotes that figures originate from the LTC survey, TAMS (1986) or McGowan, et al. (1986).

b/ No information on area or number of farms are available from the LTC survey or published literature.

c/ The figure 639 is based on a CRASH program's estimate that 350 farms settled CRASH program areas. This figure appears unrealistically low. The figure 2,567 was calculated by dividing areas lacking population estimates by the average farm/land ratio computed from known population estimates.

are labeled 'Estimated Remaining Area' in Table 2.2. Land areas for this group (aziendas 1-3, 14-17, and 33 in Annex IV) were calculated by comparing hectarages among aziendas, and making extrapolations using best judgement.

The total area of 8,543 ha. is nearly twice as large as TAMS (1986) estimate of 4,451 ha., reported for their smaller PPA. Approximately 87 percent (7,473 / 8,543 ha.) of the total area was verified by key-informant discussions. Data for the remaining 1,070 ha. (data for the 'Estimates for Other Areas' category) are less accurate, but margins of error are probably less than 10%. Independent smallholder areas make up 46.4 percent of the PPA, while smallholder Agricultural Cooperatives cover another 13.7 percent. The remaining area is divided fairly evenly among large cooperatives (14.0%), state farms (10.2%) and large private farms (15.7%).

Large commercial farms in the PPA commonly give some land to farm laborers, who cultivate the land for personal use. Laborers are smallholders who sell their labor to commercial farms rather than engage in off-farm activities in Shalambood. Of the total 3,410 ha. held by large commercial farms, 532 ha. (15.6%) are cultivated by laborers.

These figures pose a challenge to TAMS implicit suggestion (that smallholders control 36 percent of the total land area, based on their smaller PPA) that smallholder development is a weak component of the project. Survey results suggest that independent smallholders, small farmers in the Agricultural Cooperatives, and farm laborers of the larger commercial plantations control or personally cultivate 66.3 percent of the land resources in the PPA.

Figures for the CRASH program area, aziendas 51 to 63, were based on information from a well-informed ministry official that areas are primarily controlled by independent smallholders. To make the best use of the limited time available, the team concentrated its energies on the portion of the PPA to the north of the paved Shalambood to Genale road. Information given for the CRASH program areas was assumed to be correct. Since the site visit, it has come to the attention of the team that aziendas 60 to 63 may be plantations (at least part of the area is known to be planted with bananas), whose precise management and organizational structure is unknown. The area denoted by hash marks in Figure 2.3 is approximately 575 ha. Based on this revision, smallholder areas would represent 60 percent of the total land in the PPA, while the shares for other farm management types would correspondingly increase. Future research in the area should seek to verify these figures and better define the land tenure profile in this ex-CRASH program area.

### Laborers of Large Farms and Smallholder Characteristics

Laborers of the large plantations have many characteristics in common with smallholders in the PPA. Both groups have small parcels of land which they cultivate for personal use, and both rely heavily on outside employment as a source of livelihood. Farm laborers work for the large commercial farms, as either permanent workers (drivers, watchmen, cooks, etc.) or temporary seasonal workers (performing planting, weeding, harvesting of perennial crops). They live in villages on the *aziendas* where they work. Smallholders primarily live in Shalambood and Buffow. They may seek seasonal employment with the large plantations, but many own tea shops, carry water, are merchants, or are engaged in other off-farm activities.

The tenurial security of laborers' land holdings is often misunderstood. TAMS (1986, p. I-53) notes in their population census of the area that nearly a quarter of all resident (i.e. laborers) households outside the area of Shalambood (in the villages of Shouferi, Lando, and Laba Garas) are made up of smallholders whose land was unregistered and was allocated by the Government to state farms. On closer inspection by the LTC team, it was found that the villagers were former workers of an Italian *azienda*. Upon leaving, the Italians transferred control of the land to the Government, which in turn gave it to the National Petroleum Cooperative. Prior to the transfer, workers had parcels allocated to them, but had no holdings of their own. This situation was left more or less intact with the transfer of the land to the National Petroleum Cooperative. Although laborers lack individual leasehold rights, evictions are rare. The fact that land-giving is so prevalent in the area suggests that plantations are willing to pay a high premium to recruit and keep good workers. Plantations are in need of a reliable work force, and land acts as a premium to ensure that workers stay.

Since husbands, wives and children may all work on a plantation, it is very difficult to calculate the number of households involved. Workers may or may not be allocated a parcel of land by the farm's management. On the Ahmed Gaas large private farm (Annex V), temporary workers normally receive 3 jibals per worker, while permanent workers may receive as much as 2 ha. On average, farm laborers receive between 0.6 jibals to 1.0 ha.

Survey results from the LTC smallholder survey (Table 2.3) show that smallholder families average 8.3 persons, including 1.9 resident able-bodied adult males (+14 years), 2.0 resident adult females, 0.5 elders, 3.3 resident children, and 0.1 others (sometimes a permanent laborer). Male headed households (9.0 person total) are larger than female headed households (6.5 person total) and have more land (2.61 ha. for males versus 0.87 ha. for females). A comparison of simple

Table 2.3: Household Demographics and Farm Size,  
LTC Smallholder Survey, 1987

	Male Respondents	Female Respondents	Total Sample
1. Number of Respondents	44	12	56
2. Household Demographics (persons):			
Resident Able-bodied			
Adult Males (+14)	2.2	1.2	1.9
Resident Able-bodied			
Adult Females(+14)	2.1	1.7	2.0
Resident Non-working Elders	0.6	0.3	0.5
Resident Children	4.0	3.3	3.8
Others	0.1	0.0	0.1
Total Family Size	9.0	5.5	8.3
3. Farm Size Distribution: <sup>a</sup>			
0.0 to 0.99 ha.	6 (13.6)	5 (41.7)	11 (19.6)
1.0 to 1.99 ha.	19 (43.2)	6 (50.0)	25 (44.6)
2.0 to 4.99 ha.	11 (25.0)	1 (8.3)	12 (21.4)
5.0 plus	8 (18.2)	0 (0.0)	8 (14.3)
4. Mean Average Hectares	2.61	0.87	2.24

a. Figures in parentheses are percentages of total number of respondents in respective categories.

land-per-resident ratios (0.1 ha./person for female headed households compared with 0.3 for male headed households) provides further evidence that land endowments are more restricted for women.

While farms usually comprise only 1 parcel of land, it is not uncommon to have more. In fact, 25.0 percent of farm respondents had 2 parcels, and 7.1 percent had 3 or more parcels. Most of the multiple parcel households, however, were those of males. While male headed households have 1.5 parcels on average, female headed households own an average of 1.2 parcels. There are several reasons why more than one parcel is farmed: 1) land fragmentation has reduced land to a minimum size holding, and additional land is purchased elsewhere to meet subsistence needs; 2) as part of a risk management strategy, farmers have 2 or more parcels along several canals to ensure water is received somewhere; and 3) land inheritance from both the husband's and wife's families, may result in multiple parcels for married households.

Before discussing results on the incidence of land transactions by respondents in the survey, an important definitional point needs to be clarified. Data on number of parcels and farm size (question 10, Annex II) refer to total land holdings of the respondent. Information on whether specific parcels (adding up to total holdings) are owned and cultivated, owned but uncultivated, rented-in or rented-out are also covered in question 10 of the questionnaire (Annex II). However, data concerning land acquisitions, specifically whether land was inherited, bought, settled from unclaimed land, or allocated by the government, were obtained only for the main parcel of the household, to economize on data collection.

Main parcel was defined as that parcel of land that was perceived by the respondent as being the most important for his or her livelihood. Of the 56 respondents in the survey, 17.9 percent had acquired the main parcel through inheritance, 19.6 percent had claimed their parcel from unused areas, 10.7 percent had bought the parcel, 12.5 percent had been allocated the land after the failure of the CRASH program, and 39.3 percent had been allocated the land by the government after the Italians had left (Table 2.4). The high percentages reported for inheritance from the Italians and claimed land suggest a fairly settled area. In fact, nearly 45 percent of the sample had cultivated their main parcel for 20 or more years; the sample average was 16.0 years.

In retrospect, the possibility that the main parcel may have been the first parcel settled by the household may understate the actual incidence of land acquisition by transactions reported for the sample. The high figures mentioned above for land claimed from unused areas and land allocated by the government after the Italians left, may reflect this definitional bias. Also the high figure for land settled from unclaimed land seems peculiar, since the area was presumably fully cultivated by the *aziendas* when land was under their control. These are problems that need further clarification in future research.

Table 2.4: General Land Tenure Characteristics,  
LTC Smallholder Sample, 1987

	Male Respondents		Female Respondents		Total Respondents	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Total no. of respondents	44		12		56	
2. No. of holdings having: <sup>a</sup>						
1 parcel	27	(61.4)	11	(91.7)	38	(67.9)
2 parcels	13	(29.5)	1	(8.3)	14	(25.0)
3 or more parcels	4	(9.1)	0	(0.0)	4	(7.1)
Mean average	1.5		1.2		1.4	
3. No. of years main parcel farmed <sup>a</sup> by number of farms:						
0 to 5 years	8	(18.2)	3	(25.0)	11	(19.6)
6 to 10 years	5	(11.4)	2	(16.7)	7	(12.5)
11 to 20 years	9	(20.5)	4	(33.3)	13	(23.2)
21 to 30 years	12	(27.2)	3	(25.0)	15	(26.8)
31 plus	6	(13.6)	0	(0.0)	6	(10.7)
Missing observations	4	(9.1)	0	(0.0)	4	(7.1)
Average years parcel has been farmed	18.2 <sup>b</sup>		13.8		16.0	
4. Main parcel was acquired by: <sup>a c</sup>						
Inheritance	6	(13.6)	4	(33.4)	10	(17.9)
Settled from unclaimed land	8	(18.2)	3	(25.0)	11	(19.6)
Bought	5	(11.4)	1	(8.3)	6	(10.7)
Rented	0	(0.0)	0	(0.0)	0	(0.0)
Allocated by govt. following failure of CRASH program	4	(9.1)	3	(25.0)	7	(12.5)
Allocated by Govt after departure of Italian owners	21	(47.7)	1	(8.3)	22	(39.3)

a. Figures in parentheses are percentages of total respondents in each category.

b. One outlier (60 yrs) was excluded.

c. Figures for parcel acquisition refer to the main parcel only, thus data may underestimate the incidence of acquisition by transactions.

Information in Table 2.5, sheds some light on farmers' ability to adjust the size of their holdings, in response to changes in household demographics and subsistence needs, or for asset accumulation. In response to the population cycle, it might be expected that land would be rented-in as family sizes increase, and land leased-out as the family ages and children leave the household. Results from the LTC small farmer survey showed that none of the respondents currently rent-out land, although 4 farmers were renting-in land, with payments in cash. During the course of the interviews it became apparent that renting of land was a sensitive issue. As will be elaborated on in Chapter III, land disputes often stem from rental arrangements, hence farmers may have been reluctant to fully disclose their transactions in land.

It is also apparent that as population pressures have increased, the supply of land has grown scarce. Farmers would like to buy land, but according to one farmer in the Dayax Cooperative, land prices have soared, rising from about So. Sh. 2,000/ha. for land close to water 10 years ago, to So. Sh. 40,000 to 60,000 today. In such an inflationary environment, it is not surprising that of the 6 respondents who had ever bought land, all did so because it was a good investment (Table 2.5).

Despite the small size of parcels, farm sizes appear to be adequate to meet family subsistence needs. Based on the average farm size of 2.24 ha. (Table 2.3), 8.3 persons per household (Table 2.3), and average yields of 10.3 quintals per hectare (Table 3.4), less 13.5 percent for losses, per-capita production would average 240 kg. This figure compares favorably with the FAO minimum standard of 180 kg/capita/year for subsistence, but allows little surplus for improvement of social welfare.

Many households look to off-scheme employment as a source of income. Of the 55 farmers responding in the survey, 41.8 percent said non-farm employment was somewhat to very important as a source of livelihood (Table 2.6). The type of employment varied. Male respondents (within the 41.8%) worked as public officials, merchants, manual workers, butchers, barbers, mechanics, laundrymen, watchmen and operator's of tea shops. Information for women respondents is more spotty. Growing tomatoes for sale and tomatoe marketing appear to be common.

Table 2.5: Land Transactions, LTC Smallholder Sample, 1987

	Male Respondents		Female Respondents		Total Respondents	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Number of respondents who have ever bought land	6	(13.6)	1	(8.3)	7	(12.5)
2. Why was land bought <sup>a</sup> :						
a) Land was good investment	6	(100.0)	0	(0.0)	6	(85.7)
b) Wanted better quality land	0	(0.0)	0	(0.0)	0	(0.0)
c) Wanted to control own farm	0	(0.0)	0	(0.0)	0	(0.0)
d) Previous land was inadequate to meet family food needs	0	(0.0)	0	(0.0)	0	(0.0)
e) not able to respond	0	(0.0)	1	(100.0)	1	(14.3)
3. Number of respondents who have ever sold or gave land <sup>b</sup>	1		0		1	(1.8)
4. Number of respondents <sup>b</sup> renting-out land:	0		0		0	(0.0)
5. Number of respondents <sup>b</sup> renting-in land:	3		1		4	(7.1)
Terms: Number paying cash	3		1		4	(7.1)
Number paying in-kind	0		0		0	(0.0)

a. Values in parentheses indicate percent of those who bought land.

b. Values in parentheses indicate percent of total number of farmers surveyed (56).

Table 2.6: Importance Of Non-Farm Employment  
As A Source Of Income

	Male Respondents		Female Respondents		Total Respondents	
	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>
1. Number of respondents rating importance of off-farm employment as:						
Very important	9	(20.9)	2	(16.7)	11	(20.0)
Somewhat important	11	(25.6)	1	(8.3)	12	(21.8)
Not important	23	(53.5)	9	(75.0)	32	(58.2)
2. Total sample <sup>a</sup>	43	(100.0)	12	(100.0)	55	(100.0)

a. One case missing.

## SECURITY OF TENURE AND LAND REGISTRATION

### Introduction

If farmers in the project area are to respond to improvements in the irrigation system, security of tenure will be a necessary ingredient. In essence, tenure security means that people using land can expect to enjoy the fruits of mixing their labor and capital with it and can make their production and investment plans over a long enough time horizon to permit the most efficient use of the land and other resources being utilized. Greater security can affect incentives for capital investment and applications of labor and modern inputs in the holding. One way that this may occur is through the linkage between documented title and access to institutional credit. Tenure security can be operationalized as involving, 1) a clear definition of rights to the land and its boundaries, 2) recognition of land use rights by those with the power to abolish or deny those rights, 3) the ability to defend rights, if challenged, through the administrative/legal system. There is also the matter of being able to sustain tenure security in the form of registration once it is initiated. This essentially involves the capacity to renew and update rights once established after transactions in property occur via sale, or as a result of inheritance.

The Project Identification Document proposes a cadastral survey and land registration component for the project. A system of land registration under the 1975 Land Act has already been applied to some holdings in the PPA. Issues covered below include: "Why are some holdings registered and not others?", "Are registered parcels being utilized differently than others, and why?", and "What are the economic costs of land registration and how do they influence the incidence of registration?" Time constraints and the requirement for multivariate analysis to control for other factors, made assessment of land registration's economic benefits impossible.

Land registration and security should not be viewed as being necessarily synonymous. As will be seen below, there are cases in the Shalambod area of registered farmers having their rights challenged. Conversely, the lack of documented title is not necessarily synonymous with the absence of security and with chronic disputes over land boundaries. Some farmers cultivating land registered in the name of the Agricultural Cooperative feel secure about their usufructory rights even though they lack legal ownership of the land. Traditional tenure systems exist in Somalia in which rights to land are sanctioned and upheld by the community and all the ingredients of tenure security cited above exist.

This is an especially salient point in Shalambood, an area of long-term settlement, where the incidence of land registration is low yet boundary disputes are infrequent. Recognition of these local realities set against the limited administrative capacity of the centralized bureaucracy to keep up with local property situations, will be relevant later when policy recommendations are spelled out.

Based on LTC survey data, several aspects of registered and non-registered farm households' socio-economic behavior will be compared: the extent of registration and non-registration in the area; motivations for registration and non-registration; and levels of security as evidenced by the incidence of displacement and land disputes affecting registered as opposed to unregistered parcels. To register or not to register is a choice not always made by the farmers themselves. Sometimes farmers are conferred land title through government programs such as the CRASH program or as a result of former state farms being restructured into small-holder operations. The extent of the latter type of registration will be assessed. One additional connection that will be investigated is that between land registration, on the one hand, and land use and resource allocation, on the other. Do the presumed tenure security benefits of registration result in the planting of perennial crops with a delayed pay-off on registered parcels and not on unregistered parcels? Does registration encourage capital investment in buildings or wells? Information on these relationships will be no more than indicative or suggestive at this stage and will be obtained by comparing households with and without registered parcels.

#### Disputes and Tenure Insecurity in Shalambood

Information on disputes and tenure insecurity comes from two basic sources: 1) interviews with key informants, including district and regional-level judges, regional and national Ministry of Agriculture (MOA) officials, local farm leaders and other groups of farmers and, 2) the LTC small farm survey. Regionally, the frequency of disputes has been on the rise since 1982, according to the regional judge in Merca. All sources agree that disputes over usufruct rights are more predominant than boundary disputes in the Shalambood area. However, court and MOA officials indicate that the level of disputes over usufruct is low in Shalambood compared to other newly developing frontier areas. Officials also note that more disputes concerned unregistered than registered land.

#### Land Dispute Settlement Mechanisms

In the Shalambood project area, three major sets of institutions are involved in the land dispute resolution process: the district and regional courts, both located in Merca, the regional office of the Land and Water Resources of the MOA in Genale, and local farmers committees in the various *aziendas*. While the dispute process will usually begin and,

in the case of border disputes, usually end with the farmers committees, the procedural sequence if disputes are not locally and informally resolved remains somewhat unclear. In part this appears to be due to jurisdictional conflicts between the courts and the MOA and in part because there appears to be no firmly established set of steps to follow; disputants have the choice of initially submitting a dispute to the MOA district representative in Genale (who is also the regional representative) or taking the judicial path. Both routes have their own set of successively higher appeal steps. At the same time, someone dissatisfied with either the MOA or court decision at any level, apparently has the option of switching over into the hierarchy of the other agency. It will be seen that institutions vary in the degree to which they are prepared to hear cases involving unregistered land or those involving prohibited practices such as land renting.

### The Courts and the Ministry of Agriculture

Disputes involving registered land are initiated by a letter of complaint, which the Genale Land and Water office head and the regional judge both agree is first directed to the former. From that point on, accounts of the procedures diverge somewhat. According to the regional judge, if the local Ministry official cannot settle it, the case shifts to the regional court in Merca. The Land and Water officer in Genale agrees that people may turn to the court if dissatisfied with his office's determination, although he says that this is improper. The proper path is to move up the MOA hierarchy of appeal starting with a district committee composed of the District Commissioner (who is also the District and Regional head of the Land and Water Resources office), the District police officer and the District Agricultural Coordinator. This committee investigates and rules on the case. The Committee, accompanied by witnesses, visit the site of the dispute. Neighbors are queried about the length of time land was used by the respective parties. The party dissatisfied with the determination at the district level may then pursue the matter at a regional MOA committee level. If still not satisfied, a disputant may resort to a committee of last resort in Mogadishu by writing to its head, the Permanent Secretary. This committee, includes three additional members: the Director General of the MOA, the director of the Land and Water Resources office and a Party representative. Sometimes this body will select a group to investigate the situation or they may write to the regional MOA Coordinator to do so.

Perhaps because of the inconveniences and greater costs involved in moving a case to Mogadishu, it appears that people often will transfer their case to the regional court in Merca if they object to the ruling of the MOA in Genale. Here an alternative hierarchy of appeal exists. Disputes over usufruct rights tend to go straight to the Regional rather than the District Court at Merca, because the district court's jurisdiction is limited to cases in which the land concerned is worth

less than Sm Sh 3,000; the land in dispute is almost always worth more than this. Furthermore, the district court restricts its dealings to registered land. The district court judge had in his three months at his post heard only one such dispute. It's most prominent role is in settling inheritance cases (more will be said on this below). Whether this difference between the district judge refusing to deal with inheritance of unregistered land, but the regional judge deciding disputes concerning registered as well as unregistered land, is a division of labor decided on in Mogadishu or merely a difference of personal viewpoint is unclear. In any case, the regional judge's position appears more pragmatic, as these disputes must ultimately be settled.

