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RESERVE (E32)

LAND ON LOAN¹
(An Analysis of the factors affecting Loan
repayment on the Millionacre Schemes

By

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Historical Background

In 1961, just prior to Independence, Kenya embarked on an ambitious program of agricultural reform called the Million Acre Settlement Scheme. This scheme, which developed out of an earlier more modest program for the transfer of land ownership from European settlers to native Kenyans, provided for the purchase of lands previously reserved for and occupied by white settlers and their redistribution to landless wanjinchi. Plots were allocated to individual farmers in line with the policy of individualising land tenure in Kenya which had been promulgated in the Swynnerton Plan in 1954. More recently in a second phase of the Million Acre Settlement program farms purchased from departing aliens are being resettled on a cooperative basis, and termed Shirika Settlements.

The Million Acre Settlement Scheme is set in a context of what has amounted to an agricultural revolution in Kenya, partly officially promoted, and partly due to individual initiatives. On the one hand, also following the Swynnerton Plan, there has been action to consolidate and register land titles in the areas now designated Trust Lands which in colonial times were the African Reserves (i.e. land reserved for the sole

1. Acknowledgement and thanks are due to the staff of the Settlement Department for their practical assistance which was much beyond what could reasonably be expected, and for the very frank way in which they respond to questions. Acknowledgement and thanks are also due to the farmers for their courteous reception of the researcher and their cooperation in what was for them a highly suspicious enterprise. It is to be hoped that the findings of this project may be of practical value to all concerned.

occupation of the various indigenous people of Kenya). On the other small groups of people have purchased farms from outgoing Europeans and established their own cooperative or company enterprises. In addition there has been the spontaneous development of Haraka Schemes where squatters have moved on to vacant farms or other unoccupied land and their right to remain has been formally recognised by Government.

There have also been initiated from time to time some special schemes such as Ol Kalou Salien' the Mwea Rice Scheme and, the Ahero irrigation scheme among others which have their own organisational structures. However the focus of this study is phase I of the Million Acre Scheme and more particularly problems of loan repayment on settlements established under this scheme. It is not intended therefore to go into the broader aspects of other developments and their legal, agricultural and social implications.

The major impetus for the Million Acre Scheme was political. Anyone who has read any literature on the colonial period in Kenya is aware of the conflict over land between the white, mainly British colonisers, and the indigenous African populations. A large part of the best agricultural land, mostly in the Rift Valley, was reserved exclusively for the occupation of whites and was thus termed the White Highlands, the African peoples being confined to so-called Reserves in which there was increasing pressure of population on the available land acreage. There were from time to time also various other measures which served to squeeze indigenous people from their homes in order to provide a suitable labour force for the colonisers. Conflicts were not only confined to these spheres however, and the control exercised by the white colonisers over the indigenous people in the interest of the former was sometimes brutal. The eventual eruption of Mau Mau only exacerbated the bedrock of earlier bitterness and after the hand over of political power to black Africans.

many found it was impossible to accept a black African controlled Government, some left before Independence abandoning their farms, others progressively ran down their stock or took other measures to more gradually withdraw. As a result production dropped, unemployment increased as labour was laid off, the pressures from the dispossessed became more immediately one of potential violence, and it became rapidly apparent that urgent action must be taken to ensure the orderly transfer of ownership from the outgoing whites to the incoming indigenes. The Million Acre Scheme was conceived as the answer to these problems. In view of the speed, not only in which it had to be planned and prepared but also implemented it has been astonishingly successful. On the other hand the same pressure to act quickly is also a probable major factor in inadequacies in original planning which are still having their effects especially on loan repayment today.

The first phase of the Million Acre Scheme broadly comprises two types of settlement: High Density and Low Density schemes, though there are a number of exceptions including ranching schemes which are cooperatively managed and the Muhoroni Settlement Sugar Organisation. The High Density schemes, with an average Grade 1 acreage of 10 acres per farmer, were designed for the landless, and jobless, and the Low Density Schemes with an average Grade 1 acreage of 30 acres per farmer, were planned for those who were able to raise some money for the development of their plots and who were capable of demonstrating some farming ability. The Settlement Sugar Organisation, although having a special structure of its own, contains both High and Low Density settlements. In the main individuals allocated plots on these schemes have satisfied the qualifying criteria, although over time a few others with independent resources have purchased plots from the original allottees, and such changes in ownership are continuing.

The Million Acre Scheme was financed from a number of sources both local and foreign, including grants from Britain and loans from Britain, West Germany and the IBRD. The financing of the Million Acre Scheme is not however central to our discussion here. Our concern is with the loans granted to individual farmers to purchase their plots and for certain development inputs.

The new settlers were provided with 30 year loans at $6\frac{1}{2}\%$ interest to cover the value of the land, and a further 10 year loan also at $6\frac{1}{2}\%$ interest to pay for various development inputs such as cattle and fencing. Both loans were repayable in 6-monthly instalments, the first instalment falling due within 6 months of a settler arriving on a scheme. However later on the President in 1967 declared a 2 year moratorium which required rescheduling the loans.