Parties dissatisfied with the regional court ruling may pursue the case at the appellate court, then through the Supreme Court and if there is still objection to the ruling, the case might be brought before the President himself. That cases are sometimes pursued upward through the judicial hierarchy is borne out by one of the people in the LTC survey sample who, it was learned, was in Mogadishu pursuing his case at the Supreme Court level against someone with a document issued for his land. His capacity to do so was undoubtedly enhanced by the registered status of the parcel.

Whether the courts or the MOA are involved, disputes concerning registered land are decided according to the provisions of the 1975 Act. Both also hear disputes concerning unregistered land. Since no statute strictly applies to such land, courts and MOA committees apply general principles of justice in their deliberations. In operational terms justice usually means deciding in favor of the person who can establish the most long-standing record of use of the land. Neighbors or other witnesses are called to testify how long the land had been used by the respective parties. Presence of a house or other structures belonging to one of the parties reinforces that person's claim, according to the regional judge.

Length of previous use remains the main basis for deciding in favor of someone; land is assigned to the original user in whose name the land is then registered. In some cases, both parties are assigned land. Litigants sometimes offer as proof, certificates issued under a law from the colonial period and in force until 1975, which allowed a landholder to have the Ministry of Agriculture write to the regional court, specifying that the landholder farmed a specific amount of land at a certain location and asking the regional court to issue a certificate to that effect. These certificates do not however list adjoining holders. Their current legal status may therefore be open to question. Occasionally, farmers present as proof of usufruct rights, court resolutions from a dispute case settled in the past.

### Farmers committees

Aside from the courts and the MOA, the most prominent organizations concerned with land dispute resolution are the farmers committees that exist in the various *aziendas*. This role is in addition to their water allocation and conflict resolution duties. Community religious leaders, the sheikhs and imams, do not apparently get involved in land disputes and restrict themselves to personal matters. The role of the seven-member farmers committees, is largely restricted to boundary disputes which by all accounts are relatively infrequent and which they handle with relative success. Efforts to resolve boundary disputes usually begin with these committees. The disputants try to establish their long-term use of the land. If the conflict cannot be resolved at the community level, the courts or the MOA are resorted to. That step is rarely taken by small farmers, according to the head of the Small Farmers Association of Shalambod; people are impatient with official mechanisms. The usual sequence as he described it, was to first try resolving a case through personal negotiation and if that failed for people to take matters into their own hands and resort to violence. One suspects some hyperbole in this version of the situation. But although the actual incidence of disputes leading to violence may be low, the perception expressed by the Small Farmers' Association leader is real and quite widespread among other small farmers in the area.

### Incidence and Types of Disputes and Procedures for their Resolution

Both authorities and farmers agree that unregistered land is more often involved in disputes than registered land. They also agree on the preponderance of use-rights disputes over boundary disputes. Although the numbers are small, the preponderance of use-rights disputes and the overall low level of disputes in general is mirrored in data from the LTC survey of Shalambod small farmers: while only 3 of the 56 respondents had ever had an ownership dispute, only 1 case each of a boundary and an inheritance dispute were reported (See Table 3.1). Despite the evidently low level of disputes, a quarter of the respondents (14/56) perceive land disputes to have become more common. This indicates the great impact on farmers' perceptions of what appear to be a rather small number of actual disputes. In general, perceptions about the severity of conflicts over usufruct rights differ dramatically between officials who tend to down-play their frequency and significance and farmers who evoke a sense of vulnerability and fear when the topic of land disputes is brought up. Since perceptions are important in the behavior of actors in the scheme area, it is important to have a sense of what these perceptions are.

The two key officials in the area responsible for dealing with disputes, the regional head of the MOA's Land and Water office located in Genale and the regional judge in Merca stated that such disputes over rights of usufruct were very common, but mostly in newly developed and

Table 3.1: Incidence of Disputes in the Shalambood Scheme,  
LTC Smallholder Survey, 1987

	Male Farmers		Female Farmers		Total Farmers	
1. Total Respondents in sample	44		12		56	
	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>
2. Number of Respondents having had <sup>a</sup> any past dispute over land	4	(9.1)	1	(8.3)	5	(8.9)
3. Number of farmers responding that land <sup>a</sup> disputes are becoming more common	13	(29.5)	1	(8.3)	14	(25.0)
4. For farmers having had a dispute, the dispute was over:						
a) boundaries	1					
b) usufruct rights over a piece of land	3					
c) inheritance			1			

a. Figures in parentheses are percentages of total farms in respective subsamples.

newly settled areas (notably, Korioli and Afgoi), not in Shalambood, which is an area of long-standing settlement. The low 5 percent incidence of land disputes among respondents in the LTC survey, seems to back up the officials' evaluation of the situation. Disputes over rights of usufruct usually involve unregistered land. Such cases are settled in the same way or based on the same principles applied to registered land. The legal reference point is the 1975 Land Law. In cases of unregistered land, principles from that law, most notably making the right to land contingent on its use, are applied in addition to general norms of justice.

Many use-rights disputes originate in rental arrangements in which the renter utilizes someone else's unregistered land and then resists handing back the land after the rental term expires. According to one area villager, fear of that happening made people wary of entering into rental agreements. According to some sources, land rental although banned in the 1975 Land Law, is common in the area (TAMS, 1986). According to Table 3.2, based on the small farmer survey, the percentage of respondents renting land was 7 percent (4/56). The MOA commissioner in Genale deals with many such cases and terms it the biggest dispute problem in the region. When the farmer has no documents and no rental agreement has been written up, the Regional Commissioner utilizes neighbors as witnesses. Since both parties are frequently from the same community, it often happens that witnesses supporting both sides in the dispute range against each other, making resolution extremely difficult.

The regional judge in Merca suspects rental to be the source of some use-rights disputes that cross his desk. However, since the 1975 Land Law prohibits renting of land, the court restricts itself to the job of establishing the relative merits of the case presented by the parties according to the same principles applied to other disputes concerning usufruct rights. One aspect of such cases that was difficult to clarify concerns the legal stipulation that land left unused for 2 years would be considered abandoned or would resort back to the State for reallocation. This stipulation applies to registered land and it is possible that a stricter standard may be applied if the land is unregistered.

Estimating the potential scope of disputes linked to a rental agreement is complicated by the fact that it is not known with certainty whether rentals are restricted to individual small holders or whether small farmers working land registered as a cooperative might also be able to enter into such arrangements. Interviews yielded conflicting views on the degree of autonomy the latter farmers would be able to exercise. The regional MOA official in Genale thought that renting and sale would be absent in a cooperative; freedom to sell or rent land was the main advantage of individually-controlled over co-op registered farms, he thought. The group most affected by rent-related disputes would be small unaffiliated farmers who lack documented title to their land.

Table 3.2: Land Transactions, LTC Smallholder Sample, 1987

	Male Respondents		Female Respondents		Total Respondents	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Number of respondents who have ever bought land	6	(13.6)	1	(8.3)	7	(12.5)
2. Why was land bought <sup>a</sup> :						
a) Land was good investment	6	(100.0)	0	(0.0)	6	(85.7)
b) Wanted better quality land	0	(0.0)	0	(0.0)	0	(0.0)
c) Wanted to control own farm	0	(0.0)	0	(0.0)	0	(0.0)
d) Previous land was inadequate to meet family food needs	0	(0.0)	0	(0.0)	0	(0.0)
e) not able to respond	0	(0.0)	1	(100.0)	1	(14.3)
3. Number of respondents who have ever sold or gave land <sup>b</sup>	1		0		1	(1.8)
4. Number of respondents <sup>b</sup> renting-out land:	0		0		0	(0.0)
5. Number of respondents <sup>b</sup> renting-in land:	3		1		4	(7.1)
Terms: Number paying cash	3		1		4	(7.1)
Number paying in-kind	0		0		0	(0.0)

a. Values in parentheses indicate percent of those who bought land.

b. Values in parentheses indicate percent of total number of farmers surveyed (56).

Two other types of disputes concerning usufruct rights cited by the regional judge in Merca involve the issuance, by the Ministry of Agriculture in Mogadishu, of documents assigning land to individuals. Two types of documents may be involved. One assigns a given plot of land, the other is in the form of instructions to the regional MOA officer in Genale to locate "unclaimed", i.e., unregistered land for someone. Although, not very frequent in Shalambod, this was the major form of land disputes in the area according to the regional judge in Merca. The land at issue may be either registered or unregistered. Where the land is registered the court overrules the MOA; if the land is unregistered, the principle of length of use is applied with the possibility once again being that the MOA could be overruled. It should be noted that the MOA agricultural officer gets similar requests for land. He has had to turn such requests down in recent years for lack of available land.

Among small farmers and their representatives interviewed by the team, the last-mentioned type of dispute -- outsiders from Mogadishu and elsewhere armed with documents entitling them to unregistered land currently being cultivated and used -- was the most common source of disputes and the one that farmers found most unsettling. According to a key informant, small farmers often felt powerless in challenging the claim of someone they considered obviously influential by dint of the fact that "they come with documents from Mogadishu." Cases of violence in such situations were cited. The head of the Small Farmers Association of Shalambod ranked the "land grabbing" phenomenon as the primary problem small farmers faced in the area ranking it even above irrigation. As he put it, "What good will improved irrigation do if I lose my land."

A key informant noted that area farmers were aware of the irrigation rehabilitation project and that they recognized that with improved water supply, land would become more attractive to outsiders who would be tempted to take advantage of the unregistered status of land in the area. With that line of reasoning in mind, team members suspected that current use-rights disputes involving outsiders and locals might be most intense in small farmer *aziendas* bordering on well irrigated plantation areas and close to one of the 5 secondary canals (See Figures 2.2 and 2.3). This idea was partially confirmed by information that use-rights disputes were most serious in two *aziendas*, Alas Yare and Meiro. Our team visited the latter. We learned that there had been an effort by a man in Genale to obtain currently farmed but unregistered land. The man had come with a letter issued by an official in Mogadishu requesting that an unidentified regional official give special consideration to the man's land request. The governor and regional head of the Land and Water department decided against the outsider and in favor of the Meiro residents whose land was at issue.

There are two important conclusions to draw from this case. One is the ripple effect of even isolated cases in instilling fear both inside and outside the community most immediately affected by a dispute. Even

though the case was decided against the outsider, residents of Meiro and other haciendas in the area were filled with trepidation about what the future might bring and a feeling of exposure to the loss of land as long as it remained unregistered. Indeed, when the team had completed its discussion with the Meiro residents, a farmer approached a Somali member of our party with a request. He was informed that Meiro farmers had prepared a packet of registration documents for all members of the community and asked to have these taken to Mogadishu for final signing. Registration therefore often ranked highest on farmers' agenda of needs.

#### A Last Word on Disputes

It was not possible for the team to assess with great accuracy how well-founded farmers' fears of having their land taken by "an outsider" were. It was possible to confirm several instances of land having been lost by small farmers, although the exact circumstances (for example, whether the land had been left uncultivated for too long a time) were difficult to ascertain. Several of the cases that came to the team's attention actually were decided in favor of the local small farmer. The testimony of local judges and MOA officials and evidence from the LTC survey suggest that such incidents are quite uncommon in Shalambod and much more characteristic of newly settled and irrigated areas. The impact of ownership disputes pitting outsiders against local small farmers lacking registration may be concentrated in certain areas of the scheme with the best access to irrigation water or small farmer areas lying on the fringes of large farms practicing perennial crop cultivation. At any rate, it is important for project planners to be aware of perceptions depicted above which prevail in the PPA.

#### Registration and Tenure Security

Registration clearly emerges as something farmers desire, given the climate of tenure insecurity in the area. Yet few small farmers in the Shalambod area possess documented rights to the land they are cultivating. The LTC small farmer survey (Table 3.3) found that only a minority, 45 percent (25/56), enjoyed at least some measure of tenure security. Of those that did claim tenure security, 64 percent (16/25) did so because their land was registered in the name of a cooperative (Table 3.3). The remainder, 36 percent (9/25) or 16 percent (9/56) of the total sample, held individual title to their primary parcels. An additional 7 percent (4/56) were in the process of registering their land. Just how low the percentage of land registered by farmers can be is revealed in Vicariato hacienda where, it was learned from the farmer committee head that only 5 percent (13 of 250 farmers in the hacienda) of the land was registered. Registration appears to be the domain of larger farmers, with all of the large private farms (See Figures 2.2 and 2.3) being registered. An examination of the Land Registration Book at the

Table 3.3: Reasons Given By Farmers For Registering Or Not Registering Their Land, LTC Smallholder Sample, 1987

	Males Responding Affirmatively		Females Responding Affirmatively		Total	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Number of farms with registered parcel	24		1		25	
2. Reasons why land was registered: <sup>a</sup>						
Necessary for credit	1	(3.8)	0	(0.0)	1	(3.7)
Had dispute over land	0	(0.0)	0	(0.0)	0	(0.0)
Afraid of losing land	6	(23.1)	0	(0.0)	6	(22.2)
Protect capital investment in land	0	(0.0)	0	(0.0)	0	(0.0)
Acquire credits from banks	0	(0.0)	0	(0.0)	0	(0.0)
Govt program encouraged registration	4	(15.4)	0	(0.0)	4	(14.8)
Land registered under cooperative	15	(57.7)	1	(100.0)	16	(59.3)
Total <sup>b</sup>	26	(100.0)	1	(100.0)	27	(100.0)
3. No. of farms not registering parcel	20		11		31	
4. Reasons why land has not been registered: <sup>a</sup>						
Unfamiliar with land registration procedures	1	(4.8)	3	(27.2)	4	(12.5)
Procedures too complicated	4	(19.0)	1	(9.1)	5	(15.6)
Registration is too costly	6	(28.6)	2	(18.2)	8	(25.0)
Don't wish to upset family or neighbors	1	(4.8)	0	(0.0)	1	(3.1)
Registration in process	6	(28.6)	2	(18.2)	8	(25.0)
Land tax payment is sufficient	0	(0.0)	1	(9.1)	1	(3.1)
Parcel is too small	3	(14.2)	0	(0.0)	3	(9.4)
Don't need to; land received through CRASH program	0	(0.0)	2	(18.2)	2	(6.3)
Total <sup>b</sup>	21	(100.0)	11	(100.0)	32	(100.0)

a. Figures in parentheses are the percentage of total responses.

b. Totals and percents may not correspond to the size of subsamples due to multiple responses.

Genale Land and Water Resources office revealed that of approximately 350 cases of registration in 1986 (in the region as a whole and including Shalambood) no more than a handful involved parcels smaller than 1 hectare; most were significantly larger. The average total land holding for individually registered respondents in the LTC survey was 5.5 ha compared to 1.6 ha among unregistered farmers (See Table 3.4). The survey also indicates that women are least likely to register their land. None (n=11) had their land individually registered; 1 had her land registered under a cooperative (Table 3.3).

It is important to realize that in Shalambood, registration can exist in group or corporate form; land may be registered in the name of a cooperative. Farmers living in *aziendas* organized in that way are afforded security against outsiders' claims against their lands and are spared the costs and inconveniences of attempting to register land individually. Insecurity in that situation pertains to the possibility of being expelled from the cooperative. However, the extent to which this actually happens is unknown, but probably low. Farmers in the Halgan, Ispahaysi and Matrico *aziendas* are subject to the limited security benefits of this arrangement. As noted above, 29 percent (16/55) of respondents in the LTC survey had their land registered by a cooperative.

If registration is so important to small farmers in the area in order for them to benefit from the planned rehabilitation of the irrigation system, why have more of them not registered their lands? Farmers generally cite the following reasons: high costs, complicated and time-consuming procedures, and discouragement with the length of time -- sometimes as long as 2 to 4 years -- it takes until a registration document is obtained. Among LTC survey respondents (See Table 3.3) who were not registered or not in the process of registering (n=24), costliness of the process was cited as the main reason for not being registered by 33 percent (8/24); lack of familiarity with the procedures or the complicated nature of the registration procedure was cited by 38 percent (9/24). For women lack of information, a factor in 33 percent (3/9) of female unregistered respondents versus 7 percent (1/15) of males, and discomfort in personally dealing with a male-dominated bureaucracy emerged as key factors.

When officials were asked to explain non-registration by small farmers, they attributed the cause to laziness and lack of information. The regional Land and Water Resources officer noted that his office actively engages in information campaigns designed to encourage registration by small farmers. He and others also recognize, however, that transportation costs involved in the registration process may be too much of a financial burden. Where agreement with the farmers tends to occur is on the matter that registration procedures are too cumbersome, involve too many stages and must be simplified. Before outlining ideas on how to remedy this situation, it is best to take a detailed look at the registration process as it stands today.

Table 3.4: Characteristics of Registered Versus Unregistered  
Parcels, LTC Smallholder Sample, 1987

	Registered Parcels		Unregistered Parcels		Total	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Total number of farms	25		31		56	
2. Size distribution:						
0.0 to 0.99 ha.	3	(12.0)	8	(25.8)	11	(19.6)
1.0 to 1.99 ha.	10	(40.0)	15	(48.4)	25	(44.6)
2.0 to 4.99 ha	6	(24.0)	6	(19.4)	12	(21.4)
5.0 plus	6	(24.0)	2	(6.5)	8	(14.3)
Mean average hectares	2.9 <sup>a</sup>		1.6 <sup>b</sup>		2.3	
3. No. farms attempting to get bank credit using land as collateral	3	(8.3)	---		3	(5.4)
4. Farms having made capital improvements in:						
Wells	0	(0.0)	0	(0.0)	0	(0.0)
Buildings	2	(8.0)	0	(0.0)	2	(3.6)
Tree crops (banana, mangos, and papaya)	1	(4.0)	0	(0.0)	1	(1.8)
5. Input Use:						
No farms using fertilizer	1	(4.0)	0	(0.0)	1	(1.8)
Avg. man-days of Irrigation (No. Irigat. X Duration / Ha.)	1.8		1.6		1.7	
6. Average yields (quintals) per hectare ( <u>Gu</u> season) of maize	12.2		8.2		10.2	

- a. Mean average for land registered as a cooperative is 1.6 ha. (n=16);  
mean for individually registered parcels is 5.5 ha. (n=9).
- b. Mean unregistered land for males is 2.0 ha. (n=20), mean unregistered  
land for females is 0.87 ha. (n=11).

### Land Registration Procedures

The process of registering land requires as many as five different steps and several months to complete, if all goes well. As noted above, the process can stretch out over a few years. A landholder in the Shalambod area wishing to initiate the process must start with a visit to the Land and Water Resources Office in Genale. A formal letter of application must be submitted to the director stating the applicant's desire to register the parcel. The applicant must also provide minimum background information about the parcel: name and age of the applicant, place of residence, length of time the parcel has been held, size of parcel and its location relative to canal borders or neighbors parcel immediately adjacent to the site. Information on crops cultivated may also be stated. The only fee for initiating this process is Sm Sh 6 for a revenue stamp.

Once the letter of application is submitted, the director of the Land and Water Resources Office accompanies the land holder to the field to verify the claim. Measurements are taken of the parcel's dimensions and a rough sketch drawn of its shape. Estimates of area are verified although no exact measurements are made. The sketch is then given to the land holder who has the responsibility of taking it to a draftsman for an official rendering. Charges for making a formal drawing/map of the site are expensive, ranging from a low of about Sm Sh 1,000 to purported highs of Sm. Sh 20,000 to 30,000. This was the expense farm committee leaders complained most about in a meeting with team members. The drafting costs are borne fully by the landholder and appear to be unrelated to parcel size. One draftsman is located in Merca, 8 Kms from Shalambod, although formal maps are often drafted in Mogadishu. Drafting specialists must be specially licensed by the government and require special training. Farmers would clearly welcome more affordable and convenient drafting services.

With a formal map in hand, the landholder returns to the Land and Water Resources office in Genale and formally submits the map along with the original letter of application. The director writes a letter to the police station nearest to the site, stating the nature of the case and requesting verification of ownership. An enquiry is made: the site is visited and discussions are held with the village chief, neighbors, or other expert witnesses located by the police. If no dispute to the claim arises, a letter of approval is returned to the Land and Water Resources office. After the letter is sent, a public notice is posted in the village of the applicant for 30 days, to allow time for any final disputes over land ownership to be brought forward to officials.

If no land dispute arises within the 30 days, an official land title is typed and copies made (using an alternative registration form). The district office sends a copy to the regional office of Land and Water Resources. In the Genale case, however, the district and regional

offices are the same. Both the district and regional offices write letters to the main Department of Land and Water Resources in Mogadishu stating that all appears to be in order with the request.

The director of the Department in Mogadishu, has the final check before sending the file to the Minister of Agriculture for signing. Once signed, the registration procedure is complete. The original title is returned to the landholder while each of three copies are retained by the district, regional and main departments of Land and Water Resources. A registry of titles is held in the Land and Water Resources Department in Genale. The book contains information on the serial number of entry, name of land holder, date of the law (1975: always constant), date of registry (when notice of approval is received from Mogadishu), village, size (hectares) and the names of other people bordering the holding. Information is recorded in a clean and legible manner.

The application may be disapproved at various stages of the process. The Land and Water Resources officer in Genale, apparently does more to get the application in order, than he does in verifying the claim's eligibility. The police apparently play the largest role in claim verification and in uncovering any disputes in land that may occur.

#### Discussion

As noted earlier, the cost and the lengthiness of the registration process deter many small farmers from registering their land. Ideally, even as currently set up, registration should take no more than 2 or 3 months to complete. Once the original letter of application is complete, the district officer of Land and Water Resources in Genale can go to the field and make the plot sketch in a day. He has a car to facilitate this process. But several trips may be made by the landholder to get the letter of application right. From a sketch to a drafted map of the site (drawn by a draftsman) may take two days but normally requires a week. The police require only two to three days to verify the claim, but the official notice of claim requires posting for 30 days. The final step from the district office to Mogadishu and back should take no more than three to four weeks.

If this were the way the process actually went, many more small farmers would probably have their land registered. But cases of registration still pending up to 4 years after the process was initiated act as a deterrent. Although the registration procedure only requires a farmer to go to Genale, farmers report making countless trips to the various far-flung offices involved to ascertain the status of their file. This poses a problem of time and cost, both for transportation and in the case of trips to Mogadishu, possibly lodging. This is a problem acknowledged both by farmers and officials, notably the regional head of the Land and Water Resources office in Genale.

Several other ambiguities exist. According to the regional Land and Water Resource office's director, a farmer is allowed only one registered title per household. However, multiple parcels were observed to be common in both the ARD and TAMS reports. The LTC small farmer survey (See Table 2.4) indicates that while the majority of respondents had only a single parcel, multiple parcel households are quite common. Almost 40 percent (17/44) of male respondents had 2 or more parcels, with almost 10 percent (4/44) having 3 or more parcels. Only 1 of the 12 female respondents had multiple parcels. For the entire sample including both males and females, the proportion with multiple parcels approaches one-third (18/56).

These people are legally unable to extend the benefits of registration to all the land they cultivate. Registration in the name of sons over 15 years of age or in the name of other family members is possible but violates the rule of 1 registered parcel per family (no doubt, some registration to multiple family members does unlawfully occur). Thus, even if registration can be extended to all households in the area, many will still have land that is in a legally tenuous state. This problem may not be as severe as it seems as long as local authorities continue to exercise flexibility. There remains the question, however, of what the courts or the MOA would do if a dispute arose that involved the unregistered land of someone who also had a registered parcel.

#### Farmers' and Officials' Suggestions to Streamline the Registration Process

All concerned feel that a special self-contained registration office should be established in Shalambood, Genale or Merca. Although an office already exists in Genale, it only represents the first stage in a process that ends in Mogadishu. It is also over-burdened with other duties, mainly water allocation and dispute resolution. The process should be more consolidated and either the number of steps reduced or, as the regional head of the Land and Water office suggested, contained in one building with several adjoining offices. This was the situation before 1979 when the whole registration process was in the hands of the MOA and when a farmer could write an application, come to the office, have boundaries sketched and be given a certificate, all in one place.

Two small-farm leaders, who also supported the establishment of a local self-contained land registration office, had another idea: to have officials come to the various communities and register land on the spot. Instead of having teams of investigators examine individual applications, the process could be facilitated by having local farmers committees assemble the relevant information about the parcels of farmers in their areas and submit it to the relevant authorities. Farmers were interested in reducing the number of steps involved for another reason. They spoke of having to make service payments to authorities at each stage of the process. A feeling prevails among many small farmers that registration is something beyond their means. During a meeting with small farm committee heads, the lack of any standard cost for parcel map drafting services emerged as perhaps the major element in hiking up the costs of registration.

Possible Land Use and Production Impacts  
of Land Registration: Conceptual Issues  
and Evidence from the LTC Small Farm Survey

The underlying rationale for promoting land registration is the belief that title will enhance tenure security and thus encourage producers to adopt a longer term perspective in deciding what to grow and what permanent investments to make on the parcel. Unless the farmer can look with security into the future and be fairly confident about being able to enjoy the fruits of investments with relatively long pay-off or gestation periods, such investments are thought to be unlikely. Growing perennial rather than or in addition to annual crops is frequently taken as evidence of tenure security. Another key benefit attributed to registration is that it provides farmers with a form of collateral that can be used in gaining access to formal credit channels. The expected net outcome of the enhanced tenure security attributed to land registration is higher productivity.

Before going on to examine the evidence from the LTC small farmer survey, it is important to make the following points. First, even if one were to detect differences in the investment and productivity performance of registered versus unregistered holdings, tenure security is not easily isolatable from other aspects of the farming operations being compared. Two of those factors, size of farm and the availability of irrigation water may in fact be correlated with the absence or presence of registration. The link to farm size is certainly borne out in Shalambod as was seen above. In terms of credit, even were all farms to be titled, the amount of formal credit available will remain a function of farm size.

As for the land quality differences between registered and unregistered parcels, most of the registered land in the PPA also enjoys the best access to irrigation water. Thus systematic bias may creep in either in comparisons between households or within households between irrigated and unirrigated parcels. Given the prohibition against having more than 1 parcel per family registered, holders of multiple parcels may choose to register the one best situated in terms of water access.

Finally farms lacking title but enmeshed in comprehensive production/marketing arrangements may perform no worse and sometimes better than unaffiliated small farms whose land is registered or larger farms not benefitting from such arrangements. In Shalambod, farmers working cooperative registered land come closest to such comprehensive arrangements. In the LTC survey sample, the only farmers working less than 2 hectares who are "registered" have their land registered in the name of a cooperative. Cooperative-affiliated farmers lack individual title, but do have a reasonable degree of security in their usufructory rights. They also enjoy the benefits of inputs and ploughing services on a seasonal credit basis, although such services appear to be provided only intermittently. Their productivity performance as measured by

quintals (1 quintal=100 kg.) per hectare of maize planted in the Gu season is 12.3 kg/ha (n=13). Productivity among unregistered farmers in the same 'under-2 ha.' landholding size category (n=17) is 8.2 quintals/ha.

With all the above provisos in mind, data comparing registered and unregistered main parcels from the LTC small holder survey are presented in Table 3.4. Survey results reveal only small differences between registered and unregistered parcels in terms of the percentage of respondents attempting to get bank credit using land as collateral, the incidence of farms having made capital improvements, and in terms of fertilizer use. However the results are consistent in that only registered parcel holders are the ones to use the inputs or make capital improvements. The main differences between the two groups are in terms of respective landholding sizes and in the average yields per hectare of maize planted in the Gu season -- 12.2 for registered parcels versus 8.2 for unregistered parcels. It would be wrong to attribute this productivity difference simply to the registered/unregistered difference because of the reasons discussed earlier: the correlation between registration and larger total farm size, better access to water (See the Chapter 4 on water allocation) and the fact that the majority, 65 percent (15/23), of those included in the registered column actually have their land registered in the name of a cooperative. Future analysis should seek to define the nature of this relationship, controlling for the influence of factors besides registration.

#### Land Registration and Access to Credit

Currently there are four avenues for small farmers in the PPA to obtain credit. First, co-op members are eligible for credit for inputs extended on a seasonal basis. The limited resources of the agricultural cooperative, however, limits the number of farmers who are able to benefit. These farmers do not require individually registered parcels to qualify, or any other type of collateral. The bank in Merca provides credit based on either of the following arrangements: 1) to have someone who has an account in the bank secure a loan (it is unlikely that many small farmers would be able to benefit from this sort of arrangement); and 2) through an experimental program being implemented in two villages (Bulo Sheikh and Bulo Mareerto) to extend seasonal credit up to a ceiling of Sm. Sh. 50,000. This latter procedure seems rather lengthy, having to pass first through the village council, then the district authorities and finally the Bank manager who himself needs prior approval from superiors in Mogadishu. The Bank prefers the first procedure because they feel better protected from loan defaults.

Finally, there is an FAO program (UNDCF Project SOM/82/COI) begun in 1984 to extend seasonal credit to small farmers. The Bank operates on behalf of the FAO through its Regional Input and Credit Committee. It

consists of the Merca Bank manager, cooperative representatives and representatives from AFMET to serve a technical advisory role. Only credit in kind -- seeds, pesticides and fertilizers -- are provided. Inputs are delivered at planting time with repayment due 8 months later. Once again, cooperatives are the main beneficiaries of this program because they are organized. Usually the procedure begins with an application from the cooperative to the chairman of the regional cooperative. He in turn submits the request to board members. Among cooperatives, priority is given to those best endowed with road and irrigation infrastructure. Interest charged is 10 percent.

One concludes from the above discussion that lack of registered land as collateral is not a primary impediment to credit access. The current structure seems to favor the provision of credit to cooperative affiliated farmers, most of whom lack individually registered parcels. Ability to obtain cash credit on a longer term basis may still be contingent on having collateral, but not necessarily in the form of registered land. The fact that land cannot be legally sold and is not a person's private property, limits the attractiveness of this form of collateral to banks. Although the local judge in Merca said that control of the land could revert to a bank in case of loan default, this would seem to be restricted to large plantations.

In the case of small farms, the transactions cost of reapplying for registration under a new name, then going to the government to reallocate the land to someone else and selling improvements on land to recoup its money would seem to be very high relative to possible interest income. This may explain why banks seem to prefer a guarantor arrangement or more liquid assets as a means of securing a loan. Some support for this assertion comes from the LTC survey. Four farmers (7% of the total sample) stated that they had used or tried to use registered land as collateral. All four had a registered parcel and three of them had larger than average total landholdings (10.6 ha., 8ha., 4 ha.). One had been turned down because he lacked fixed assets such as buildings. Another was turned down because the bank required assets other than the farm. Another who did obtain some credit lacked registered land and eventually obtained credit through government connections. The other case of successfully obtaining credit is a bit ambiguous. The respondent had 10.6 ha and had other potential collateral to put up, including a wood and brick building. It is unclear what was used as collateral, the house or the land.

It therefore seems that forms of securing loans other than registered land -- having a bank account, cattle, buildings or other private property -- are the key to obtaining credit. For small farmers deficient in capital of any kind suitable as collateral, group guarantees or risk sharing as a cooperative seems to be the dominant means for obtaining credit. Such credit, however, takes the form of inputs provided in-kind and is seasonal in nature. The overall impression

gained from survey responses, is that most farmers see bank credit as having nothing to do with them and that it is beyond their reach. Many felt that their parcels were too small to qualify, and several stated that they lacked information on the credit acquisition process.

#### Land Transfers: Tenure Security and Updating Claims to Land

Land transfers either via sale, purchase or through inheritance infuse a dynamic element into the tenure security picture that must be accommodated. Legally, since passage of the 1975 Land Law (See discussion of the Law in Chapter 2) only leases with the State are recognized as a valid basis for title to land. For "private" small and medium scale farmers the lease term is set at 50 years with renewal possible. Transfer either via sale, sub-letting or renting does not appear to be legal although there is some evidence that this occurs. Such transfers and exchanges impose the need for tenure rights to be updated. Where it is difficult to do so, land registered today will assume ambiguous status after the change occurs, threatening to degrade tenure security benefits of registration.

#### Sales

The situation is aggravated in the present context by two features of the 1975 Land Law. The first is the prohibition of land sales; these are universally acknowledged to be occurring in Shalambod, although the precise extent remains unknown. The indication from the LTC survey (See Table 2.4) is that nearly 11 percent (6/56) of respondents had purchased land. An additional case of land sale was reported. Sales pose little apparent problem if the land involved can then be registered. However, until registered, the land in question is in a tenuous status legally against other claims because the purchaser lacks a long-term record of cultivation. This problem may not arise if the purchase is between close kin living in the same community. This constraint on being able to adjust farm size to needs and capacities (also the case with rents which are also prohibited) is especially grave for the many households possessing only mini-parcels of land and would like to expand their operations.

A second restriction of the 1975 Law compounds the problem; the restriction against being able to register more than one parcel per family. The only way to circumvent this problem is for families to register parcels in addition to the one they may already have registered, under the name of other family members. Males as young as 15 are eligible to have land registered under their names. The regional head of the Land and Water office acknowledges that this sort of thing probably

occurs and admits that there is virtually no way for his office to check on such cases. The restriction against registering multiple parcels is an even more serious problem when it comes to the matter of inheritance, which we now consider.

### Inheritance

The 1975 Land Law permits lease rights granted to individuals to be bequeathed to close kin. Although the definition of "close kin" remains vague and ill-defined in the 1975 Law itself, rules of the Family Code are operative. These lay out in great detail who the rightful beneficiaries are, the shares due to them and the procedures needed to settle division of an estate. In many respects the rules applied differ little from traditional Islamic inheritance rules. A notable exception is that Islamic law grants daughters half the shares of sons while the Somali Code makes no such sex-based distinction.

Matters of inheritance for registered land are dealt with by the district court in Merca. The judge explained that his court handles only inheritance for registered land, because land which is not registered is not owned and so inheritance of it is anomalous. After the death of the registered owner the relatives of the deceased come to the court with his certificate of ownership and records of his or her other property. These are valued prior to their division. There is in the Family Code a listing of potential heirs and an order of preference. The preferred heirs, who take all the inheritance if they exist, are the surviving spouse or the children of the deceased. Male and female children take in equal shares and children born out of marriage are included if acknowledged by the deceased before his or her death. The surviving spouse (spouses?) takes one-fourth of the estate and the remaining three-fourths is divided equally among the children. Usually each heir wants a share in the deceased's land. The partition of the succession cannot take place until all the heirs are represented. Those who are abroad are notified by mail and if they cannot attend in person, must appoint agents to represent them. The judge and his assistant and a representative of the MOA's local Land and Water Resources office go to the parcel and divide it in front of witnesses, preparing new sketch maps. These sketch maps then become the basis for the registration of the new parcels.

Even the most extreme subdivision is registered, though there may be informal, unrecorded arrangements for some heirs to farm the land of others. A farmer in Meiro azienda told us that even very small parcels are usually subdivided. This happens whether the land is registered or not. Heirs working and living in town often leave their land to brothers still engaged in agriculture with the proviso that should they return to the village the land would revert to them.

A key fact to realize, is that each time an inheritance subdivision is worked out, heirs must themselves go through the lengthy process described earlier of getting their land re-registered. It seems likely, therefore, that if the current registration process is not simplified, currently registered parcels would over time reassume unregistered status. Heirs to portions of a registered parcel would be legally on firmer grounds in warding off claims of an outsider than heirs of an unregistered parcel holder. However, in the absence of registration of subdivided parcels, severe problems are possible if and when conflicts arise among the heirs themselves. Consideration should therefore be given to measures facilitating re-registration by heirs. Perhaps the courts, already charged with succession settlements, could also reissue registration documents reflecting the settlement. Admittedly, such a measure would have limited impact since few farmers bring succession cases to the courts. At least it will ease re-registration for those who do resort to courts. Without measures easing re-registration, gradual erosion of the tenure security afforded by registration seems inevitable.

Another inheritance-associated problem derives from the legal stricture against registering more than one parcel. The inheritance rights of women, if and when claimed, can be one of the factors resulting in people having parcels in areas distant from each other. The distance depends on where the woman came from before she married into her husband's household. One would expect either informal gifts to be made to brothers, where the distances are great, or leasing and renting. If this process is a widespread one, the government may want to consider permitting people to trade or sell parcels, to make them contiguous to each other. Otherwise inheritance will probably increase the number of multiple parcel households and expand the scope of problems caused by the prohibition against registering more than one parcel.

Article 16 of the 1975 Law which deals with inheritance, leaves substantial leeway for heirs to work out mutually acceptable arrangements. One can speculate, however, that inheritance disputes will mount in the future with the confluence of the following factors: mounting population pressure; the prospect of land becoming more productive and therefore more valuable due to improvements introduced by the scheme; growing emphasis on registration and titling may encourage heirs to reach a clearcut once-and-for-all resolution of what otherwise might have been able to be a more flexible informal arrangement adjustable to heirs' changing needs. Possibly, the desire to avoid conflict about who will obtain title to land originally in a parent's name may be an incentive for delaying land registration or its updating, if already registered.

### A Note About Small Farmers Working Cooperative Land

It should not be forgotten that the above discussion pertains to unaffiliated small farmers. For the many other small farmers in Shalambood who do their farming on land registered in the name of a cooperative, the ability to engage in land transactions, especially sale would be restricted. The same is true of rental, although it is possible that informal arrangements take place. As for the matter of intergenerational transfer of usufructory rights, a paternalistic system prevails. Land allocation is in the hands of the cooperative, not of the individual. According to the Agricultural Cooperative representative in Shalambood, an effort is made to accommodate children of farmers currently allotted parcels. Sometimes this is done by adjusting parcel size down throughout the cooperative. This would appear to be difficult to implement, however. Another possibility is for the cooperative to respond to the need for land by placing young men on cooperative land located elsewhere. Although only one family or household per parcel is the rule, discussion with the cooperative's representative left the impression that families could exercise some flexibility.

### Issues and Recommendations

#### 1) Simplify the Land Registration Process:

Both farmers and officials agree that the present land registration system is too cumbersome and involves too many steps. Reduction of the number of necessary steps and/or containing those steps spatially to the project area is advisable. It might be possible to reinforce the present Genale office by making it a self-contained land registration center. A better option would be to establish a special registration office in Shalambood, a population center where many of the PPA's small holders live. The Genale MOA Department of Land and Water Resources office could then concentrate on water allocation and enforcement and act as a general coordination body for the region. (See elaboration of such a role in the recommendations for water allocation). Apparently the reason for the current arrangement, in which the Genale office is responsible for land registration, dispute resolution, and setting and attempting to enforce water schedules, is due to limited resources and manpower to support multiple offices. Hence, while a Shalambood land registration office may be more convenient to farmers, additional resources will be required to enable effective reforms of the current land registration system.

The above recommendations apply whether registration remains an individual affair, as it is now, or whether a group approach is substituted for it. Since administrative capacity is strained, the existing local community organizational infrastructure should be used to the extent possible; cooperatives and farmers committees could be used as vehicles for group registration in *aziendas* with a high incidence of

unregistered parcels. Registration could be carried out either by 1) having local farmers committees assemble the relevant information and documents and submit these to the local authorities, or 2) preparing the groundwork for registration officials to come to the communities to register parcels azienda by azienda in a registration campaign. Option (2) might be preferable since, as part of a coordinated registration drive, it would enjoy high-level support. What would happen after land holding information were submitted under option (1) is less predictable. Local communities could also be given authority to resolve any pending boundary disputes whose incidence is generally very low in the area.

2) Registration Should Not Wait for a Complex Cadastral Survey:

The task of registration in the PPA does not require an involved or technically sophisticated cadastral survey to precede it. Boundary disputes in Shalambod are minimal and neighbors are aware of and recognize each others' parcel boundaries; disputes are, as noted above, usually solved by local farmers committees. Land also tends to be partitioned in regularly shaped parcels due to the azienda origins and the dividing up of land via government programs. If desired, rough-sketch plans could later be upgraded using more sophisticated methods.

The temptation to implement sophisticated programs should be resisted because such programs inevitably take longer than planned. A fear of the team is that expectations of a titling process being completed several years in the future may temporarily increase the incidence of land grabbing, as speculators seek to establish land use rights. If the titling program is carried out over too long a time period, lands being titled may be those of the speculators. Thus, the emphasis should be on a quick cadastral survey and titling process that takes advantage of local institutions and procedures already in place. Emphasis should shift to more sophisticated methods only after land tenure rights have been established.

3) Provide More Affordable Parcel Map Drafting Services

One of the expenses farmers complained most about were those incurred for map drawings. Providing such services through a Government office (perhaps the land registration center suggested in recommendation no. 1) would be welcomed by small farmers on the scheme. A program to train more draftsmen might also reduce the high prices that draftsmen are reputedly charging on the private market.

4) Eliminate the Requirement that Heirs to Portions of a Registered Parcel Must Go Through the Whole Registration Procedure.

As long as registration procedures remain as they are today, the onerous process of re-registration by heirs threatens to degrade the validity of existing registered parcels over time. Specifically, the

process whereby the MOA must again initiate an application, send the claim to the nearest police department for verification, formally post the claim for 30 days, and send the application for land registration to Mogadishu for signing, seems redundant once completed the first time. Perhaps the best solution under present circumstances is to have the courts (in collaboration with the district office of Land and Water Resources), already charged with succession settlements, also reissue registration documents reflecting the settlement.