A different system applied to the Settlement Sugar Organisation where initially farmers rented their plots for 5 years before being confirmed in occupancy, after which the payments originally made as rent were converted to loan repayments. The loans were granted by the Kenya Government and repayable through Cooperative Societies which were established on each settlement to deal with marketing of products and with other joint or communal endeavours such as dips, dryers farm supplies, tractor hire and so on. It was assumed that 50% of net income from produce sold through the Cooperative after deductions for commission, dip fees and so on, would go towards loan repayment. The new settlers could also make payments directly to the Settlement Department, or if in employment arrange for deductions to be made from their salaries on a monthly basis. On the sugar schemes the Settlement Sugar Organization made deductions from receipts for cane sold. Slight modifications have been made from time to

in procedures for repayment, especially in transmission of loan repayments from the Cooperatives to the Settlement Department headquarters, but no basic changes have been made.

The Problem.

Whilst from many points of view the Million Acre Scheme has been extremely successful, especially when compared with efforts of a similar kind in other countries, a continuing major problem has been one of default on these loans. The overall rate of repayment for all schemes is about 50% at present, for the High Density Schemes only rather less than this and some individual High Density Schemes have a rate of repayment as low as 18%. Over the years also since the schemes were first established nearly all farmers have fallen into arrears with their loan repayments to the extent that interest on arrears has in many cases now equalled loan instalments, and at the present rate of repayment the majority will never complete repayment of their loans. It was with this problem in mind that research was initiated to find the causes of this situation, and to make recommendations to improve the rate of repayment.

A subsidiary objective was to attempt to establish objective criteria for indicating, in case of future loans schemes, the type of farmer who represents the best loan risk.

Research Methods.

Field Research was carried out in three areas with contrasting farm systems: Muhoroni in the sugar belt; Turbo a major maize as well as milk producing area; and Dundori, where a combination of pyrethrum, potatoes and milk provide the basis of the farm economy.

Interviews and informal talks were held with Settlement Department personnel, followed by interviews and discussions with officials of 27 cooperative primary societies and 1 cooperative union. At the same time pilot investigative interviews were carried out with about 35 selected farmers and data extracted from the files of random sample of a further 56 farmers on the Muhoroni schemes. Following this two High Density settlements were randomly selected in the Dundori and Turbo areas and random samples of farmers on these two settlements were interviewed. Ninety² farmers were included in the random samples of which 81 were actually seen.

Follow up observations in the form of farm diaries were maintained for 10 months on 51 farmers of the 87 originally interviewed in Dundori and Turbo, covering income and expenditure, farm management practices, and yields of cash crops and milk. General observations of problems within these settlements has also been continued over the year. Lastly these 50 farmers were reinterviewed as a check on the diary data, and also for purposes of comparison with the first interviews since inaccurate information appeared to have been given in both, especially in respect to farm expenditure, cultivation and matters concerning livestock. Certain data on income and expenditure were additionally extracted from cooperative records.

2. In the tabulated data to be presented it will be noted this in some instances information is given for the total sample - eg. family size and sometimes for only the follow-up sample of income statistics.

It was extremely difficult to maintain accurate records of such purchases. While daily diaries were kept by Research Assistants they did not always meet the purchase who was not always the plot holder - to particular Kikuyu wives tended to buy many of the regularly needed items from money from sales of produce from their 'subsistence' plots which were their responsibility, and husbands were not aware of the items and amounts or cost. At monthly intervals further records were collected. These of course may also miss many items, since people do not remember their purchases cover a larger period.

It had been intended to include both further work at Muhoroni, and to have included one Low Density and one mainly Kalenjin settled High Density scheme in the more intensive field research, however the research budget was too small for this.

Discussions with Settlement Department personnel have provided basic information on problems of administration, as well as giving some historical as well as current insights into the roots of present difficulties, whilst those with Cooperative officials and members yielded data necessary to an assessment of their efficiency, and of their management and marketing problems. The interviews with farmers focused on their personal histories, farm management practices, income and expenditure, and both their initial and present problems. Subsequent observations have given both a broader view and greater depth of insight to data obtained from direct interview and have served sometimes to confirm, in others to give the lie to statements made in them.

Findings

The major cause of poor loan repayment was found to be that of insufficient income. At scheme level there are clear correlations between schemes where higher incomes may be assumed and better rates of repayment, and conversely between those of apparent poorer potential and therefore of lesser incomes and lower rates of repayment.

An analysis of individual settler's records from two representative schemes tended to reinforce this argument in that all those with better repayment records were also in the higher income category. However, it was also evident that other factors were of some relevance

since not all of those with larger financial resources had small loan arrears. In such cases it is postulated that the positive inducements to repay did not match the attractions of alternative uses for income, while at the same time the system of loan administration permitted settlers to opt out of repayment.

Administrative inadequacies were of course also an element in the case of those in lower income categories since they enabled such farmers to satisfy several felt basic needs instead of repaying their loans. Although it must be pointed out that too stringent enforcement procedures can defeat their own objective since farmers cannot be expected to work only for the purpose of servicing their loans. As occurred on the Muhoroni Sugar Settlements they may drop out of projects altogether which are not sufficiently rewarding.