5) Measures are Needed to Address the Problems Associated with Multiple Parcels

A substantial percentage of farmers in the PPA have more than one parcel. However, registering more than one parcel is prohibited by the 1975 Land Law. The probable motive for this provision is to prevent people from circumventing landholding size ceilings. Evidence suggests that these fears are misplaced for the majority of farmers in the area whose total farmed area tends to be well under the 30 ha. per family limit. Current incentives are for households to not disclose all the parcels they have, register multiple parcels in different family members names, or register multiple parcels in widely separated geographic regions to avoid detection by local registration offices. It could be argued that allowing more than one parcel to be registered per family will permit the government to better control for some of these violations. Record keeping organized by landholder's name as well as merely the order in which registration is processed, would allow such checks to be made. As things presently stand the farmer with more than one parcel loses because the unregistered parcel may be less secure; the government loses because it lacks an accurate data base.

## WATER ACCESS AND DISTRIBUTION

Water allocation issues are central to the rehabilitation of the Shalambood PPA, and to water management and use along the entire Lower Shebelli. Issues at the macro level concern the allocation of water among farms, schemes or projects lying along the Shebelli river. Micro issues concern water distribution and use among users within the Shalambood scheme. As Lahmeyer (cited by TAMS, 1986) correctly points out, there is not sufficient water in the Lower Shebelli to fully satisfy all competing needs. Given the absence of pricing mechanisms to allocate water, questions concerning how water is allocated, who are the beneficiaries, who bears the costs, and what policies ought to be implemented to achieve a more optimal allocation, are crucial.

Land tenure issues are inter-related with water allocation issues through the size and spatial distribution of holdings relative to primary, secondary, and tertiary canals within the scheme. Improved access to water should ultimately improve productivity. But ensuring that sustained and adequate investment is made to provide continued water delivery over the long term suggests that new management strategies are required. Higher productivity can also be expected to increase demand for the limited supply of land resources, thereby possibly increasing the incidence of disputes about claims to land and water. This chapter will describe the current water allocation system on the scheme, and the effects of current distribution on the scheme's performance. Special problems of livestock damage to the irrigation infrastructure will be evaluated in the next section.

### Macro Water Issues

It is not the intent of this paper to treat in depth the macro water allocation issues of the Shebelli river basin. Those problems were elaborated in detail in TAMS (1986), although the full magnitude of the problem received too little emphasis there. The quantity of water available on the Shalambood scheme is not independent of water use either upstream or downstream from the PPA. Besides projects such as the Jowhar Sugar estate, and Romsoma, Baarow Weyn, Balcad Flood Irrigation, Afgoi-Mordile and Genale Bulo-Mareta projects, there are numerous farms drawing water through pump irrigation. Expanding numbers of both people and livestock have further increased demands on the region's limited resource base.

USAID/Mogadishu's proposal to rehabilitate the scheme places emphasis on increasing the supply of water to the scheme, and improving the efficiency of water distribution. From a strictly technical irrigation perspective, high productivity may evolve from control of flooding, improved water distribution, and increased water supply. To achieve these goals, the irrigation infrastructure will be rehabilitated by desilting the Genale barrage, replacing gates, constructing drainage canals, digging resevoirs, and land levelling.

The demand side of the equation has received less attention. The TAMS (1986) report (Annex I) lays out well the increased demand for water that has resulted from expansion of irrigated areas along the entire lower Shebelli. Water allocation and distribution on the Shebelli-wide scale is currently done on an ad hoc basis with the ministries in charge attempting to respond to water shortages as they arise. With the continuing influx of settlers and farms into the region, this situation is likely to worsen. If water demands continue to increase either upstream or downstream of the PPA, then water supply for the Shalambood scheme will be reduced. Any hoped for gains from increasing the efficiency of the Shalambood irrigation system may be offset by the higher water demands in other areas along the Shebelli. If growth in water demand proceeds unabated along the length of the Shebelli river, the production gains planned for the project may fail to materialize. Instead, the project may find itself having to shift goals as water supply shrinks, from increasing production or farm incomes, to minimizing losses of existing producers.

#### Historical Perspective on the Shalambood PPA

The current agricultural structure in the PPA is, as McGowan, et. al. (1986) note, "...a lineal descendant of the system put in place in the Italian estates of the 1920s and 1930s." Concessions were granted to Italian entrepreneurs and firms as a way to generate income to support the colonial administration. Construction of the current irrigation system, centered on the Genale dam was completed by the mid-1930s. Irrigation was meant to support plantation agriculture and annual cultivation by resident workers. The division into *aziendas* shown in Figure 2.3, originates in that time period. Former *azienda* owners left one by one in the 1960s.

Now as in the past, systems are needed to maintain the physical infrastructure of the canals: to allocate water without provoking unacceptable levels of conflict among users; and to accommodate different users and uses, notably cultivation, and livestock watering and grazing. According to the testimony of some of the locals old enough to remember, the *azienda* plantation system worked well in the past but has since deteriorated. This decline is especially notable in small farm annual

crop areas on Figure 2.3. Although it is uncertain whether perennial crops were ever grown in these areas, farmers now living there speak of a more smoothly running system in the past.

In speaking of deterioration, one should bear in mind the organizational and social upheaval that accompanied the departure of the Italians. Most problematic has been the transition from an Italian estate system in which management was founded on a profit motive, to a more centralized system, governed by the State. Notable differences include a higher degree of bureaucratization, the multiplicity of links to governmental and other bodies located outside the PPA and, with the exception of the large private farmers, the substitution for clear-cut income maximization goals by other motives. State farms attempt to satisfy a myriad of goals, such as meeting production targets, promoting small holder development, earning foreign exchange, increasing government revenues, promoting technology development, or demonstrating improved farming practices through demonstration farms and extension efforts. The break-up of *aziendas* into small holdings is a rather recent trend, which has further complicated coordination.

Overall, the current structure is less self-contained and lacks the probable solidarity the Italians in a foreign environment must have possessed. Plantations compete with small annual crop growers for water; large plantations compete with each other and owe their allegiance to a panoply of organizations located in Mogadishu and elsewhere. This structure is one that poses a special challenge for coordination. The focal point for such coordination today is the regional office of Land and Water Resources. The man in charge must deal separately with the divergent groups and interests represented in the area. In the past, *azienda* owners evidently had organizational vehicles for coordinating water allocation and other aspects of agriculture in the area.

Evidence is spotty about how the current PPA operated in its heyday. McGowan, et. al. (1986) cite farmers who maintained that "...before 1960 the irrigation system functioned reasonably well." To further quote McGowan: "An arrangement had been made between large Italian landowners and local farmers and villagers that during the dry season, water allocations would be prioritized as follows ": first for human consumption, next stock watering, and if water is available then maintenance irrigation of cash crops."

A group of private canal police enforced these allocations. A farmer compared the past system with the current procedure for farmers short of water. Now they must go to Genale and ask the regional commissioner to send a canal or water guard to open a gate. This system does not work well, he said. "The problem is not with the Genale office but with the water or canal guards; they will give water but as soon as the farmer committee representative leaves, the guards will give water to another *azienda*."

The owner of the Gemesio farm described water management on the scheme between 1972 and 1975, when he was manager of the Banana Board. During that period, a levy of So. Sh. 0.5 was charged for every quintal of bananas sold. The So. Sh. 550,000 that was collected annually, was used for upkeep and maintenance of the canal infrastructure. In nominal terms this sum now seems low, but at that time it represented a very sizable amount in real terms. He recalls that two excavators were bought with the money for canal dredging. The Board has since been transformed into SomalFruit and the government has assumed responsibilities for water management. Current management is less effective than in the past. Canals have been allowed to fall into a state of disrepair, the barrage is silted, canal gates do not work, and the overall management of water use and allocation is poor.

On the issue of livestock grazing and watering needs, another farmer committee head noted that before 1955 (i.e., before the Italians had left), canal guards were posted at every gate to ensure that livestock did not break down canals while grazing along canal banks. If anyone's animals did any damage, it was reported to the police and the person was punished. Another interesting feature of the older system was that 2 jibals (50 meters) were left along either side of the canals to be used for animal grazing. Since then, the land has been taken over by farmers. The same informant noted that the MOA had a similar system in operation in 1962.

Informants attributed the current critical state of water supply and the difficulties in allocating water to population growth and greater farming activity in the area. Growth has occurred without planning or overall coordination. Farmers are well aware that this situation is not unique to Shalambood alone. The increase in farmers settling the area, the inflow of people from Mogadishu seeking land, the continued expansion of irrigated areas upstream and downstream of Shalambood, are factors frequently cited by farmers as indicative of the problem.

Description of Canal Setup and Water Delivery Systems:  
Present Situation at Shalambood

Irrigation water for the Shalambood scheme comes from a barrage located near Genale at the extreme northwest border of the project area. Water is distributed by gravity flow through primary, secondary, and tertiary canals which comprise the irrigation system. Water is elevated in the barrage by gates in the Ganale dam. The water flows into the Dhame Yassin primary canal, and from there into the Second, Third, Fourth and Fifth secondary canals. Tertiary canals feed off the secondaries, delivering water to farmers' fields. Since the level of water is higher than the surrounding farmlands, water is obtained by unplugging canal walls, allowing water to flow into the fields. In theory, the quantity and location of water in the system is regulated by water levels in the barrage and by raising and lowering canal gates.

The irrigation system in the Shalambood area was initially developed for large plantations with the construction of the Genale barrage and the Dhame Yassin canal in 1927. Presently the area is under-used because of the poor condition of the irrigation system. Water control structures are in very poor condition. Most of the irrigation gates are inoperable, resulting in uncontrolled water distribution. Along some canals, area of canal beds are excessive and seepage through the banks occurs. Canal cross-sections have problems of siltation, weed growth, insufficient water-way, poor embankments and irregular bed slopes. The distance between secondary canals III and IV is too great to allow adequate water distribution. Most canal bank tops are impassable for vehicles, impeding canal inspection and maintenance (TAMS, 1986). Along the secondary canals, there are depressions which result in seepage and swampy locations. Most of the man-made storage basins (associated with old plantations) have been abandoned.

At present no drainage system exists at Shalambood. Natural soil drainage is fair to moderate to a depth of one meter, and moderate to poor at deeper soil horizons. In addition, over 90 percent of the soils in the PPA are characterized by a heavy clayey texture; a clay barrier is located within the top meter, and salt precipitation is common in the subsoil. All of the above are responsible for drainage problems (TAMS, 1986).

#### System of Water Allocation

The following information on water allocation within the Shalambood PPA comes from interviews with: 1) the head of the Shalambood Small Farmers Association; 2) the Department of Land and Water Resources Offices in Mogadishu and Genale; 3) the Ministry of Agriculture Regional Officer; 4) Assistant Chief of Buffow village; 5) the heads of the Vicariato and Duray azienda water committees; and 6) discussions with farmers in the PPA.

Decisions on the distribution of water in the Shalambood PPA are made at two different levels: 1) the Ministry of Agriculture regulates the offtake of water from the Genale barrage, and governs the distribution of water through the primary and secondary canals up to the point where water enters the tertiaries; 2) decisions on which fields get water from the tertiary canals are made by representatives of the local farmers' committees, namely water foremen.

Agriculture in Somalia follows two distinct cropping seasons. The 1st season accompanies the Gu rains which normally start in late April or early May. That season extends from around April to August. The 2nd season, extending from around September to December, accompanies the Der rains which normally peak in November. The time from December to the end of March, marks the dry season, or the Jilal. The Gu rains are

relatively abundant and reliable. They normally provide sufficient rainfall for rainfed irrigation. The Der rains are less plentiful and more sporadic. Even in a normal Der season, rainfall is grossly inadequate for rainfed irrigation, and irrigation by gravity flow on some areas of the scheme is difficult. In some years, the Der rains may fail entirely as in 1986, and the river dries-up entirely. By way of contrast, rainfall in the 1986 Gu season was good, and some farmers had no need to irrigate.

#### Water Scheduling Along Primary and Secondary Canals

The MOA's Land and Water office at Genale sets water schedules for all the secondary and tertiary canals up to the azienda boundaries. An example of a water schedule for the Primo Secundario canal is provided in Annex VI. Water is scheduled according to the size of azienda; larger aziende (by area) receive more irrigation, smaller ones receive less. The water schedule is enforced by canal guards employed by the MOA. Each secondary has 1 canal guard; at each turnout, there is another guard to operate the gates. The canal guard determines from the water schedule which tertiary canal(s) get water from a secondary at a given time. However, decisions on which farms are allowed to take water from the tertiary canals, are made by farmers' committees.

According to the representative of the Land and Water Resources office at Genale, water scheduling (by the MOA) is not normally required in the Gu season. The need to impose water scheduling depends on rainfall. If rainfall in both seasons is normal, water scheduling usually starts around December 15 to 31. Due to the failure of the 1986 Der rains, water scheduling had to start in early November (1986). When scheduling starts, each secondary gets water, if only for 2 or 3 days. As the water shortages grow more severe, irrigation of cereals stops, with priority given to irrigation of perennials (mainly along the Primo Secundario and Dhame Yassin canals). As the water situation deteriorates further, irrigation of perennials is stopped, and water is conserved for people and livestock. Plantations with wells shift to pump irrigation to enable them to continue irrigation of bananas. Farms such as AFMET or the PLO (Annex V) which have restricted pumping capacity, may suffer permanent perennial crop damage or loss. According to the MOA agricultural officer, the most critical problems in the area were too much water and not enough drainage and levelling in the Gu, and not enough water in the Der.

The Jawhor resevoir was designed to store water during wet periods, releasing it in the dry season for perennials on the scheme. As water is released, however, water is drawn by farms upstream from Shalambod, using pump irrigation. This was confirmed by the Regional Officer of the Ministry of Agriculture, and several large farms in the area.

According to the Regional Land and Water office, farms usually obey the regulations. A regional committee, comprised of the Regional Agricultural officer (MOA), and representatives of SomalFruit and the Land and Water Resources Office at Genale (plus others), has the power to impose fines on those taking water out of schedule. However, resources are too scarce to effectively monitor and enforce water schedules both within and outside the Shalambood PPA.

#### Water Allocation to Small Holdings Along the Tertiary Canals Within Aziendas

While the MOA regulates water up to the point where water is let into the tertiary canals from the secondaries, decisions on water distribution within an azienda are made by a group of farmers comprising the Guddi da Beeraleyda, or farmer committee. There is only one committee per Azienda. TAMS (1986) refers to the committees as Water Users Associations, although their actual functions are much broader than water allocation.

Water is available to farmers, only when the tertiary is opened off the secondary canal. That is determined by water guards (employed by the MOA) from a water schedule prepared by the MOA. All tertiaries off the secondary are kept closed except for the one scheduled to receive water. The farmer committee has the authority to determine which farmers get water and for what duration. The head of that committee, the water foreman, is elected by farmers within the azienda.

Each azienda has a water-foreman, and each foreman has a list of farmers within his azienda. Usually there is only one azienda per tertiary canal, although multiple aziendas per tertiary are possible. An azienda does not normally have access to 2 more than one tertiary canal.

The system for allocating water, within Aziendas, varies between the Gu and Der seasons. In the Gu season, those furthest out from the primary or secondary canal get water first, with each succeeding azienda in toward the secondary or primary canal getting its water in turn. If water is taken out of turn, the farmer may have to report to the water committee, but the violation is not considered to be serious. If water arrives to a farmer's field by accident, nothing is done.

In the Der season, water allocation works in reverse. Those closest to the canal get water first then each succeeding farm (within an azienda) further away gets its turn. If water is taken out of turn, the azienda committee and/or head talks to the violator, and if this does not work, they may report him to the local MOA authorities. This is not a hard and fast rule, but the situation demonstrates the degree of seriousness that violations of water scheduling receive during the Der.

In addition to water allocation and regulation, the azienda committee has other functions:

- A. Committees organize routine maintenance and cleaning of canals within the azienda. Each azienda committee is responsible for that section of the secondary canal which services the azienda. Tertiary canals are cleaned by the farmers whose land they traverse. Payment for those who clean the tertiary canals is made with either money or food collected from farmers in the azienda. Those who cannot afford to pay may contribute their own labor. For heavier dredging of canals, the committee requests a tractor, plow and driver from the Regional Land and Water office in Genale. Equipment used to clean the canal is supplied by the MOA. Fuel is paid from money collected by azienda committees.
- B. Azienda committees also resolve land and water disputes. If the azienda committee cannot resolve a dispute, or if a disputant does not agree with the committee's decision, then the disputant can take it to the MOA or district court in Merca. However, both the regional courts and MOA usually uphold the azienda committee's decision.
- C. Committees collect land taxes for the municipalities: So. Sh. 5/ha. for rainfed land and So. Sh. 10/ha. for irrigated land irrespective of whether the land is registered or unregistered. At times, the government collects taxes via the committees for "self-help" programs.

Further details on the activities of the azienda committees can be gleaned from the views expressed by the Assistant Chief of Buffow village, and two water foremen from Duray and Vicariato aziende:

Case Study 1: Assistant Chief of Buffow village

Farmers in the village cultivate land near to the end of the Buffow or Second secondary canal. The MOA maintains the secondary canal, doing the dredging with heavy equipment when needed. Farmers collect money to help pay for the cleaning. The amount paid by each farmer varies by size of farm.

Usually an azienda has only one tertiary off the main secondary to supply it with water. In some cases, a tertiary canal will run through two or more aziende. In such cases, farmers' committees of the aziende concerned will cooperate in canal maintenance and control of water. The most severe problems concern the secondary, not the tertiary canal. The secondary canal is heavily silted, and large farmers take too much water, leaving too little for small holdings near to the canal's end. If water is available in the secondary, the tertiary canal system works fine.

With regard to questions on water allocation, the assistant chief responded that a water guard employed by the MOA has the responsibility of opening and closing the tertiary canal. In the Gu season, water is plentiful and water guards are not needed. In the Der when irrigation water is scarce, water is rationed to the tertiary canals by water guards, according to a water schedule drawn up by the MOA. The schedule provides the dates when water will be available in each secondary. Tertiary canals are opened in sequential order, with each tertiary remaining open only a fixed number of days (5 for Buffow in the 1986 Der season), the duration depending on the area of land associated with each tertiary. In the Gu, water is first allocated to farmers in Buffow, then to haciendas along tertiaries closer to the secondary. In the Der season, the system works in reverse. However, while smallholders must ration water, large farms irrigate all the time. If rainfall is good, 2 to 3 irrigations of maize are sufficient. Sesame receives only 1 flood irrigation prior to planting.

Case Study 2: Head of the Vicariato Azienda Committee

Water for farms within the hacienda is taken from the 9th tertiary off the 4th secondary. Only one tertiary feeds water to smallholders in the hacienda, and access to water would be considered poor relative to farmers in Buffow.

The water situation is bad and growing worse. Water distribution is also poor. To irrigate a crop, flood irrigation must be applied for at least 24 hours. In the past Der season, the water schedule was sufficient to irrigate only 3 farms, before water guards stopped the water to begin irrigations on the next hacienda. When asked about neighboring haciendas, and the water they receive, the informant replied: "some haciendas have the same number of farms as we do, but receive more water; the system is not equitable." With plenty of rainfall in the Gu season, water is normally sufficient. The most serious problems arise in the Der, when rains fail, and water shortages are acute.

The informant recalled that only 10 years ago the canals were in better shape and water distribution was more equitable. Even then water scarcity existed, but the management system in place was better; water distribution now is governed by influence.

Case 3: Head of the Duray Azienda Committee.

The foreman of the farmers' committee allocates water within the hacienda according to a priority system, using a list containing the names of all farms within the hacienda. The first farm on the list (presumably the one closest to the source) receives water first, then each farm receives its ration in turn. The amount of water received normally depends on the size of farm. If someone does not receive water during

the first round of irrigations, he or she may receive it during subsequent rounds. The allocation process resumes with the first name on the list in that group not having received water in the previous round.

The most serious problems arise in the Der. Farms closest to the head of the canal are supposed to receive water first, but few farms may actually receive any irrigations. In the 1986 Der season, only 2 farms out of 120 received water during the first round of water scheduling; another 3 farms in the sequence received water during the second round. Since irrigations each Der season initially begin with the farms closest to the head of the canal, land there is preferred and is more valuable.

#### Water Allocation and Problems LTC Smallholder Survey

Farmers in the LTC sample were asked specific questions about the number of irrigations they received, water problems they faced, input-output characteristics of their irrigated parcels, and suggestions for improvement. Questions dealing with the number of irrigations, quantity of irrigation water received, application of other inputs (i.e., fertilizer) and crop yields were asked only for the family's main parcel, in order to keep data within manageable bounds. However, questions on water problems and recommendations were asked in a more general, farm-wide sense. Also, the same sets of questions were asked for both the Gu and Der seasons to capture the seasonal dynamics of water distribution and use.