A concept of 'sufficient' income is therefore integral to this analysis and it is necessary to consider what constitutes such sufficient income before discussing why some farmers' incomes are lower than others, evaluating the administrative organisation or analysing the behaviour of the more affluent.

It is suggested that there have evolved certain generally accepted standards of living in the rural areas, to which the mass of peasantry aspire. These standards comprise a number of felt needs, the elements of which may be briefly enumerated. They include shelter of a semi-permanent nature, provision of certain foods, basic household goods such as saucepans and blankets, schooling, and medical care. The actual cost of providing these in relation to family size and structure are what may be said to constitute sufficient income, below which every attempt will be made to avoid repayment, and where a rigid repayment policy may have self-destructive effects. This is perhaps to be over-simplistic since both domestic and farm crises such as prolonged illhealth of a wife, or loss of the bulk of livestock may intrude into this equation. Nevertheless it is postulated that any loan scheme which does not recognise these minimum monetary requirements will have repayment problems.

In relation to the two schemes studied it will be shown that loan arrears were only appreciably reduced where gross income was in excess of Shs.4500/= according to the statistics collected, or Shs.3000/=

gross income through the Cooperatives. Gross income figures have been used since it was also observed that both total and per unit expenditures on farm inputs were equally related to income, and it was also the case that the cost of optimal inputs was different for the main crops of the two schemes. The relationship between gross income and loan arrears is not, however completely consistent since on both schemes there were cases of those with lower incomes who had better repayment records. These may be explained by a number of factors. Firstly current income at the time of the survey had in some cases dropped due to particular circumstances such as loss of livestock. Secondly total accuracy of the income figures is not claimed and in a few instances could be much higher than that recorded. Thirdly the family circumstances may be more favourable. Lastly since most of these cases fall within the scheme, with wage earners contributing Lumpsums from time to time. Titles had been issued hereby, such positive inducement may have had some influence.

Scheme Level Differentials

Before dealing with issues affecting the individual farmer we must first examine factors influencing differential rates or repayment at scheme level. The Million-Acre Settlement programme includes schemes scattered over the whole of the Rift Valley, and although broadly speaking this is often considered a homogenous agricultural zone, there are in fact wide variations. In his book Odingo³ has examined and detailed some of these differences in so far as the physical characteristics of the areas are concerned and for a thorough study his book should be referred to. In addition the schemes may be considered to have socially distinct

3. R.S. Odingo " The Kenya Highlands - Land Use and Agricultural Development" East African Publishing House 1971.

aspects not only because each has more usually an ethnically dominant or exclusive group of settlers but because of their location near or far from the traditional areas of origin of the settlers. Further distinguishing features of the schemes are their proximity or otherwise to centres of commerce and the practical parameters of routine set by the nature of the enterprises in which the settlers are engaged. This is additional to the already mentioned contrast between the Low and High Density schemes.

Odingo describes 15 zones related to distinctive geological formations and climatic variables but within each of these zones there are further differences arising from the very variable altitude of the whole area, as well as rainfall and other physical features of more precise location. It was observed during field studies that even within a scheme there were sharp contrasts between individual plots due to their position nearer to rivers, hilly peaks, or other natural features such as gravel pits. The more general zonal differences have been the deciding factor in the nature of the agricultural pattern, whereas the latter differences are crucial to the viability of particular farms. In the context of loan repayment the crucial variables were those relating to the profitability of the enterprises on the schemes and the economic standing of the settlers themselves. Thus the first immediate contrast is between the Low and High Density schemes. Secondly within these two groupings between the schemes with a wider range of more profitable undertakings and those with a more limited number of cash earners. Table 1 sets out details of loan repayment for the different groups of schemes:

TABLE 1

SCHEME LEVEL LOAN REPAYMENT DIFFERENTIALS

Type of Scheme	% Repayment					Total Schemes
	0-20%	21-40%	41-60%	61-80%	81-100%	
Low Density Maize/Milk	0	0	5	0	1	6
Low Density Milk/Pyrethrum and vegetables or other combinations	0	0	9	9	9	26
High Density Maize/Milk	6	11	9	3	0	29
High Density Milk/Pyrethrum and vegetables or other combinations	0	8	35	4	1	48

It may be noted that the average rate of repayment for all low Density Schemes from inception to Jan 1973 as computed by the Department of Settlement ⁴ is 65% as compared with 46% for all High Density Schemes. The average rate for the same period for the Turbo High Density Schemes was 26% compared with 55% for the Dundori High Density schemes, Turbo and Dundori being contrasted as low potential and high potential in respect to range and nature of crops and other agricultural enterprises. The low Density Schemes for these areas show even more marked differences, the rate for Turbo being 40% and that for Dundori 83%

It may therefore be stated that the farmers with better initial resources and of at least theoretically better knowledge and performance tend to be better loan repayers and that this tendency is markedly improved where the farm system is more diversified. It will also be shown that not only the diversity of farm enterprises, but the rates of return that are obtained from each is equally important to the repayment records of each farmer and that

4. Department of Settlement Annual Report 1972 Kenya Govt. Printer.

in this not only natural physical features but other geographical aspects of each area play their part. It is also suggested that ethnic differences between the settlers have some not readily quantifiable effect through differing traditions in relation not only to the choice of enterprises but also to ideas and attitudes not only about farming methods but also about utilisation of resources. These will also be touched on in what follows.

As has been said there were marked differences in rate of repayment between low and high density schemes and between the maize and milk schemes and the milk, pyrethrum, and vegetable schemes. Rather outside these categories lie the sugar and ranching schemes. For reasons of convenience and resources it was decided to concentrate on the former categories, although some useful data was also collected on the sugar schemes. It was also decided to limit the samples of individual farmers to High Density Schemes although Low Density schemes in the same areas were also visited. It was considered that the operation of variables at individual farmers level could be measured sufficiently through such samples.

The two schemes chosen were Mautuma in the Turbo area, typical of maize and milk schemes, with predominantly Luhya settlers but with a small enclave of Kikuyu and a sprinkling of Nandi farmers; and Melangine in the Dundori area which is representative of the higher potential schemes with pyrethrum, milk, potatoes and vegetables. The former is remote from the more prosperous marketing towns, and near to the former reserves. The latter is within easy distance not only of Nakuru, but also within the area which supplies Nairobi with farm produce. It is more remote from the Reserves and is settled entirely by Kikuyu.

The rate of repayment for Mautuma was only 21% as against nearly 58% of Melangire. However these overall rates conceal considerable differences between individuals within the schemes. These range from nil repayment to nil arrears. Table 2 shows the range and relative proportion of settlers in each category for both schemes. It must however be noted here that the total loan taken was larger in the first instance for Melangire Settlers than for those at Mautuma so that these figures are not completely comparable. The total amount of the loan is on average Shs 5200/= repayable over 30 years for the land, and shs 6000/= repayable over 10 years in farm inputs. There are slight variations between schemes. In this case the total loans were not stated. However, the annual instalments amounted to 390/= or 428/= in Mautuma and 712/= in Melangire representing a larger loan amount for the land in the latter case.

TABLE 2

LEVELS OF LOAN ARREARS MAUTUMA AND MELANGIRE *

SCHEME	Amount of Arrears Shs.					Total Sample	
	0-001	10001-2000/=	2001-3000/=	3001-4000/=	4001-5000/=		5001+
Mautuma	3	0	5	18	25	0	51
Melangire	7	7	1	6	8	8	37

* N.B. Instalments are higher for Melangire resulting in higher total arrears for poorest repayers.

CHARACTERISTICS OF INDIVIDUAL DEFAULTERS .

Whilst it would appear clear from scheme level statistics that those with larger monetary resources and higher incomes repay better two data collected on individual settlers does not fully support this thesis. It will be shown the factors affecting repayment are more complex and it is not possible to demonstrate a direct causal relationship between income and arrears.

One can state that those with sufficient income will usually repay their loans more readily whilst those with incomes below this will not repay if this at all possible. However, not all those with apparently sufficient income do reduce their loan arrears before using it for non-necessities. Before considering these further issues however it is necessary to define what can be calculated to be sufficient. In addition in some instances where loans are provided for particular agricultural developments it is possible to control repayment to some extent. In case of some types of crop such as tea, where only one market outlet exists, this is more easily done. Though even in such instances there are ways around enforced deductions from income. It is also possible that total income may not be enough to cover the loan instalment due. Where however crops may be marketed through a number of avenues as with milk, or are freely sold without control, as in the case of maize, the lender is almost completely dependent on the goodwill of the loanee for repayment. In all these instances the importance of the volume of income the loanee gets, not only from the enterprise for which the loan was given, but from all sources is a key to his rate of repayment.

When the schemes were planned target incomes were set at between £25 p.a. for the High Density Schemes and £100 per annum on the low Density Schemes. It was calculated using the Lower Income Group cost of Living Index that this represented between Shs.825/- and Shs.2500/- at the prices prevailing during the fieldwork period. As will be detailed most farmers were in fact achieving these target income.

, As will be detailed, most farmers were in fact achieving these target incomes. But whereas the target incomes assumed a certain acreage under cash crops and a specified number of cattle which required specified inputs at then current, prices, present incomes are obtained from an often larger acreage and greater number of cattle, and input prices have risen

steeply. Thus such target incomes are now inadequate for basic domestic needs and it is suggested greatly underestimated monetary requires even at the time they were being planned.

The Scatter Diagrams on the following pages which relate gross income to rate of repayments indicate that it is only at higher levels and income that loan arrears are appreciably reduced. Gross income was used since levels per unit expenditure on farm inputs also vary with gross income, and to deduct total farm expenditures can be misleading in view of disparities in acreages.

Income and Domestic Expenditure

Income figures for the two samples have been set out in Table below. Several sources of income statistics were utilised. The first of these was Primary Society records of sales of produce. Secondly were daily diaries, supplemented by more detailed interviews at fortnightly or monthly intervals (depending on the availability of the farmer or his wife on such visits), thirdly observations of the regular habits of each settler and his family and informal talks with expert informants such as Agriculture Assistants, Veterinary Scouts and Settlement Department Staff, fourthly AID records and two separate census of livestock at the beginning and end of the survey.

TABLE 3
FARM INCOMES MAUTUMA AND MELANGIRE.