Respondents were asked to list the most critical problems faced in the Gu and Der by choosing among 6 pre-set responses: 1) flooding; 2) salination; 3) water not available when needed, but quantity sufficient when it arrives; 4) water usually available when needed, but quantity received is inadequate; 5) both timing and quantity of water are inadequate; and 6) other. Responses (4), (5), and (6) were aimed at separating the influence of irrigation timing from quantity of water in the production function. Farmers were allowed to choose either one or several responses.

Survey results for the Gu season are reported in Table 4.1, and for the Der season in Table 4.2. Of the 56 total respondents in the survey, over half (54.2%) cited both poor timing and inadequate water as the most critical problem they faced. This problem appeared to be more severe for women (76.9%) than men (47.8%). In fact 11 of the 44 (23.9%) male respondents explicitly stated that they had no irrigation problems in the Gu season, while none of the women made that claim. Information in item (3), dealing with the number of irrigations received, provides further supporting evidence. While 4.7% of the men's parcels within the PPA had to rely on rainfall for production, the figure for women was 33.3%. Due

Table 4.1: Critical Irrigation Problems in the Gu Season,  
LTC Smallholder Sample, 1987

	Male Respondents		Female Respondents		Total Respondents	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Number of respondents	44		12		56	
2. No. of farms listing most critical <sup>a</sup> water problem in the <u>Gu</u> :						
Flooding	0	(0.0)	1	(7.7)	1	(1.7)
Salination	1	(2.2)	0	(0.0)	1	(1.7)
Water not available when needed but quantity sufficient when it arrives	1	(2.2)	1	(7.7)	2	(3.4)
Water usually available when needed but quantity received is inadequate	4	(8.7)	0	(0.0)	4	(6.8)
Both timing and amount received are inadequate	22	(47.8)	10	(76.9)	32	(54.2)
Levelling	1	(2.2)	0	(0.0)	1	(1.7)
No response	4	(8.7)	0	(0.0)	4	(6.8)
No need of irrigation	2	(4.3)	1	(7.7)	3	(5.1)
No problems	11	(23.9)	0	(0.0)	11	(18.6)
Total <sup>b</sup>	46	(100.0)	13	(100.0)	59	(100.0)
3. No. of farms with:						
Rainfed	2	(4.7)	4	(33.3)	6	(10.9)
1 irrigation	20	(46.5)	5	(41.7)	25	(45.5)
2 or more irrigations	16	(37.2)	3	(25.0)	19	(34.5)
Did not cultivate	5	(11.6)	0	(0.0)	5	(9.1)
Missing values	1	(2.3)	0	(0.0)	0	(0.0)
Total	43	(100.0)	12	(100.0)	55	(100.0)

a. Eight observations were excluded because plots were not attended to due to sickness, death in family, economic hardship or absence from home.

b. Totals and percentages may not add up to the respective sample size due to multiple responses.

Table 4.2: Critical Irrigation Problems in the Der Season,  
LTC Smallholder Sample, 1987

	Male Respondents		Female Respondents		Total Respondents	
1. Number of respondents	44		12		56	
	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>
2. No. of farms listing most critical problem in <u>Der</u> as:						
Flooding	0	(0.0)	0	(0.0)	0	(0.0)
Salination	0	(0.0)	0	(0.0)	0	(0.0)
Water not available when needed but sufficient when it arrives	1	(2.3)	0	(0.0)	1	(1.7)
Water usually available when needed but quantity received is inadequate	0	(0.0)	0	(0.0)	0	(0.0)
Both timing and amount received are inadequate	38	(86.3)	12	(100.0)	50	(89.3)
No response	1	(2.3)	0	(0.0)	1	(1.8)
No problems	4	(9.1)	0	(0.0)	4	(7.1)
Total	44	(100.0)	12	(100.0)	56	(100.0)
3. No. of farms with:						
0 irrigations	0	(0.0)	0	(0.0)	0	(0.0)
1 irrigation	18	(41.9)	4	(33.3)	22	(40.0)
2 or more irrigations	2	(4.7)	2	(16.7)	4	(7.3)
Did not cultivate	23	(53.5)	6	(50.0)	29	(52.7)
Total	43	(100.0)	12	(100.0)	55	(100.0)

to the small sample size for women, results should be interpreted with caution. But, as several women noted in the course of the interviews, "...women are the last to get anything, including water."

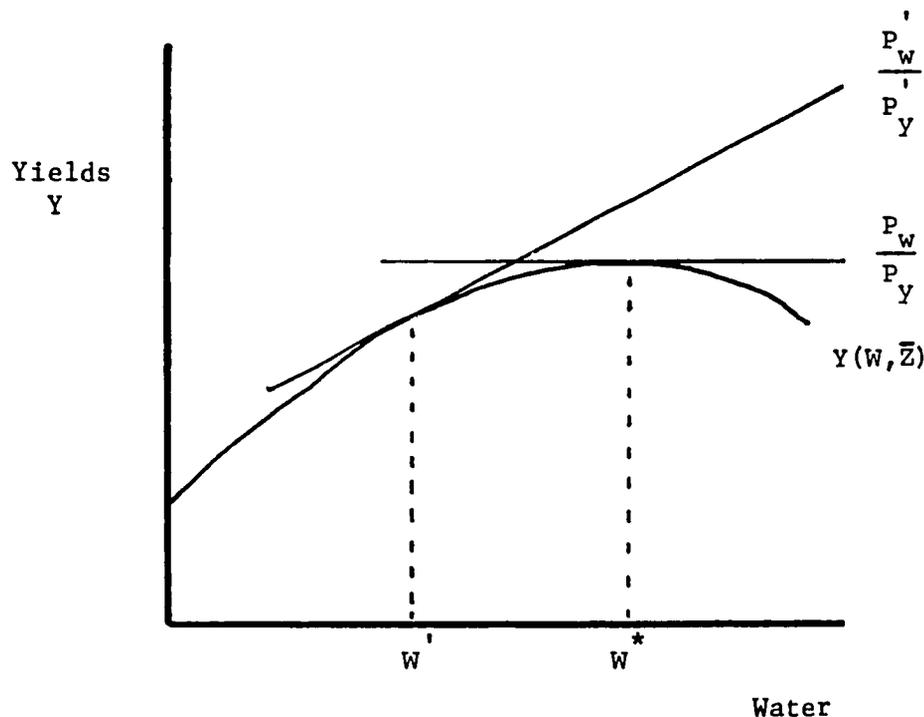
Water problems worsen in the Der season. The number of male farmers citing both timing of water and inadequate amount received as the most critical problem increased from 47.8 percent in the Der to 86.3 percent in the Gu. The percentage of women farmers with the same response increased from 76.9 percent to 100.0 percent. While farmers have the option of shifting to rainfed agriculture in the Gu, if irrigation is not available, this alternative does not exist in the Der. Virtually no rains fell during the 1986 Der season. This largely explains why more than half (52.7%) of irrigable parcels remained uncultivated. In contrast, only 9.1 percent of farms were left uncultivated in the 1986 Gu; most of these cases were due to sickness, death in the family, economic hardship or absence from the farm.

The survey was expected to uncover a greater incidence of flooding or salination problems, related to poor drainage, than was actually found. Of the 56 respondents in the survey, only 1 respondent listed flooding, and 1 listed salination as critical irrigation problems. Compared with poor timing and inadequate water, flooding or salination problems may be relatively unimportant. While farmers were encouraged to give multiple responses if they desired, the fact that few did, suggests respondents may have interpreted the question as "choose the most important problem" rather than "rank in order of importance your most important irrigation problems", as was asked. In informal interviews, some did mention problems of malfunctioning gates and inability to control (i.e., restrict) the flow of water in the Gu, as a serious problem.

#### Water pricing and Theoretical Production Response

According to Lahmeyer (cited by TAMS), water in the Lower Shebelli in general and the PPA in particular is insufficient to fully satisfy all competing needs. Under a scenario of competitive markets, it would be expected that prices would rise until the amount of water available is fully distributed to those with the highest marginal utilities. In the Shalambood PPA, water is free. Farmers are not charged directly for irrigation water used although they bear direct or indirect costs for cleaning and maintaining the canal infrastructure within their azienda. Other costs of dam, gate, bridge and canal maintenance and upkeep are not included or recouped through water charges. This situation has two effects: inadequate revenues are generated to maintain the irrigation infrastructure, with the result that users are living off the fixed capital investment; and the cost of water to users is heavily subsidized. It should not be unexpected then that the number of users wanting water exceeds the government's ability to effectively ration the limited water available.

A simple paradigm helps explain the relationship between location of parcel and the production behavior of producers. Assume that the function  $y(w,z)$  defines the relationship between crop yields  $Y$  per hectare and water  $W$ , assuming all other inputs  $Z$  are fixed.



For low amounts of water, yields are low; but even at zero irrigation water, crop yields are still positive with a shift to rainfed agriculture. As water increases, yields also increase, perhaps increasing at a constant or even an increasing rate initially. But at some point the function begins to turn down, as diminishing returns set in. Past point  $W^*$ , water actually has a negative effect on yields, an effect that may result from water-logged soils, or flooding.

When the cost of water is zero, the price ratio line (price of water  $P_w$  to price of output  $P_y$ ) is flat. Since water is free, producers have the incentive to use water up to  $W^*$ , maximizing production. If the price of water were to increase, the price ratio line would shift to say  $(P_w/P_y)'$ . Because the cost of water is higher, farmers use less. The distributional impacts are evident. If all else is constant (an important change will be introduced shortly) farmers closest to the water will attempt to maximize production, using more water than they otherwise would if the cost of water were higher. Farmers somewhere on the periphery get no irrigation water, because other farmers between them and

the canal's source are using more water than they would without subsidized water prices. If water prices increased, users close to the canals would use less and users further out would get more.

The model has direct relevance to the situation at Shalambood. In discussions with farm managers and laborers of the large cooperatives, state, and private farms along the Dhame Yassin, it was very clear that water was not a critical problem, except for the Jilal season from December to March (refer to Annex V) when neither smallholders or plantations are able to obtain water from the river. Laborers stated repeatedly that they took as much water from the canals as they liked, except when the canals were empty. The production response to additional water on plantations then would appear to be low or near zero, at least compared with farms on the periphery (empirical results on the frequency and duration of irrigations and the yield response to water on small holdings will be presented shortly).

Theoretically, farmers on the periphery stand to gain high marginal returns to a small increment of water. The marginal returns of farmers closest in are very low or near zero, if they are maximizing production. Incentives for arbitrage would seem to exist, with farmers on the periphery willing to pay those closest to the water to use less. Both groups would gain, while overall production would increase. Why does this not occur? The answer lies somewhere in the realm of transaction costs. That is, farmers on the periphery may be willing to pay for water, but incur high costs of locating and making cash transactions with all farmers between them and the canal source, and higher costs still for making sure that the contract is abided by.

A more cost-effective mechanism has evolved on the scheme -- the institution of azienda committees. Heads of committees monitor irrigation water from one azienda to the next, while the committees themselves allocate water within the azienda. Water allocation by the azienda committees is imperfect, with some smallholders receiving 2 irrigations and others none (this same phenomena could result, if farmers were far out on the periphery and costs in terms of water losses were very high). However, considering the severity of scarce water supplies in the Der season and the lack of water-pricing structures to allocate the limited supplies that exist, the Azienda committee represents an effective institution, for allocating water in an orderly fashion.

The fact that large plantations grow mainly bananas while smallholders grow mainly cereals further exacerbates the issue. Bananas are more water intensive than maize, requiring irrigation 12 months per year. When water is scarce, the marginal returns to irrigation of bananas is probably quite high due to the high capital investment made in establishing the crop. Inadequate water in the Jilal may mean the loss of fixed capital investment and three years of production. The loss for smallholders would be the production of a seasonal crop. The fact that

little interaction concerning water sharing is observed between smallholders and large farms during water scarce periods probably reflects the high expected losses held by plantation owners.

#### Yield Response and Benefits

An important issue not having received much attention in previous studies, concerns who will be the likely beneficiaries of the irrigation rehabilitation project. From the previous sections it seems apparent that large estates along the Dhame Yassin are already taking water at or near the levels required for production maximization during the Gu season. Hence, any additional water made available by the project during this period will result in some expansion of smallholder irrigated areas, but will mainly enable better timing and greater quantity of water on existing smallholder irrigated parcels. Data on existing smallholder irrigation practices from Table 4.3 show that approximately 56 percent of the farms in the PPA grew their crops under rainfed conditions or with only 1 irrigation (in the Gu), when 2 to 3 irrigations are considered optimal for maize.

Given the above argument that additional water in the Gu will primarily benefit smallholders, the production response of maize or other crops to water represent important questions. Little empirical evidence has been presented to date on the functional relationship between water and on-farm yields. Since economic benefits of the project stem from this relationship, information on crop yield response is essential.

Out of the total of 56 respondents in the LTC survey, 48 farms were selected which produced a crop of maize on their main irrigated parcel in the Gu. The sub-sample was split into two strata: relatively abundant water users, and farmers with relatively low access to water. Abundant water users (n=23) are defined as those farmers who either said they experienced no water problems (n=11) or received 2 or more irrigations during the course of the season. The group with low access to water either relied entirely on rainfall for water or had at most 1 irrigation.

The group with relatively abundant water resources had by definition received at least 2 irrigations amounting to 2.5 man-days of irrigation on average (Table 4.3). In the low water access group, 6 farms received only 1 irrigation, for an average of 1.0 man-days of irrigation. Applications of fertilizer by both groups were insignificant, and although improved seeds, pesticides or tractor services were not controlled for in the analysis, the level of input use is generally reported to be quite low.

Maize yields of the group with relatively abundant water (average of 13.6 quintals/ha.) is nearly double that of the low water access group (7.0 quintals/ha.). While it is possible that farmers in the relatively

Table 4.3 Irrigation Characteristics of Farms with Relatively Abundant Versus Relatively Scarce Water Resources, LTC Smallholder Sample 1987

	Rel. Abundant <sup>a</sup> Water Resources	Rel. Scarce <sup>a</sup> Water Resources	Total
1. No. of farms <sup>b</sup>	23	25	48
2. No. of farms with:			
<u>Gu</u> 0 irrigations	0	6	6
1 irrigation	0	19	19
2 or more irrigations	23	0	23
<u>Der</u> 0 irrigations	11	14	25
1 irrigation	10	10	20
2 or more irrigations	2	1	3
3. Average man-days of irrigation in the Gu season (No. of irrigations x duration/ha.)	2.5	1.0	1.8
4. Average yields per hectare of maize (quintals/ha.)	13.6	7.0	10.3
5. Proposals to ensure sustained water supply in the future (No. of farms):			
Higher land taxes			30
Tax on water used			10
Both higher land taxes and taxes on water			8
Man's decision not a woman's			5
Don't know			3

a. Users with relatively abundant access to water were those stating that they either had no irrigation problems in the Gu season, or had 2 or more irrigations on the main parcel during the course of the season. Users with relatively scarce water represent the remaining sample.

b. Eight farms were excluded because of zero production. Reasons for no production varied, including sickness, death in family, economic hardship and need to work off farm, etc.

abundant water group are better farmers, have secure title to land, more wealth to hire labor and perhaps more fertile soils due to the deposits of sediment over time, the yield response to water still appears to be sizeable (perhaps on the order of 50%).

The Der season is more difficult to evaluate. If the Der rains do not come, rainfed irrigation is impossible, and the supply of irrigation water will be scarce, unless sizeable reservoir capacity is built upstream. In such a case, as happened in 1986, smallholders are unlikely to be able to compete with plantations for water, unless high costs are placed on water use. Of the 23 farmers who received 2 or more irrigations in the 1986 Gu season (Table 4.3), only 2 received 2 or more irrigations in the Der, 10 received 1 irrigation and 11 received no irrigations. Water access for the group with relatively low water resources deteriorated, but 11 farmers (instead of 19 in the Gu) still received some irrigation water.

There is one major difference between the Gu and Der seasons, however. While it is possible to revert to rainfed agriculture in the Gu, lack of irrigation water in the Der usually results in crop failure. The costs to farmers can be high, not just in terms of foregone production, but also in terms of sunk production costs borne in the expectation that water will arrive. In discussions with farmers, many stated that labor and sometimes money were spent preparing the land for cultivation. Payments for land preparation, ranging from So. Sh. 800/ha. to So. Sh. 5,000/ha. were reported in anticipation that a parcel would receive water. In all these cases water never arrived, and production was zero.

With the sizeable production response to water that appears to exist in the Shalambod PPA, an important question concerns whether farmers are able or willing to respond to the incentives offered by the irrigation rehabilitation project. The situation may be such that labor demands for livestock or other non-farm activities may restrict the additional labor times required with improved irrigation. Of the 63 responses (sometimes multiple) received in the survey, 39 percent said they would shift labor from non-farm employment to irrigated agriculture, 13 percent said they would shift their labor away from livestock and 16 percent said they would not change their labor allocation at all. A further 23 percent said they would hire labor. It would be interesting in future analysis to determine whether this group has a high fraction of large farms. In general, farm labor appears to be responsive to incentives.

Because of the emphasis often placed on food grains for national security reasons, the team asked farmers what crops they would prefer to grow if the supply of irrigation water were to be improved. Approximately 85 percent of the 46 respondents offering comments said they would change crops (Table 4.4). For those who would change crops

Table 4.4: Predicted Shifts in Farm Labor With Irrigation Improvement <sup>a</sup>

	Male Respondents		Female Respondents		Total Respondents	
1. Number of respondents <sup>b</sup>	43		10		53	
2. Number of responses (multiple responses possible)	51		10		61	
3. Farmer responses on how they would reallocate labor with improved irrigation:	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>
Shift labor from livestock	8	(15.7)	0	(0.0)	8	(13.1)
Shift labor from non-farm employment	20	(39.2)	4	(40.0)	24	(39.3)
Shift labor from off-scheme crop agriculture	0	(0.0)	2	(20.0)	2	(3.3)
Hire additional labor	14	(27.5)	0	(0.0)	14	(23.0)
No change in labor allocation	9	(17.6)	1	(10.0)	10	(16.4)
Don't know	0	(0.0)	3	(30.0)	3	(4.9)
Total	51	(100.0)	10	(100.0)	61	(100.0)

a. Numbers in parentheses indicate percentages of subset.

b. Missing data for three respondents.

(n=39), 55 percent said they would stop cultivating maize, while 32 percent said they would stop cultivating sesame. What crop would they grow instead? Approximately 60 percent would shift cultivation to fruit trees and palms (coconut, grapefruit, mango, banana, papaya and lemon), while 30 percent said they would shift to vegetables (Table 4.5). Cereal production would appear to have low priority. Farmers perceive that perennial crops and vegetables are more lucrative, at least compared to the cereals yields and prices they currently receive.

#### Farmers' Recommendations for Irrigation Improvement

Clearly, all farmers would like to see improvements in the scheme's physical infrastructure. They directly associate problems of poor water timing and inadequate water with the silted-in dam, broken gates, clogged canals, and poor land levelling that characterize the scheme's current deteriorated state. In addition to physical problems, however, large and small farmers alike point to the poor state of water management and allocation, both on-scheme and in the greater Shebelli region. A comprehensive water use plan that sets clear priorities and goals for the management of the Shebelli's water resources is lacking and urgently needed. The continued expansion of irrigated lands upstream from Shalambood, when water is already scarce downstream, and the ad hoc procedures used to allocate water at Shalambood are indicative of the problems with water management and planning that exist.

The ability of the Ministry of Agriculture to better manage water resources in the Shebelli river valley is constrained by limited resources, particularly manpower. The Land and Water Resource officer at Genale has in addition to his responsibilities of water scheduling, the tasks of land registration, and handling land disputes. When water schedules are set, enforcement is difficult because of the lack of vehicles, personnel and funds for fuel, wages, etc. No doubt, the lack of a comprehensive Water Law exacerbates regulation and enforcement.

It was mentioned in a previous section on the history of the scheme, that farmers feel management has deteriorated. The problem of the MOA trying to control the distribution of water with inadequate resources is a contributing factor. But due to the unabated growth of water upstream and downstream of the PPA, there is simply less water to be allocated nowadays. Also, there are greater numbers of people and animals competing for water, and all these factors are likely to grow worse over time. While management may be poorer now than in Italian times, it is also true that management of water has not kept pace with fundamental economic and demographic change in the area. With dwindling water supply and growing demand, it is not surprising that complaints of too little water and poor distribution abound.

Table 4.5 Farmer Crop Preferences With Irrigation Improvement

	Male Respondents		Female Respondents		Total Respondents	
1. Number of respondents	38 <sup>a</sup>		8 <sup>b</sup>		46	
	(n)	(%)	(n)	(%)	(n)	(%)
2. Those who <u>would not</u> change crops	6	(15.8)	1	(12.5)	7	(15.2)
3. Those who <u>would</u> change crops	32	(84.2)	7	(87.5)	39	(84.8)
4. For those who <u>would</u> change crops:						
Number of responses for those who would <u>stop cultivation</u> of a crop (multiple responses possible)	60		9		69	
Would stop cultivation of maize	32	(53.3)	6	(66.7)	38	(55.1)
Would stop cultivation of sesame	19	(31.7)	3	(33.3)	22	(31.9)
Would stop cultivation of tomatoes and watermelon	9	(15.0)	0	(0.0)	9	(13.0)
Total	60 (100.0)		9 (100.0)		69 (100.0)	
Number of responses for those who would <u>begin cultivation</u> of a new crop (multiple responses)	79		8		87	
Would begin cultivation of fruit trees and palms (coconut, grapefruit, mangos, banana, papaya, lemons)	50	(63.3)	2	(25.0)	52	(59.8)
Would begin cultivation of vegetables	20	(25.3)	6	(75.0)	26	(29.9)
Would begin cultivation of cotton, groundnuts, sesame, tobacco	6	(7.6)	0	(0.0)	6	(6.9)
Would begin cultivation of grapes and watermelon	3	(3.8)	0	(0.0)	3	(3.4)
Total	79 (100.0)		8 (100.0)		87 (100.0)	

a. Missing data for 6 cases.

b. Missing data for 4 cases.

Farmers themselves also contribute to the problem. While the azienda committees are an effective social organization, performing many important functions, their job of canal maintenance and water allocation is not perfect. Farmers themselves admitted (in a meeting between azienda committee heads and the team) that they could do more. A tour of the scheme reveals cart and truck paths across the canals, broken down canal walls from animal watering and grazing, and silted-in tertiary canals. Each azienda has an incentive to repair its sections of a secondary and tertiary, but only to the extent required to supply its own farms with the water needed. They have less incentive to widen or deepen canals to permit more water downstream. At the same time, communications among azienda heads result in a better job than what otherwise would be expected if each azienda acted independently. Consequently, the quality of canals declines from the head to end. Maintenance of bridges is another area where mis-management shows. At one time, as many as 17 bridges crossed each of the secondaries (according to a meeting with committee heads); now few remain operable. To avoid overloading the government administration, some of the more basic tasks of maintenance and upkeep will have to be more effectively performed by farmers themselves.

A fundamental problem is that poor management has led to complacency, and lack of innovation in finding new organizational forms and practices to cope with new problems. The feeling among farmers that influence, wealth or bribes determine who gets water, when and in what quantity, is a major hurdle that will need to be overcome before farmers will fully participate in upkeep of the scheme.

To measurably improve livelihoods, farmers will have to be given technological alternatives to the traditional agricultural practices they are now following. When one farmer was asked why he did not use fertilizer, he responded that because of levelling problems the fertilizer washes to the lowest point of the field. The extension agent could offer no other alternative than expensive land levelling. The use of modern technological inputs to maintain fertility is low, and such inputs are restricted in availability. Moreover, the scheme is in need of improved agronomic practices -- more efficient methods of applying irrigation water, better integration of crops and livestock, improved cropping practices -- and on-farm experimentation to demonstrate the viability of new technology adapted to the area.

The problem of farms, taking water out of turn or ignoring water schedules drawn up by the MOA is also growing in importance. Banana farms in the area have recently pooled So. Sh. 300,000 to hire a man from the MOA, a driver and a car, and 2 soldiers to drive around the scheme and identify the parties illegally taking water. A proposal whereby someone found cheating would be fined So. Sh. 20,000 for the first offence, So. Sh. 40,000 for the second offence, and be jailed for the third offence, was put forth by the Board to the governor, and approved.

Farmers were asked to suggest ways to generate funds for upkeep and maintenance of the irrigation system. As a preface to the question, it was suggested that farmers will have to pay to ensure that the physical infrastructure is kept in operating order, since international donors may be less inclined in the future to invest in another rehabilitation. Three preset responses were given for farmers to choose from: 1) higher land taxes; 2) higher water taxes; and 3) other. Since every person has a right to water under Islamic law, it was expected that few farmers would be willing to pay for water. Enumerators were instructed by the team to tell farmers that water taxes were payment for water delivery services and not water per se.

Survey results reported in Table 4.3, show that of the 56 total respondents in the LTC survey, 54 percent (n=30) would be willing to pay higher land taxes, 18 percent (n=10) would pay higher water taxes, and 14 (n=8) percent would be willing to pay both higher land and water taxes. These responses were conditioned on a very important caveat, however. Farmers are willing to pay for improved water services, as long as management by the MOA is improved, and they see positive and concrete results. Otherwise, farmers would be reluctant to make any form of payments. Nevertheless, the fact that nearly all farmers are willing to pay for water services is a positive sign in view of the proposal that the project be self-sustaining.

The proposal by the manager of the Gemesio farm that a levy be placed on bananas, also appears to be useful. Large farms would pay for water through the excise tax on bananas. Smallholders could pay based on the number of irrigations and duration of water received. Water foremen of azienda committees have a list of farmers and know who receives water, and when. All foremen are known by the Land and Water Resources office in Genale.

These systems would assign water charges based on relatively crude measures of water use (as opposed to systems involving metering of water), but are relatively cost effective, with the transactions cost of identifying water users being borne by existing institutions other than the government. However, actual collection of tax revenues should be done by the MOA to avoid over-burdening organizations like the farmers' committees.

Whether taxation is based on land or water, the taxes will need to be kept separate from the land taxes currently collected. Those go to the municipality to support public works, roads, schools, etc., with none reinvested in the irrigation scheme. According to the owner of the Gemesio farm, management decisions concerning water distribution and use, planning, levying and collection of taxes, and reinvestment of scheme revenues should be handled by a Shalambood Rehabilitation Board. The Board would be financed by taxes from export commodities and land taxes paid by smallholders. Discussions with smallholders confirmed that they

had similiar notions in mind. However, if the system were used to broaden the tax base, without improving water availability and distribution, the effect instead would be an additional cost on the system, and economic disincentives for farmers. The point constantly reiterated by farmers, is that water-tax revenues should be reinvested in the scheme, not elsewhere.

Several alternative means for recouping the cost of water services from small holders may be considered: 1) set a flat-rate charge per-unit of area for all farms irrespective of whether irrigation water is received or not (as with the current system of land taxes); 2) set a flat-rate charge per-unit of area for those farmers receiving at least one irrigation, however short in duration; 3) base water payments on the number and duration of irrigations received. Proposal (1) is the least costly and difficult to administer, as it avoids problems of setting water charges based on actual water used. Proposal (2) charges farmers according to whether they receive water or not, but does not take into consideration the quantity of water used. It would however be administratively easier than proposal (3) which taxes water according to the total number of hours of irrigation per hectare. Proposal (3) is preferable because it more accurately taxes water according to actual use, without investing in expensive measures for monitoring water use. It would be more administratively costly than proposals (1) or (2), however, but the fact that water foremen have names of farmers and could record the needed information, makes the procedure feasible.

Tax levels should not be oppressive. Likewise they need to be adequate to ensure that sufficient revenues are generated. The tendency will be to set taxes too low, as is the case with the current rates for land taxes of So. Sh. 10/ha. for irrigated land. At 8,500 hectares in the PPA, a tax base of So. Sh. 85,000 would barely be sufficient to support several annual staff salaries. The tax level needed will depend on the annual level of investment required to sustain the project, the production response of small grains and perennial crops to water and commodity prices. Since farmers will be hesitant to carry the higher tax load, the government will have to demonstrate that higher productivity is forthcoming to offset the higher costs.

Finally, discussions with laborers on the large plantations revealed that a shortage of drinking water exists during some periods of the year, particularly during the Jilal. Farm managers are sometimes reluctant to divert water from banana irrigation for the domestic uses of farm laborers. Wells are in short supply and plantations usually have limited pumping capacity to meet the demands of banana cultivation. Consideration should be given to constructing wells with hand pumps for the relatively few villages that are located within the PPA.

## LIVESTOCK INTEGRATION WITH IRRIGATED AGRICULTURE

Having successful integration of livestock with irrigated agriculture at the PPA is important because of the potential for livestock damage to the canals, and the importance of livestock products to the Somali lifestyle. To assess the factors relevant to integration of livestock and irrigated agriculture, the LTC survey focused on issues of water and grazing livestock in the PPA rather than breeding, production, marketing, and support services. For this latter information, the reader is referred to TAMS (1986, Annex II).

### Quantity, Ownership and Maintenance of Livestock at the PPA

Livestock numbers in the PPA vary by season and type of animal. It has been estimated that during the dry season there are as many as 10,000 cattle, 10,000 sheep and goats, and 500 camels in the PPA. In the wet season these numbers dwindle to 3,000 cattle, very few sheep and goats, and almost no camels due to the availability of grazing areas off-scheme (TAMS, 1986). Apart from the temporal variation in livestock presence at the PPA, the single most important factor limiting the quantity of livestock on the scheme are tsetse flies, which are the vectors of trypanosomiasis (TAMS, 1986).

Livestock husbandry practices vary by herd size. Generally, 1-5 animals are considered suitable for keeping in the vicinity of the household, while 6 or more animals are often regarded as a herd, which must be driven, grazed and watered. However, there is some indication that small herd owners may collectively maintain their animals -- pooling animals from several families (TAMS, 1986).

Of the small farmers surveyed, approximately one-third (34%) reported owning livestock, predominantly cattle. Average herd size per livestock owning household totals 8.4 animals, while the average number of animals per household for the entire sample is 3.0. This distribution of livestock concurs with that given by the TAMS (1986) study. When the sample is stratified by small (1-5 animals) and large (6+) livestock owning households, the average size of small herds is 3.2 animals compared with an average of 15.3 animals for large livestock-owning households. Of households which had livestock, 10 (53%) had small herds of 5 animals or less, while 9 households (47%) had herds of more than 6 animals (Table 5.1).

Table 5.1: Livestock Ownership on Small Holdings,  
LTC Smallholder Survey, 1987

	Males Respondents		Females Respondents		Total
1. Number of respondents	44		12		56
	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u> <u>(%)</u>
2. Cattle:					
Those with none	32	(72.7)	10	(83.3)	42 (75.0)
Those with 1-5	7	(15.9)	0	(0.0)	7 (12.5)
Those with 6+	5	(11.4)	2	(16.7)	7 (12.5)
Total	42	(100.0)	12	(100.0)	54(100.0)
3. Sheep and Goats:					
Those with none:	41	(93.2)	9	(75.0)	50 (89.3)
Those with 1-5:	1	(2.3)	2	(16.7)	3 (5.4)
Those with 6+:	2	(4.5)	1	(8.3)	3 (5.4)
Total	44	(100.0)	12	(100.0)	56(100.0)
4. Camels:					
Those with none	43	(97.7)	12	(100.0)	55 (98.2)
Those with 1-5	1	(2.3)	0	(0.0)	1 (1.8)
Those with 6+	0	(0.0)	0	(0.0)	0 (0.0)
Total	44	(100.0)	12	(100.0)	56(100.0)
5. Donkeys:					
Those with none:	43	(97.7)	12	(100.0)	55 (98.2)
Those with 1-5:	1	(2.3)	0	(0.0)	1 (1.8)
Those with 6+:	0	(0.0)	0	(0.0)	0 (0.0)
Total	44	(100.0)	12	(100.0)	56(100.0)
6. Average small herd size (1-5):	2.6		4.5		3.2
7. Average large herd size (6+):	17.8		10.3		15.3

Cattle appear to be the animal of preference. Of the 19 farmers from the sample who own livestock, 14 (74%) own cattle, while only 6 (32%) have sheep and goats. Only one case each of camel and donkey ownership was observed.

It is important to note that while the majority of the small farmers sampled (66%) own no livestock, only one member of this group approved of a suggestion that livestock be banned in the PPA (Table 5.2). The argument most often given, is that livestock are the backbone of the Somali economy. Farmers state that livestock provide a needed supply of meat and milk to supplement diets, manure for construction of houses, and hides and leather products. Surprisingly, manuring of cropped areas is rarely done, presumably because of manure's high value for construction purposes.

The seasonal location of livestock for grazing and watering purposes is shown in Table 5.3. During the dry Jilal season, approximately 21 percent (4 cases) of livestock owners reported grazing their animals off-scheme (in the bush or along river banks) and approximately 58 percent (11 cases) grazed their animals on the PPA, either at the house, on the fields, or around the canals. There was only one instance where a farmer had no fixed grazing area in mind for his livestock. As might be expected, these proportions change during the Gu rainy season: 42 percent (8 cases) of livestock owners grazed their herds off-scheme, while the number of owners who kept their animals on the PPA decreased to 37 percent (7 cases), a reduction of 21 percent (4 cases). In the Der season, approximately 32 percent (6 cases) of the livestock owners graze their herds off-scheme, while 47 percent (9 cases) had their animals on the PPA.

Livestock presence on and off-scheme essentially reflects seasonal precipitation. Because low precipitation during the Jilal season reduces pasture in surrounding rainfed areas, animals are brought in toward the irrigation scheme. During the rainy Gu season however, more animals can be grazed off scheme, reducing potential conflicts with crop agriculture. During the Der season, which receives less precipitation than the Gu, some animals graze off-scheme, but as water and fodder grow scarce, herds begin to migrate toward the river.

The use of specific watering locations for livestock also varies seasonally. In the Jilal season 74 percent (14 cases) of livestock owners make use of wells, either government or private. As expected, this proportion drops considerably in the Gu and Der seasons, to 47 percent (9 cases) and 42 percent (8 cases) respectively. Other watering areas include points along the river and irrigation canals. However, the reported use of these areas is less than for wells, even during the Der. During the Jilal season, only one case each was reported of animals watering along the river at the canals. In the Gu season, there was no reported use of the river for watering of livestock, and only 3 instances

Table 5.2 Farmer Preferences for Preventing Breakdown of Canals by Livestock

	Animal Owners		Non-Animal Owners		Total	
	(n)	(%)	(n)	(%)	(n)	(%)
1. Number of respondents:	19		38		55 <sup>a</sup>	
2. Banning the presence of livestock on-scheme:	1	(5.3)	1	(2.6)	2	(3.6)
3. Building watering points for animals:	17	(89.5)	32	(84.2)	49	(89.1)
4. Maintain grazing areas on-scheme:	6	(31.6)	12	(31.6)	18	(32.7)
5. Impose fines on constant violators:	0	(0.0)	3	(7.9)	3	(5.5)
6. Maintain grazing areas off-scheme:	0	(0.0)	1	(2.6)	1	(1.8)
7. Do not know:	0	(0.0)	2	(5.3)	2	(3.6)
Total: <sup>b</sup>	24		51		75	

a. One case missing.

b. Total number of responses exceeds total cases, and summed percentages exceed 100 due to multiple responses.

Table 5.3 Seasonal Location of Livestock  
LTC Smallholder Survey, 1987

	Jilal Season		Gu Season		Der Season	
1. Number of livestock owners: 19						
	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>	<u>(n)</u>	<u>(%)</u>
2. Grazing:						
a. Off-scheme(bush, riverbanks):	4	(21.1)	8	(42.1)	6	(31.6)
b. On the farm or at home:	8	(42.1)	5	(26.3)	6	(31.6)
c. Around the canals:	3	(15.8)	2	(10.5)	3	(15.8)
d. No fixed area:	1	(5.3)	1	(5.3)	1	(5.3)
Total: <sup>a</sup>	16	(84.3)	16	(84.3)	16	(84.3)
3. Watering:						
a. Government well:	12	(63.2)	7	(36.8)	6	(31.6)
b. Private well:	2	(10.5)	2	(10.5)	2	(10.5)
c. Watering points by river:	1	(5.3)	0	(0.0)	4	(21.1)
d. Canals:	1	(5.3)	3	(15.8)	2	(10.5)
Total: <sup>a</sup>	16	(84.3)	12	(63.1)	14	(73.7)

a. Responses may not total number of livestock owners, and percentages may not total 100, due to missing data for certain seasons.

(15.8%) of owners using canals to water their animals. During the Der, 4 owners (21%) reported using the river, and 2 (11%) used canals to water their livestock (Table 5.3). The low reported incidence of watering livestock at the irrigation canals is questionable, and should not be taken as an accurate indication of canal damage due to livestock, which is in fact considerable (TAMS, 1986). The movement of livestock through the irrigation scheme results in significant grazing and watering at the canals.

#### Farmers' Preferences for Integrating Livestock onto the Scheme

In an effort to obtain small farmer preferences for integrating livestock with irrigated agriculture, several options for dealing with livestock on-scheme were incorporated into the LTC survey. The responses of farmers to these options are presented in Table 5.2. As might be expected, banning the presence of all livestock at the PPA was not a popular alternative. Only one non-animal owner and surprisingly, one animal owner was in favor of this. Few supported this alternative since banning the presence of livestock at the PPA would deprive the inhabitants of livestock products, which are a valued supplement to their diet and lifestyle. Building watering points for livestock on-scheme was most popular, being supported by 90 percent (17 cases) of the animal owners, and 84 percent (32 cases) of the non-animal owners.

Maintaining grazing areas for livestock on the PPA was a less popular option, presumably because this would mean some loss of cultivatable land (the notion that land must be given up by someone, to provide grazing areas, was a condition to answering affirmative to the question). Only one-third (32%) of each group (6 animal owners and 12 non-animal owners) favored this alternative for integrating livestock onto the PPA. Also, providing more grazing areas on the scheme might further exacerbate problems of environmental degradation around watering points.

None of the animal owners and only 3 non-animal owners supported imposing fines on constant violators. Farmers repeatedly emphasized that fining animal owners for having their herds on-scheme would be unjust if there were no defined water or grazing areas set aside as an alternative. Such a situation would be tantamount to banning all animals from the PPA. Maintaining grazing areas off-scheme was the least favored option; none of the animal owners, and only one non-animal owner recommended this alternative (Table 5.2). This option might be impractical for the small herd owners (comprising 53% of all animal owners) who gain the most from immediate access to livestock by-products by grazing and watering their animals in the vicinity of the household.

Recommendations for Integrating Livestock  
Onto the PPA

Most livestock damage to the canals seems to take place when animals move from one area to another, not from intentional grazing at the canals (Table 5.3). The wide seasonal variation in livestock presence on-scheme, together with the fact that the animals must travel to watering points from grazing areas (Table 5.3) suggests that a great deal of livestock traffic takes place on the PPA. That livestock damage to canals occurs as animals are passing through the area was in fact borne out at a meeting of the heads of the azienda farmer's committees. The following recommendations therefore focus on minimizing and/or facilitating controlled livestock traffic on the scheme.

1. Livestock bridges should be built over canals, along frequently traveled routes. This was an option brought up at the meeting of the heads of the farmer committees in Shalambood.
2. Fixed watering points should be constructed on-scheme. These might include wells and/or concrete water basins along canals and the river.
3. Fences could be built along especially vulnerable sections of canals, i.e., sections of canals which run alongside (or under) roads and other livestock routes.
4. As many farmers rent fallow land from large landowners for use as pasture, locating temporary water 'stations' in these areas would serve to prevent animals which are being grazed there from wandering or being driven, in search of water. As most large landowners (and therefore their fallow land) are located near canals, mobile water stations might comprise a small pump to draw water from the irrigation canals and temporary watering troughs. This apparatus would then be moved when the farmer wants to cultivate his fallow land. A benefit to the landowner would be the manuring of his field. While this arrangement might alter the water schedule and/or raise the costs of renting land for the grazing and watering of livestock, the feasibility of this arrangement should be explored.
5. Arrangements which emphasize locating grazing and watering areas together should be given priority. Ideally watering points should be located off-scheme and in off-scheme grazing areas to reduce the number of livestock on-scheme. The parallel to farmers arguments that fining those watering animals in canals would be unjust unless alternatives are provided, would seem to equally apply to nomadic groups who require feed and water for

their livestock during the Jilal. Sources for this water might include wells, delivery of irrigation water, or trapping rainfall and runoff in underground cisterns.

6. If defined grazing and watering points are set aside on and/or off-scheme, there is every reason to believe that the farmers, who are highly aware of the problem, would regulate themselves well. However if this did not turn out to be the case, fines for constant violators could then be imposed.

Overall, the best approach for integrating livestock onto the PPA, and minimizing canal damage, might include immediate construction of bridges and fences (proposals 1 and 3) at key points in the canal network. These alternatives have considerable appeal, because both would be inexpensive to construct and maintain. They have the potential of being highly effective when combined with designated watering points on-scheme.