	0-1000/=	1001-2000/=	2001-3000/=	3001-4000/=	4001-5000/=	5001/= +	
Mautuma	6	6	7	2	1	nil	22
Melangine	8	7	4	4	nil	2	25

Not surprisingly most settlers were reluctant to reveal total income from major sales of produce, and often forgot to mention that from minor ones. As may be seen since less than half of all recorded income was obtained from produce sold through the Cooperatives, no great accuracy can be claimed for these figures. However, they provide the dimensions of income sufficiently for our purpose here.

As will be demonstrated by the Scatter Diagram it is apparently only at much higher levels of income that it apparently becomes sufficient. What however is sufficient in real terms and is it possible to predict? As has been said the plan for the Million-Acre Scheme provided for target incomes and these were to say the least minimal. They do not provide for the basic needs of today's farmers. These/ ^{components of these} needs may be derived from the general pattern of living of the communities in which these farmers reside. Income cannot be considered apart from how it is used. The amount of money as such is only important in so far as it is needed to pay for certain things. It is in this respect that the target budgets were defective, since they did not envisage at all what the settlers' monetary needs were.

Let us look at these needs further. In the first instance settlers need to feed themselves. The selection of settlers was basically from younger family men

The survey demonstrated a nuclear family size on average of 9 members, typically a man and his wife, or wives and children. Household size was however considerably larger in many instances were notably in Melangire. If the Luhya scheme the extended family group included widows or sons, son's wives and children dependent on the same plot, on the Kikuyu scheme it also covered adult daughters or

or brothers, wives and children, the plot holder either having been the mother, or a father now deceased. The numbers of families falling into each category for each sample are set out below. Table 4 below shows total household size while Table 5 provides information on the composition of households. A few instances were noted where the plot holder was an absentee land owner. In nearly all such cases a wife was managing the plot. However in 2 instances for a time only a labourer was in charge and in one an aged mother.

TABLE 4

HOUSEHOLD SIZE MAUTUMA AND MELANGINE

	Size of Household				
	Up to 4	5-9	10-14	15-19	20+
Mautuma	2	24	19	1	nil
Melangine	4	17	7	4	3

TABLE 5

HOUSEHOLD STRUCTURE MAUTUMA AND MELANGINE

	Composition of Household*				
	Nuclear Family only	Extended F. Children and Grand Children	Extended F including Parents	Extended F Selling and Families	non-Kin in household
Mautuma	29	6	8	5	2
Melangine	14	15	8	7	3

* Relation to Plot holder some cases fall into more than one category e.g. mothers and sons & families or brothers.

It is evident that food requirements for such large family units will be large. Although where several nuclear families occupy one plot each is mainly self-sufficient in provision of their basic needs, some purchases were sometimes made by the plot holder for all of them e.g. fat, sugar and soap.

The traditional food of each group includes in the case of the Luhya millet or maize flour, green bananas beans and vegetables, in the case of Kikuyu maize flour, green maize and beans. However it has long been customary to drink tea and to use bought cooking fats for frying. In addition other items may be eaten when available. The Kikuyu in particular value meat as a regular item of diet, and fruit, bread, cocoa and bottled soft drinks are also consumed especially by invalids. Grain needs to be ground and these days this is done by machine and therefore needs also to be paid for. On the Melangine Scheme the traditional staples of maize and beans do not grow well and farmers have therefore switched to eating potatoes and cabbage for the staple diet. When they wish to eat maize either cooked whole grain, as porridge or less often Ugali to go with stew, they most often purchase small quantities and the same applies to dried beans. Table 6 presents data obtained on this.

TABLE 6

ANNUAL RECORDED EXPENDITURE ON FOOD * MAUTUMA AND MELANGINE.

	Shs						
	Up to 100/-	101-200/=	201-300/=	301-400/=	401-500/=	501/=+	
Mautuma	1	6	9	3	3	3	24
Melangine**	4	7	11	2	2	nil	

* Mainly obtained from monthly visits

** NB. It is a common habit of Kikuyu men to go to eat meat outside the home this plus any money spent on drink was found impossible to record with any accuracy and has been omitted. It is also thought the Mautuma figures are more complete which is a partial reason for some of their higher outlays as a proportion of gross income.

This does not exhaust the regular monetary needs of the average settler. In addition to food he needs to buy kerosine for lamps, matches soaps, possibly also torch batteries both for torches, and sometimes for a radio.

Farmers also need to purchase clothes, durable household items, and medicines as occasion requires. Where they have young growing families the requirement for clothes may be proportionally higher. New babies also need a range of items, including as well as clothes, towels, sheets, powder and cream. Items purchased for use in the home include blankets, mattresses and sheets, less often beds chairs, tables and cupboards. More frequently saucepans and kettles, plates and cups, knives and spoons, lamps and trays. It is of course possible to do without many of these items, or to make do with few of them. However it is a generally accepted standard that the household head, in fact most adults sleep in a bed with a mattress and blankets. Where more money is available the type of bed and quality of mattress and blankets or other items such as sheets and even pillows are better. The amounts spend on durable goods varied widely and were closely related to the volume of income. However whereas replacement or improvement may be delayed there are also occasions, such as marriage when the need to make such purchases may be more pressing.

There are several other things and occasions which require the expenditure of money, and where the householder may be forced to borrow from relatives or even from moneylenders for these purposes. The first such charge is for school fees. Whereas Primary Forms 1-IV were made theoretically free during the Survey period, previously minimal fees were charged. However, fees are only one item of school expenses, building funds, school funds, desk funds have to be subscribed⁵ and the pupils provided

5. Hence the survey many of these have also been discontinued.

with uniforms and sometimes writing materials. At Primary level these amounted to about Shs.100/= per year per child, but where as was often the case several children were of school age, this has to be multiplied. At Secondary level fees alone were reported to be between Shs.900/- and Shs.1400/- per child and other contributions were also necessary, uniforms and travel to the school, which was often a boarding school, being chief among these.

Sickness was another occasion for expenditure, particularly on the Mautuma scheme which appeared to have a less healthy environment than Melangine. Reported sickness, especially among children was a regular occurrence and several deaths occurred over the survey period. If pregnancy can be included in this category of occasional expenditure it was also a frequent event. There were 10 births among the sample or their dependents over the Survey period. Costs of sickness included purchase of proprietary medicines, the chief being Aspro, Homaquin, Malariaquin and Cofta, for headaches, fever and coughs. They also included travel to health centres, dispensaries and doctors. Where private doctors were consulted they included costs of fees. Where the Government dispensary was attended they included contribution to the building fund for a harambee project to extend it. Resource was also had to local medicine men whose charges were equally as high as registered private practitioners, but more often were exacted in the form of livestock chickens or sheep.

Less frequently there were funeral weddings, and births. The last has already been referred to. Weddings are as often as possible postponed until resources permit. However often pregnancies occur which either lead to a fine, or enforce an unplanned marriage. Amongst all Kenya peoples money and goods are paid by the bridegroom and his kin to

the Brides father. These payments are negotiated and are not paid all at once. In fact it appeared that the final total is never set. Thus at time of need the brides male relatives can turn to her husband for assistance to draw on this credit. The Luhya, possibly because they were more closely attached both in space and time to their traditional origins tended to be more closely tied to fulfilling these marriage customs. Most of the Luhya settlers had come immediately to the Settlement Scheme from the reserve, or from some employment elsewhere having left their wives and children resident in the Reserve. The Kikuyu by contrast were drawn from among landless squatters or labourers on the ex-European farms. Often it was their grandfathers who had first left the Reserves to work, driven by lack of land or employment in their traditional homes. Most had a history of detention during the Emergency period, which had still further disrupted traditional patterns of social life. Increasingly young men avoid marriage payments through their girl-friends moving in to live with them informally and no particular ceremonies are undertaken even after the birth of children. Many older men complained about their daughters' 'husbands' saying "I know nothing of him, he has not even come to be introduced". Such daughters retain ties with their mothers, often coming to help with agricultural tasks, but such visits are not returned, and the menfolk remain aloof from such contacts.

Funerals by contrast cannot be avoided. They demand an outlay on food and drink for the mourners, and in case of the death of a household head will result in a redistribution of assets. No case of such death occurred during the Survey period, although several children in Mautuma and one in Melangine died though not in the samples. Commonly however

in case of death of the plot-holder, the Settlement Department confirm the heir. Usually such person is indicated at the time of allotment and is either the wife, where children are underage, or the eldest son. The Settlement Department ignore customs in this respect, their major interest being to ensure the continuance of the plot intact without division and for the orderly transfer of responsibility for the loans. In one case cited by the Settlement Officer a plot holder died leaving a very young widow. The brothers of the man had all contributed towards purchase of the plot from the original allottee. They contested inheritance of the plot by the widow, citing this and also the fact that she was most likely to remarry and take the plot out of the family altogether. In spite of their contentions the widow was confirmed as the new plot-holder.

Table 7 shows total annual domestic expenditure on all these things in so far as it was possible to obtain such information. It must again however be stressed that it is not considered to be a complete record for reasons given.

Table 7

Total Expenditure by Household
on Non-Consumables, Clothes,
Education, Health, Domestic Chattels