Following the construction of bridges and fences, mobile watering stations could be located on appropriate fallow land set aside for grazing. Then, as the irrigation scheme is improved and expanded, designated grazing and watering areas could be located. In this way no presently cultivated land would have to be sacrificed for grazing areas. Fines would be imposed, only if farmers have difficulty regulating livestock on the PPA, and canal damage persists.

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ANNEX I

List of Contacts

List of Contacts

1. Ahmed Said, District and Regional Officer, Dept. of Land and Water Resources, Ministry of Agriculture, Genale.
2. Mohammed Ga'al, District Judge, Merca.
3. Mohammed Kai Nan, Regional Judge, Merca.
4. Yusuf Mohamad Farah, Regional Officer, Ministry of Agriculture.
5. Sallah Mohamud Hurshe, Tax Collector for Genale District.
6. Adan Nur, Head of Small Farmers Association of Shalambood.
7. Mohamoud Mohamed Ali, Director, Land and Water Resources Department, Mogadishu.
8. Yaseen Wehelie, Michigan State, Food Security Project.
9. Mohamed Khalif, Head of Department of Economics, Faculty of Agriculture.
10. Ibrahim Asser, Lecturer in the Department of Economics, Faculty of Agriculture.
11. Jim Merryman, Associates for Rural Development, Social Anthropologist for the JESS project.
12. Director of SomalFruit, Shalambood Office.
13. Regional Director, Agricultural Cooperative, Shalambood Office.
14. Farmers, village chiefs, heads of azienda committees, foremen and laborers of large state, cooperative and private farms, Shalambood.

ANNEX II

Questionnaire, LTC Smallholder Survey, 1987

Somalia Questionnaire (Shalambod)

1. Enumerator: \_\_\_\_\_
2. Name of Respondent: \_\_\_\_\_ 3. Age: \_\_\_\_\_ 4. Sex: \_\_\_\_\_
5. Place of Residence: \_\_\_\_\_
6. In What Azienda is Most or All of Land Located: \_\_\_\_\_
7. Do you have primary responsibility for farm decisions: Y / N
- If No, who is responsible for farming decisions: \_\_\_\_\_
8. Do you farm land with your father or brother. If so, how would you best characterize your situation:
- ( ) Share Income and Consumption with Father or Brother
  - ( ) Share Income but Not Consumption with Father or Brother
  - ( ) Separate Income and Separate Consumption
  - ( ) Other: \_\_\_\_\_

Household Demographics: Labor Supply

9. Size of Household:
- |  |               |       |   |
|--|---------------|-------|---|
| Number of resident able-bodied (+14) adult males:                      | a.:           | _____ | : |
| Number of resident able-bodied adult females:                          | b.:           | _____ | : |
| Number of non-working elders   | c.:           | _____ | : |
| Number of resident children  | d.:           | _____ | : |
| Number of adults living away from home at least 6 months per year      | :             | _____ | : |
| Number of unmarried children away from home at least 6 months per year | :             | _____ | : |
| Others:  | e.:           | _____ | : |
| Total Family Size:   | (a+b+c+d+e).: | _____ | : |
- Do you hire labor during peak weeding? Workers: \_\_\_\_\_ Days: \_\_\_\_\_
- Do you hire labor for other purposes? Workers: \_\_\_\_\_ Days: \_\_\_\_\_
- Elaborate: \_\_\_\_\_

10. Land Tenure

	: Area	: Irrigated	: Registered	: Main
		: or Rainfed:	: Y/N	: How Long Ago:
				: Crop
Is your principal parcel	:	:	:	:
-owned and farmed	:	:	:	:
-owned and leased	:	:	:	:
-rented and farmed	:	:	:	:
Do you have other land?	:	:	:	:
If so, where:(1) _____	:	:	:	:
-owned and farmed	:	:	:	:
-owned and leased	:	:	:	:
-rented and farmed	:	:	:	:
(2) _____	:	:	:	:
-owned and farmed	:	:	:	:
-owned and leased	:	:	:	:
-rented and farmed	:	:	:	:
Other:	_____			
Total Land Farmed:	_____			

Land Tenure on Main Parcel in Principal Azienda

11. How many years has the MAIN parcel been farmed by your family: \_\_\_\_\_
12. How was the parcel acquired: ( ) inherited ( ) settled from unclaimed land ( ) bought ( ) tenancy ( ) allocation from state ( ) farm ( ) other: \_\_\_\_\_
13. If you inherited the parcel, did brothers or sisters get land also: Y / N. If yes, what shares did they receive: \_\_\_\_\_  
\_\_\_\_\_
14. If the parcel was bought, who from: ( ) family relation: \_\_\_\_\_  
( ) neighbor or friend ( ) Government: \_\_\_\_\_  
( ) other: \_\_\_\_\_
15. Is the parcel registered: Y / N. How long ago: \_\_\_\_\_
- If Yes, why was land Registered: ( ) had dispute over land  
( ) fear losing land ( ) protect investment made in the land  
( ) acquire credit from banks ( ) government program  
( ) other: \_\_\_\_\_
- If No, why don't you register the land: ( ) don't know registration procedures ( ) procedures too complicated ( ) too costly  
( ) don't wish to upset family or neighbors ( ) other: \_\_\_\_\_  
\_\_\_\_\_
16. If all or part of the parcel is farmed as a tenancy:  
What proportion is rented or sharecropped: \_\_\_\_\_  
Owner's place of residency: \_\_\_\_\_
- Terms of the lease: ( ) cash : \_\_\_\_\_  
( ) grain: \_\_\_\_\_  
( ) Other: \_\_\_\_\_
- Duration of lease: \_\_\_\_\_

Water Allocation and Productivity  
on Main Parcel in Principal Azienda

17. Is your parcel: ( ) Adjacent to primary canal  
( ) Adjacent to secondary canal  
( ) On tertiary but close to secondary or primary  
( ) On tertiary but moderately far from secondary or primary  
( ) On tertiary but far from secondary or primary  
Distance: \_\_\_\_\_
18. How is water allocated: ( ) by foreman of Water Users Association  
( ) take water as needed ( ) Government ( ) Other: \_\_\_\_\_  
\_\_\_\_\_

19.-----1986 Gu Season-----

Crop	: Area : : ha. :	No. of Irrigations :	Duration/ Irrigation :	Fertilizer : (Quantity) :	Yield (Kg./Ha.)
1. Maize	:	:	:	:	:
2. Sesame	:	:	:	:	:
3. Sorghum	:	:	:	:	:
4. Groundnuts:	:	:	:	:	:
5. Other	:	:	:	:	:

20. Rank the most critical irrigation problems in the Gu Season:
- ( ) flooding
  - ( ) salination
  - ( ) water not available when most critically needed, but quantity generally sufficient when it arrives
  - ( ) water usually available when needed, but irrigations are too short in duration.
  - ( ) both timing and amount of water received are inadequate
  - ( ) other: \_\_\_\_\_

21.-----1986 Der Season-----

Crop	: Area : : ha. :	No. of Irrigations :	Duration/ Irrigation :	Fertilizer : (Quantity) :	Yield (Kg./Ha.)
1. Maize	:	:	:	:	:
2. Sesame	:	:	:	:	:
3. Sorghum	:	:	:	:	:
4. Groundnuts:	:	:	:	:	:
5. other	:	:	:	:	:

22. Rank the most critical irrigation problems in the Der Season:
- ( ) flooding
  - ( ) salination
  - ( ) water not available when most critically needed, but quantity generally sufficient when it arrives
  - ( ) water usually available when needed, but irrigations are too short in duration.
  - ( ) both timing and amount of water received are inadequate
  - ( ) other: \_\_\_\_\_

23. To ensure that the irrigation system is maintained for continued water delivery in the future what would you propose: ( ) higher land taxes ( ) tax on quantity of water used ( ) other: \_\_\_\_\_

General Land Tenure Questions

24. If you have ever bought or rented land, why did you do so:
- ( ) land was good investment ( ) wanted better quality land
  - ( ) wanted to control own farm ( ) land was inadequate to meet family food needs ( ) other: \_\_\_\_\_

Which of these reasons was the most important: \_\_\_\_\_

25. Has anyone in the family ever sold land; Y / N Relation: \_\_\_\_\_  
Why: \_\_\_\_\_

26. Have you ever had a dispute over any of your land? If Yes, was it a  
 boundry dispute  dispute over ownership  inheritance  
 other: \_\_\_\_\_  
 Explain: \_\_\_\_\_
27. Are disputes becoming more common in this area. Y / N. If yes,  
 why: \_\_\_\_\_
28. Are you able to get credit from a bank using your land as  
 collateral Y / N.
29. What capital improvements have you made to your registered parcel(s):  
 dug a well  buildings  bunding or terracing
30. What capital improvements have you made to your unregistered  
 parcel(s):  dug a well  buildings  bunding or  
 terracing

Off-farm Activities

31. How important is non-farm employment as a source of income:  
 very important  somewhat important  not important
32. How important is off-scheme agriculture as a source of income:  
 very important  somewhat important  not important
33. If irrigation is improved on your parcel:  
 - Would you be willing to shift labor to your parcel from:  
 Livestock  Non-farm employment  off-scheme crop  
 agriculture Comments: \_\_\_\_\_  
 \_\_\_\_\_
- Would you change crops? Y / N If yes from what to what:  
 from: \_\_\_\_\_ to: \_\_\_\_\_

Livestock

34. Number of Livestock Owned: \_\_\_\_\_ Cattle: \_\_\_\_\_ Camels: \_\_\_\_\_  
 Goats and Sheep: \_\_\_\_\_
35. Where do animals graze: Gu Season: \_\_\_\_\_  
 Jilal Season: \_\_\_\_\_  
 Der Season: \_\_\_\_\_
36. Where are animals watered: Gu Season: \_\_\_\_\_  
 Jilal Season: \_\_\_\_\_  
 Der Season: \_\_\_\_\_
37. To prevent breakdown of canals by cattle, would you prefer:  
 Banning the presence of livestock on the scheme  
 Building watering points for animals  
 Maintain grazing areas on the scheme. This may involve loss  
 of farms.  
 Impose a fine on constant violators.  
 Other: \_\_\_\_\_

ANNEX III

Status of Aziendas in the Shalambood  
PPA by McGowan et al.

APPENDIX D

Current Status of Aziendas in Shalambod PPA

<u>Azienda Number</u>	<u>Area (Hectares)</u>	<u>Number of Families</u>	<u>Management</u>
1-8			Information on these aziendas is poor. At least three are private plantations and another is run by a cooperative for a total of approximately 450 hectares.
9-10	175	128	Cooperative of smallholders created by UQIB in 1986.
11	190	140	Cooperative of smallholders created by UQIB in 1986.
12	450	427	Cooperative of smallholders created by UQIB in 1986.
13-16			Agricultural Crash Programme project land divided among various classes of smallholders in 1983.
17			No information.
18			A local cooperative is trying to arrange taking over this land but the Ministry of Agriculture has not yet certified it.
19-23	400		This is an AFMET demonstration farm. It is run as a state farm with some resident sharecropping labor and some casual labor from Genale.
24-26			This land is run by UDHIS as a state farm. It produces mainly bananas for export through SomalFruit.
27			No information.
28	280		This is a plantation growing perennial crops commercially. The work force, originally from the Bay Region, lives in a village on the azienda and has a sharecropping arrangement with the owners.
29	150	82	Owner-operated by an association of smallholders living in Shalambod.

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<u>Azienda Number</u>	<u>Area (Hectares)</u>	<u>Number of Families</u>	<u>Management</u>
30			Owner-operated by an association of smallholders living in Shalambood.
31			Owner-operated by an association of smallholders living in Shalambood.
32			Owner-operated by an association of smallholders living in Shalambood.
33			This azienda is in dispute. Ownership is claimed by a Somali private citizen. He says he got rights directly from the Italian owner of the colonial era. The claim is being contested by smallholders living in Shalambood and working the land.
34			A Somali-owned private plantation.
35	150	82	Owner-operated by independent smallholders living in Shalambood.
36	132		Land owned by national cooperative, the Cadaanka Aslubta Somaaliyeet, which operates it as plantation producing crops on commercial scale, including bananas for export through SomalFruit.
37			Privately held plantation. Labor provided by 34 families from Bay Region settled in two villages on plantation. They work on the Italian established system of plantation plots and laborers' plots. Plantation produces crops on commercial scale, including bananas for export through SomalFruit.
38			Owner-operated by independent smallholders living in Shalambood.
39	149	176	Owner-operated by independent smallholders living in Shalambood.
40	217	134	Owner-operated by independent smallholders living in Shalambood.

<u>Azienda Number</u>	<u>Area (Hectares)</u>	<u>Number of Families</u>	<u>Management</u>
41			Owner-operated by independent smallholders living in Shalambood.
42			Owner-operated by independent smallholders living in Shalambood.
43			Owned by national cooperative.
44			Owned by national cooperative, which has organized it as state farm and produces crops on commercial scale, including bananas for export through SomalFruit.
45-46	150		Owned by a cooperative of people in trades and professions living in Shalambood. Run as plantation producing crops on commercial scale, including bananas for export through SomalFruit.
47	158	161	Owner-operated by independent smallholders living in Shalambood.
48			Owner-operated by independent smallholders living in Shalambood.
49	70	66	Owner-operated by independent smallholders living in Shalambood.
50			Entire azienda has been absorbed into town of Shalambood.
51			Owner-operated by independent smallholders living in Shalambood.
52-54			No information.
55-63			Area covers over 1,000 hectares. From 1970 to 1978 it was location of two Agricultural Crash Programme project camps. Project has carved out 300-hectare farm and given it to 60-family cooperative of supernumerary government and party officials. It has also carved out 200-hectare farm and given it to an association of 200 families of former Agricultural Crash Programme project volunteers. Rest of land granted by Ministry of Agriculture in 10- to 15-hectare blocks. Authors have no information on how the latter are organized.

ANNEX IV

Structure and Organization of Landholdings  
in the Shalambood PPA

Structure and Organization of Landholdings in the Shalambod PPA,  
LTC survey, 1987

<u>Azienda Number</u>	<u>Area (ha)</u>	<u>Number: Families</u>	<u>Organization</u>
1 thru 3	?	N/A	Large Private Farm. No information. By visual comparison with other haciendas, the area appears to be approx. 180 ha.
4,5	350	N/A	National Petroleum Cooperative State Farm. One of 2 farms in the Genale area. Operates under the National Union of Cooperatives. Employs 250 to 280 workers during the peak season. Approximately 100 to 120 hectares are cultivated by the farm's laborers for personal use.
6 thru 8	318	N/A	Charcoal (CADCEED) Cooperative State Farm. Two of three farms in the Genale area organized under the National Union of Cooperatives. Many workers are employed. Workers receive 0.25 to 1 ha. per laborer for personal use, totalling 100 hectares overall.
9 thru 13	1000	800	The area is controlled by two Cooperatives: 50 hectares in Aziendas (9) and (10) belong to the Building and Public Transport Cooperatives (BPTC), controlled by a limited group of investors from the Buildings and Transport profession; 950 hectares belong to 800 families in four villages organized under the Agricultural Cooperative. Originally controlled entirely by the BPTC, the cooperative holdings were broken up in 1986 and distributed to smallholders. Under Italian management, workers had only 3 to 4 <u>jibals</u> . With the breakup of the BPTC Cooperative, farmers received 1 ha. a piece.
14 and 16	?	?	Ex-CRASH program area divided among smallholders in 1983 (McGowan, et. al., 1986). Total area of Crash Program areas (Aziendas 14 thru 17) was 680 ha. By interpolation the area is approx 220 ha. for azienda 14 and 165 ha. for azienda 16. Parcels are cultivated by independent smallholders.

<u>Azienda Number</u>	<u>Area (ha.)</u>	<u>Number Families</u>	<u>Organization</u>
15	?	N/A	Comprised of 2 large private farms, One is 30 ha. Area of the other is unknown. By interpolation the total area is about 155 ha.
17	140	N/A	Comprised of three large private farms. One of about 30 ha. is owned by the chief of police in Mogadishu. The other farms are about 40 ha. and 70 ha., respectively.
18	82 <sup>T</sup>	69 <sup>T</sup>	McGowan, et.al. (1986) note that a local cooperative is attempting to take over the land, but the decision is pending with the Ministry of Agriculture. The case could neither be verified or denied.
19 thru 23	400	N/A	AFMET is one of the demonstration State Farms for large farmers. It was established by the Agricultural Development Fund which was supported by the World Bank. The Fund terminated in 1985. The farm now operates independently, employing 15 to 20 permanent workers and as many as 120 temporary laborers in the peak labor season. Some workers get 0.25 ha. for subsistence; 50 to 60 ha. overall are cultivated by farm laborers for personal use.
24 and 25	340	N/A	National Petroleum Cooperative State Farm. The second of 2 farms located near Genale. Organized under the National Union of Cooperatives. Employs 200 to 250 workers during the peak season. Approximately 100 to 120 ha. are reserved for farm laborers for their personal use.
26, part of 27.	100	N/A	Kamiro State Farm, Ministry of Agriculture Strengthening Agricultural Production Project. Like AFMET, it is a demonstration State Farm for large Farmers. Employs approximately 20 permanent laborers and 40 temporary workers from a neighboring village. Twelve hectares out of 140 are being cultivated by the farm's laborers for personal use.

<u>Azienda Number</u>	<u>Area (ha.)</u>	<u>Number Families</u>	<u>Organization</u>
Remainder of 27	60	N/A	Mahadey Franco large private farm. Employs roughly 30 workers with 18 ha. reserved for laborers' private use.
28	300	N/A	Large private farm owned and operated by the PLO. One hundred ha. was taken out of use for construction of resevoirs because of sporadic water supply in the canals. Employs 20 workers, each receiving 0.5 ha. for personal use (10 hectares overall).
29	150	82	Maero Azienda. Land privately owned and cultivated by smallholders.
30	150	80	Borri (referred to locally as Bordi) Azienda. Land is privately owned and cultivated by smallholders.
31 and 32	44 <sup>T</sup> 95 <sup>T</sup>	40 <sup>T</sup> 56 <sup>T</sup>	Alas Yero and Alas Weyn (Allasia T. and Allasia M. Aziendas). Unable to link azienda names or Somali common names to estimates of area and number of families. Land is privately owned and operated by smallholders.
33	?	?	Adaglio Azienda. By visual comparison with other aziende, the total area is about 210 ha. Land is privately owned and operated by smallholders.
34	80	?	Durey (Franchi and Luporini Azienda) Land is privately owned and operated by smallholders.
35 and 38	310 <sup>T</sup>	N/A	Prison Farm. According to TAMS (1986) 20 ha. are allocated to the farm's laborers. No information otherwise.
36	140	N/A	Gemesio large private farm. Twenty-five of 140 hectares are cultivated by the farm's laborers for personal use, each worker receiving between 0.5 and 1 ha.
37	90	N/A	Two large private farms, approximately 45 ha. each. Both are referred to as Peraglie farms. According to McGowan et. al (1986) labor is provided by 34 families, settled in two villages on the azienda.

<u>Azienda Number</u>	<u>Area (ha.)</u>	<u>Number Families</u>	<u>Organization</u>
39	149 <sup>M</sup>	176 <sup>M</sup>	Previously Pizzo Azienda. Land is privately held by smallholders.
40	217	135	Previously Vicariato Azienda. Land is privately held by smallholders.
41	149	176	One of two Pizzo Aziendas referred to locally as Bisso Azienda. Land is privately held by smallholders.
42	128 <sup>T</sup>	N/A	Previously the Manfredini Azienda. The land is now subdivided into two parts. One part, 68 ha., has been allocated to 270 Ethiopian refugee families. The other part, 60 ha., is a large private farm operated jointly by 4 partners.
43	120	N/A	Half of the area, 60 ha., belongs to the Police farm. According to TAMS the area belonging to the farm's laborers is 5 ha. The other 60 ha. belongs to 48 families in the Dayax Cooperative. Originally land was given to farmers as a block following the departure of the Italians and was then operated jointly. Later the farmers collectively decided to split land among themselves, 1 ha. per household.
44	140	N/A	Charcoal Cooperative. One of three farms in the area. Owned by a limited partnership of 114 investors, but organized under the National Union of Cooperatives. Employs 85 permanent workers. Each worker receives between 10 <u>jibals</u> to 1 ha., totaling 35 ha. for the farm's laborers overall.
45 and 46	172	N/A	Ahmed Gaas large private farm. Workers receive 3 <u>jibals</u> per temporary worker for a man or his wife. Permanent workers may receive 2 ha. Forty ha. are cultivated by the farm's laborers for personal use.