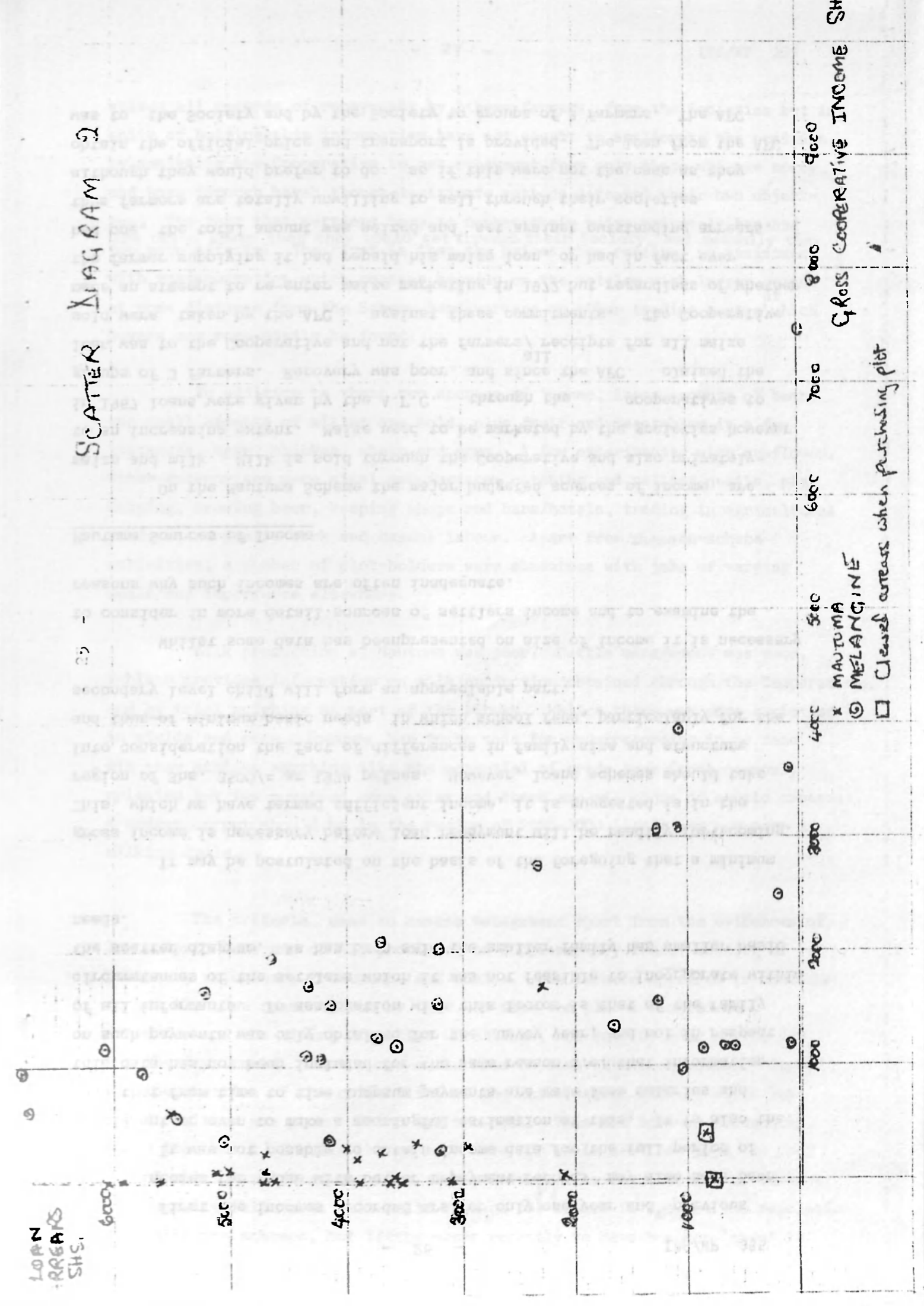
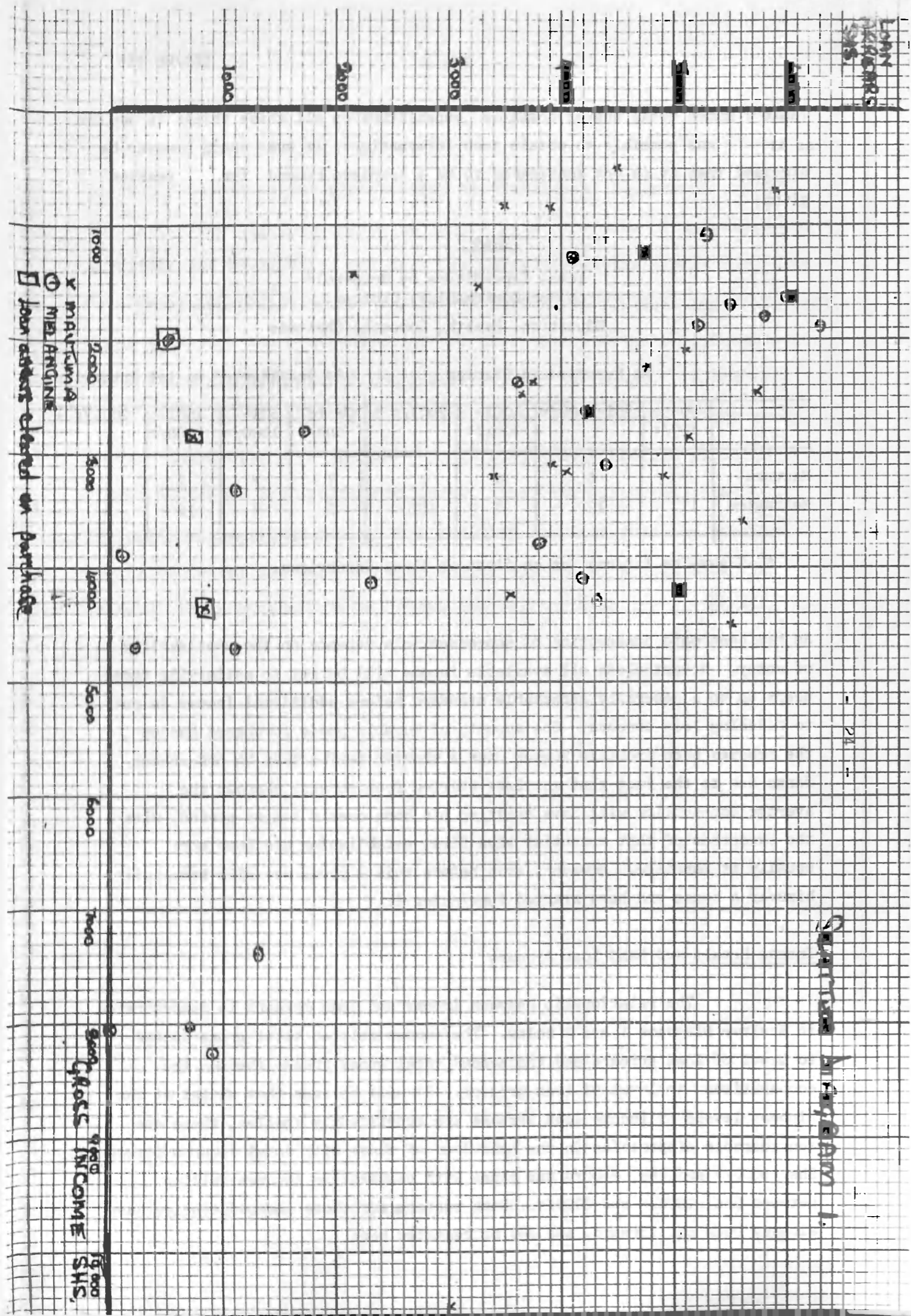
	As Recorded in Diaries				As Recollected on 1st Interview			
	Up to 500/=	501-1000/=	1001-2001/=	2001/= +	Up to 500/=	501-1000/=	1001-2000/=	2001/= +
Mautuma	9	6	8	2	?	?	?	
Melangire *	11	12	3	nil	2	7	12	4