<u>Azienda Number</u>	<u>Area (ha.)</u>	<u>Number Families</u>	<u>Organization</u>
47	158	159	Matrico Agricultural Cooperative referred to locally as Halgan Azienda. Smallholders organized themselves as a cooperative in 1975. Before 1975, farmers were independent smallholders cultivating the land. Farmers say they receive no benefits from the cooperative and behave independently. However sometimes the cooperative will reccomend what and how much to plant.
48	216	236	Urbanati Azienda. Privately held and cultivated by smallholders.
49	70 <sup>M</sup>	66 <sup>M</sup>	Servidor Azienda. Privately held and cultivated by smallholders.
50	45 <sup>T</sup>	N/A	Marzani large private farm. No information.
51 thru 63	1900	?	According to the Deputy Director of the Crash Programs Office, a total area of 1900 ha. was settled by approximately 350 families. McGowan et. al. (1986) state that the area was the location of two Agricultural Crash Program project camps. One area of 300 ha. was carved out and given to a 60 family cooperative of supernumerary government and party officials. An additional 200 ha. was given to 200 families of former Agricultural Crash Program Project volunteers. Allocations of the remaining area are not known. According to one Ministry official, all land is to be held and cultivated by smallholders, although several banana plantations are known to exist in the area.

ANNEX V

Structure and Organization of Large Private  
Farms, State Farms and Cooperatives

Structure and Organization of Large Private  
Farms, State Farms and Cooperatives  
in the Shalambood PPA

An attempt was made to visit as many of the cooperatives, state farms, and large farms in the PPA as possible. The attempt was largely successful. It was always possible to find workers at work on the farm or in neighboring villages. Owners, farm managers or foreman were more difficult to locate. Many owners of the large private farms live outside the Shalambood scheme, in Merca and Mogadishu. This was also true of members of the large cooperatives, whose members pooled funds to invest in the farm.

Another problem was the timing of the survey. Rains during the past Der season were minimal and water shortages were acute throughout the scheme. Many managers were away at the water office in Genale or visiting officials in Merca or Mogadishu attempting to find water.

Laborers provided good information on labor-management relations, wages, the allocation of land parcels by management, labor both on the farm and on their own individual parcels, aims and aspirations, and a general description of life as a laborer on the farm. They were generally unable to answer questions about overall organizational structure or operation of the plantation holdings. These questions could normally be answered only by the farm managers, who were often absent during the team's visit to the area. This Annex does not aim to provide a comprehensive overview of the organizational structure of each farm. Rather, individual farm profiles should be read and compared collectively as a cross-section of the types of organizational arrangements and problems of larger commercial enterprises in the Shalambood PPA.

A. National Petroleum Cooperative State Farm, Aziendas 4, 5, 24 and 25  
(from discussions with the farm manager and laborers).

The National Petroleum Cooperative operates 2 farms on opposite sides of the Buffow canal near Genale. One farm (aziendas 24 and 25) is 340 hectares, and hires 200 to 250 farm workers. About 100 to 120 hectares are used by the farm laborers for personal cultivation. The other farm (aziendas 4 and 5) is 350 hectares, employs 250 to 280 workers and also allocates about 100 to 120 hectares to farm laborers. The cooperative has no members. All returns go directly to the National Union of Cooperatives. Principal crops are banana, grapefruit, coconut, maize, sesame, watermelon and vegetables. Water for the plantation is drawn from the Buffow Canal.

All laborers live on the azienda in one of three villages. All workers, both temporary and permanent, have a right to some land. Parcel allotments vary by family size, ranging between 0.25 and 2.0 hectares.

Men work on the plantations morning and afternoons. Occasionally, they may be given a day off to work their own parcels or may hire other laborers working on the azienda. Women and children provide most of the labor for the small private plots.

Laborers use no fertilizer or improved seeds. They sometimes purchase pesticides from AFMET or on the market in Shalambod. Plowing is provided free-of-charge by the azienda's tractors.

When water is in the canal (Buffow) farmers are free to take as much as they like. The only months they are unable to do so are December through March, when the river is low. There is no Water Association Manager to allocate water. Since water is high in the canal, they assume water is sufficient. The Minister of Agriculture sets the water schedule, but laborers on the azienda irrigate at their discretion. Frictions sometimes arise with smallholders from other azienda's, who complain theirs is using more than its share. But until now (November 15) no one from the Land and Water Resources Office at Genale had contacted them about a water schedule. Two wells supplement the river water; well water is reserved only for banana cultivation.

None of the workers on the plantation have land in another azienda. All the laborers noted their fathers worked there and their sons would probably work on the azienda as well. When laborers were asked which was better, to work on a plantation or farm independently, they replied in agreement that azienda life was better.

B. Independent Smallholders Agricultural Cooperative (Ispahaysi), Aziendas 9 thru 13 (from discussions with farmers and the foreman of the Building and Public Transport Cooperative).

The cooperatives, together totalling 1,000 hectares, formerly belonged to an Italian land owner. After his departure in 1975, the land was transferred to the National Union of Cooperatives. Smallholders, who were previously tenants on the Italian farm, continued to work their plots, and work for large farms in the area.

At some time in the ensuing 10 years (from discussions with farmers the year was placed at 1984), the entire 1,000 hectares was transferred to the National Association of Building and Public Transport Cooperatives (BPTC). Investors from the building and transport professions invested money in the farm, expecting to gain profits.

According to the foreman of the BPTC, capital investment was inadequate to sustain on-going farm operations. Rather than let the land go idle the BPTC told farmers to cultivate it. The farm was split up in 1986 with 950 hectares going to 800 families in 4

villages on the estate (each family received 1 ha.), while 50 hectares were retained by the BPTC. The foreman maintains that the entire 1,000 hectares still belongs to the BPTC and that smallholders are members of its organization. Furthermore, he felt that the BPTC could sell out the entire farm if it so desired.

A different story was told by farmers. Under the BPTC, each farmer held only 3 to 4 jibals. The National Union of Cooperatives decided that the land should be broken up and given to poor farmers, for the sake of smallholder development. This took place in 1986. Farmers were organized under the Agricultural Cooperative, land was split up, and farmers allotments were increased to 1.0 ha.

Farmers feel that their standard of life has improved since the breakup. They have more land and better access to modern inputs. In 1986, the Agricultural Cooperative provided 12 tractors and 80 quintals of seed on a seasonal credit basis. Villagers still feel some insecurity over lack of direct land ownership, but hope the Coop will permit individual registration in the future.

A discrepancy obviously exists between statements of farmers and management of the BPTC. Whether this represents a turf dispute between the BPTC and Agricultural Cooperative could not be ascertained.

C. AFMET State Farm, Aziendas 19 to 23 (from discussions with the farm manager)

AFMET is one of the large state demonstration farms for large farmers. It used to be organized by the Agricultural Development Fund which was supported by the World Bank. The fund terminated in 1985. Since then, it has operated on its own with credit from the Credit and Savings Bank. With 400 hectares under its control and a peak season work force of 120 workers, it is one of the largest farms in the Shalambood PPA. Approximately 50 to 60 hectares are cultivated by the farm's laborers for personal use.

Income from the farm's activities goes to an AFMET central account, and used to sustain the farm's ongoing operations. Funds are tight. A number of the farm's tractors are in disrepair and spare parts are hard to come by. The main problem, however, is that the farm has no wells. Rains during the past Der season were minimal and now virtually no water is available in the river for irrigation, and all the canals are dry. The bananas are desperately in need of water. The farm needs at least 2 wells, although ideally one well is required for every 30 hectares.

D. PLO Farm, Azienda 28 (from discussions with three Palestinians currently managing the farm)

Managers of the farm note that the land totalling 300 hectares was bought from the government (no date given). Due to lack of water on the scheme in the jilal, 100 hectares were taken out of cultivation, and used for reservoirs. During the Gu season when water is plentiful, the reservoirs are filled. Later in the jilal when the Dhamme Yassin is dry, the reservoirs are emptied for irrigation of bananas.

The farm has had a long history of bad luck. At various times there have been investments in both drip irrigation and sprinkler irrigation systems. Both systems became non-operational over time: hoses for the drip irrigation system were cut by children for drinking water; pipes for the sprinkler irrigation system were torn down by villagers for construction of donkey carts. While the details are unknown, the events suggest poor management.

The farm also has had difficulties with workers. During the rainy season, workers take off to work their own fields, not those of the estate. Now land is given only to the good workers, about 20 in total; each of which receives 0.5 hectares.

Water shortages, starting in September and continuing through April, are a major problem. During the wet season, adequate water is available for everyone. But during the dry season, competition for water is stiff with "the strongest man taking the most". As foreigners they feel disadvantaged, lacking bargaining power.

The reservoirs supply enough water for 2 or 3 months. By February, the water is usually depleted, and they have to shift to pumping of wells. At present they have 5 wells, only one of which is working. Due to shortage of water, bananas plants have died. Spare parts are a problem. One relatively new tractor has been out of operation for 2 years, because of a small broken part.

E. Gemesio Large Private Farm, Azienda 36 (Discussions with owner and laborers)

The major crops grown are bananas, papaya, vegetables (tomatoes, watermelon), maize and sesame. Total farm size is 140 hectares, of which 25 hectares are reserved for laborers on the farm. All people who work for the azienda, live on the azienda. Laborers are paid weekly, payments varying by the type of task performed. Generally, payments are made according to the area worked, rather than by the hour.

Azienda patron-client relationships remain strong. Laborers' fathers worked on the azienda before them. The right to work as a laborer appears to be received by right of inheritance. Each laborer receives a plot of land, the size depending on the number of children. Food crops are normally grown. If one has no children, the laborer may receive 0.5 hectares; for more children or wives, he may receive 1.0 hectare. The landowner pays all taxes. If an employee is fired, he/she must leave the plantation (according to the workers).

Permanent workers include drivers, cooks, guards, mechanics and other staff required for support of the azienda throughout the year. Temporary staff are hired on a seasonal basis. Both types of staff get land. Laborers prefer planting food crops on their allotted parcels to meet family food needs. Because their land is inadequate to satisfy full subsistence, part of their salary from the plantation is used to buy food.

Laborers plots are irrigated from both a tertiary and a main canal. As long as water is in the canals, they are free to use as much as they wish. Only in the dry months of January, February and March, when the river is very low, is irrigation restricted by lack of water. A water foreman is not needed, according to farmers, since water flows nearly all the time.

F. Dayax Agricultural Cooperative, Azienda 43 (from discussion with village elders and farmers).

The Dayax Cooperative and the Police Farm originally belonged to an Italian land holder. After he left, approximately 60 hectares corresponding to what is now the Dayax Cooperative was given to 48 of the former workers of the Italian azienda by the Ministry of Agriculture (MOA). There was no division of land among farms by the MOA. Farmers cultivated the land as a single block. Later they decided (date unknown) to sub-divide the land among themselves, each receiving about 1.0 hectare. Apparently no benefits are derived from Cooperative membership. Farmers are private smallholders in all but name. Besides farming their own land, farmers work for surrounding large farms such as the Charcoal Cooperative. In the Der season, when the demand for labor is weak, a worker receives approximately So.Sh. 50 (about So.Sh. 300/man-day for a line of bananas (130 trunks/line). However in the Gu, they can get as much as So.Sh. 100 for the same work. While men do the weeding, women do the banana harvesting. A women can harvest about 100 hands of bananas per day, and receive about So.Sh 2 per hand.

There is not enough land for all, so some workers must go elsewhere to find land. When a farmer was asked about the size of his farm he responded that 1.0 ha. was small enough. Land would not

be sub-divided to support his children. The problem according to farmers was simply that "people grow up, have children and because of scarce land, children must either return to nomadic life, find permanent work or find land elsewhere."

Farmers would like to buy more land but prices have risen rapidly in recent years. The price of land with good water is So.Sh. 40,000 to 60,000/ha, or So.Sh 10,000 to 20,000/ha for land far from water. Ten years ago, the price for land close to water was around So.Sh. 2,000/ha.

Water is less of a problem than land. They take as much water as they like from April to December; in the Jilal season, January to March, they do not cultivate. Farmers from Shalambood often come and request them to use less, particularly in the months September to December. In such instances, they work out a schedule of water rationing with heads of azienda committees along the tertiary.

G. Charcoal Cooperative, Aziendas 6, 7, 8, and 44 (Discussions with the Accountant)

The Charcoal Cooperative operates 3 farms -- one near the Fourth secondary, and two near Genale. The farms near Genale (aziendas 6, 7 and 8) have a total area of 318 hectares, with 100 hectares cultivated by laborers of the farms. Laborers receive allotments of 4.0 jibals to 1.0 hectare per worker. The other Charcoal Cooperative farm (azienda 44) is 140 ha of which 35 hectares is reserved for the farm laborers. Primary crops are banana which is sold to Somalfruit, and maize which is sold to the ADC. The following comments come from the accountant of the farm in azienda 44, although the general organizational structure and operation probably extend to the other farms as well.

The Cooperative is best characterized as a limited partnership. It includes 114 members who invested in the development of the farm, although the Cooperative is tied to the National Union Cooperatives. No new members are allowed to join. Benefits are split among the 114 members less a fixed percentage (unknown) that goes to the National Union of Cooperatives. Farm decisions are made by a committee elected from the 114 members.

Investment in the cooperative by its members could not be fully ascertained. Apparently each of the charcoal investors has a charcoal camp. Each must donate a preset number of sacks of charcoal (e.g 600 sacks by each of 114 camps). The sacks are sold with a fixed percentage going to the government, a fixed percentage to the National Cooperative and around So.Sh. 20 per sack to a central account in Mogadishu for investment in the farm. Money is invested equally by all 114 members. Profits are divided equally. A loan was

given by the National Cooperative to buy cars, tractors and inputs, payable in 2 to 3 years. Whether the National Cooperative's share of profits constitutes loan repayment or an on-going sharing of profits is unclear.

Laborers are transported in daily by tractor and cart from outside villages. There are approximately 15 or so semi-permanent workers in a nearby village who do mainly manual work (irrigation and harvesting). Labor for weeding is mainly hired from the outside. Another 20 workers are employed as drivers, guards, cooks etc. Each laborer gets some land. The smallest allotment is 10.0 jibals per person; the largest is about 1.0 hectare. The land belongs to the cooperative, but the cooperative helps with tractors, irrigation water, fertilizer and pesticides (not able to verify this with farmers). When water is available in the canals, laborers may use as much as they wish for their own plots.

H. Ahmed Gaas Large Private Farm (from discussions with foreman and laborers)

Previously the *aziendas* of Annovazi Am. (*azienda* 45) and Annovazi L. (*azienda* 46), total farm size is 172 ha, of which 40 hectares are used by the farms for private cultivation. Major crops are banana, grapefruit, coconut and papaya grown for commercial production, and vegetables and cereals grown mainly by farm laborers.

The farm employs both permanent and temporary workers. Both types of workers receive land for their own private use. Temporary workers normally receive 3 jibals per worker (e.g. a man and wife could receive 6 jibals), while permanent workers -- foreman, pump guards, watchmen -- may receive as much as 2 hectares. The land belongs to the farm, although the laborers are free to use their allotted parcels as they wish. If they leave, the parcel reverts to the plantation to be allocated to other workers. Occasionally workers are fired because they are lazy (according to the workers), but this is rare.

According to workers, farm employment is easy to find in the Shalambood area. In the words of one farmer, "...all one needs to do is come and spend one night. The next day he will certainly find a job." Banana cultivation is a 12 month occupation and temporary agricultural workers can work the entire year. Wages vary. For weeding, laborers receive So.Sh. 20 for every 70 trunks weeded. At 40 lines and 20 trunks/line weeded per day, the daily wage is around So.Sh. 230. In the morning, laborers work on the plantations. Afternoons are spent in their own fields with permission of the foreman. Occasionally, a laborer may find work cultivating another laborer's field.

The farm situation is strongly paternalistic. Workers apparently like the living conditions, at least compared with the alternatives. Wage labor permits workers to earn money to buy land and cattle, although there are not many who can afford to do so. Land prices have soared in recent years, decreasing the quantity demanded by smallholders.

Water for their parcels is relatively abundant. When water flows through the canals of the farm, laborers can use as much as they wish. In the Jilal, bananas must be irrigated from wells since the river is dry. During such periods, well water is strictly reserved for the bananas, and not for use on laborers fields.

I. Matrico (Halgen) Agricultural Cooperative, Azienda 47 (from discussions with farmers and a representative of the Agricultural Cooperative in Shalambood).

The Cooperative comprises 159 families on 158 hectares of land. Prior to 1975, families privately held the land, cultivating it as independent smallholders. With the organization of smallholders into the Agricultural Cooperative in 1975, land was registered as one parcel in the name of the Cooperative, while farmers retained usufruct rights over the land.

The institutional arrangements under which farmers participate in the cooperative are ambiguous. According to farmers, little guidance or management is offered by the cooperative. There is no manager, no inputs are given to farmers, no benefits, no organizational meetings, no collective decision-making, or other organizational features that might imply cooperative participation. Farmers consider their parcels as their own, and make individual crop decisions. Occasionally, the ADC comes to buy maize, but they receive the same price as farmers outside the cooperative.

In meetings with Agricultural Cooperative officials, farmers statements on no provision of modern inputs were neither confirmed nor denied. Officials only noted that operating funds are scarce and priorities often have to be set. They emphasize that land belongs to the cooperative, not to the smallholders. They further maintain that the cooperative has the right to tell farmers what and when to plant.

ANNEX VI

Water Schedule, Primo Secundario  
Primary Canal

JAMHUURIYADDA DIMOQRADIGA SOOMAALIGA  
WASARADDA BEERAHA  
XAFIISKA MAAMULKA DHULKA IYO BIYAHA

T I R O: LAMB. WBJ/ 90 /87.-

TAARIIXH 24/1/1987.-

- KU: DHAMMAAN BEERALEEYDA KU CASTA KELI LAAD(PRIMO) = FADHIGOODA =
- OG: SALDHIGGA CIIDINKA BOOLISKA EE = JANNAALE =
- OG: SALDHIGGA CIIDINKA BOOLISKA EE = GOL WEYN =
- OG: KAALIYAASHA XISBIGA H.K.S. EE JANNAALE & GOL WEYN = FADHIGOODA =
- OG: ISUDUWAHA WASARADDA BEERAHA GOBOLKA SH/HOOSE = SHALAMBOOD =
- OG: GUDDOOMIYASHA MAAMULKA DAWLADDA EE DEGMADA = M A R K A =
- OG: XOGHAYAHA GUDDIGA XISBIGA H.K.S. EE DEGMADA = M A R K A =
- OG: GUDDOOMIYASHA MAAMULKA DAWLADDA EE GOBOLKA SH/HOOSE = SHALAMBOOD =
- OG: XOGHAYAHA GUDDIGA XISBIGA H.K.S. GOBOLKA SH/HOOSE = SHALAMBOOD =

UJEEDDO: BIYO QEYBIN KELI LAAD(PRIMO SECONDARIO)

- Dhammaan Beeraleeyda ku Cabta
- Keliga laad waxaan Ogeysiineynaa in aan u qeybinay Keliga Biyihiisa 5 qeybood oo ah sidan Hoos ku qoran:-
- 25/1/87, ilaa iyo 26/1/87, Waxa Biyo Aruurin.-
  - 27/1/87, ilaa iyo 29/1/87, Waxaa Cabaaya Shangaani ilaa iyo Jid Gudubka Walaalaha Baasi.-
  - 30/1/87, ilaa 1/2/87, Waxaa Cabaaya Jid Gudubka Walaalaha Baasi ilaa & Biyo Xireenka Gol Weyn.-
  - 2/2/87, ilaa 6/2/87, Waxaa Cabaaya Biyo Xireenka Gol Weyn ilaa iyo Biyo Xireenka Teesiyooow.-
  - 7/2/87, ilaa 11/2/87, Waxaa Cabaaya Biyo Xireenka Teesiyooow ilaa iyo Dala Rooba.-
  - 12/2/87, ilaa iyo 14/2/87, Waxaa Cabaaya Dala Rooba ilaa iyo Jannaale.-

Sidaas Daraadeed Dhammaan Beeraleeyda aan u qeybinay Biyaha ee Keli laad waxaan si buuxda u Ogeysiineynaa in ay sidaasi u tixgeliyaan Toornadan aan u sameynay Keliga Biyihiisa cidii ku xad gudubta waxay Ogeneysaa in lala tiigsan doono Sharciga, isla markaasina la qabsado Lacag Dhan Sh. So. 15,000/= Shilin.-

Sidaas awgeed Madaxda ay Warqaddani sida Ogeysiinta ah ugu socoto waxaan ka codsaneynaa in ay Gacan buuxda nagu siyaan sidii loo fulin lahaa Hawshan Biyo Qeybinta ah.-