* I gave no information on first or final interviews.

As has been said consumption of non-essentials depends on the availability of money. Nevertheless all available income will be put to satisfying these needs up to a generally acceptable standard before additional income is put to reducing loan arrears. The amounts of durable goods purchased has on the schemes been probably higher over a shorter period than on non-scheme farms due to the fact that settlers started from scratch whereas the average non-settler will have built up his home over a longer period, with the exception of that essential when first establishing his home most usually at marriage. However, even before this a young man will have built himself a house and have started furnishing it.

Income Levels and Land Loan Arrears

The relationship between income and loan arrears is demonstrated in Scatter Diagrams 1 and 2 below. The former relates total gross income to level of loan arrears and the second total gross income through the cooperatives to level of loan arrears. It will be seen that whilst at the highest levels of income loan arrears are consistently smaller, there are considerable disparities in the behaviour of those with total incomes between Shs. 3000/= and Shs. 4500/= and those with cooperative incomes falling between Shs. 1000/= and 3000/=. Some reasons for these inconsistencies have already been put forward, and may be restated here.



First the incomes recorded are for only one year and previous years' incomes for those with better repayment records may also have been better. It was not possible to obtain income data for the full period of settlement or even to make a meaningful estimation of this. It is also the case that from time to time lumpsum payments are made from salaries and this data has not been included for the same reason i.e. that information on such payments was only obtained for the Survey year, and not in respect of all informants. In association with this factor is that of the family circumstances of the settlers which it was not feasible to incorporate within the scatter diagram. As has been said the smaller family has smaller basic needs.

It may be postulated on the basis of the foregoing that a minimum gross income is necessary before loan repayment will be readily forthcoming. This, which we have termed sufficient income, it is suggested is in the region of Shs. 3500/= at 1974 prices. However, loans schemes should take into consideration the fact of differences in family size and structure and thus of minimum basic needs in which school fees, particularly for the secondary level child will form an appreciable part.

Whilst some data has been presented on size of income it is necessary to consider in more detail sources of settlers income and to examine the reasons why such incomes are often inadequate.

Mautuma Sources of Income

On the Mautuma Scheme the major budgeted sources of income are maize and milk. Milk is sold through the Cooperative and also privately to an increasing extent. Maize used to be marketed by the societies however in 1967 loans were given by the A.F.C. through the cooperatives to groups of 3 farmers. Recovery was poor, and since the AFC claimed the loan was to the Cooperative and not the farmers/^{all} receipts for all maize sold were taken by the AFC against these commitments. The Cooperative made an attempt to re-enter maize marketing in 1972 but regardless of whether the farmer supplying it had repaid his maize loan, or had in fact ever had one, the total amount was seized and set against outstanding arrears, thus farmers are totally unwilling to sell through their societies although they would prefer to do so if this were not the case as they obtain the official price and transport is provided. The loan from the AFC was to the Society and by the Society to groups of 3 farmers. The AFC

seized all records of repayments by these farmers, from the Societies but in spite of holding this information have not sought to ameliorate the position by assisting the Cooperative to get repayment from only those who owe money, and have through harsh though legitimate methods defeated their own objective. The fact that settlers have to market their maize privately has had are often lower than they would get through their Society, and secondly they two main effects. The first is that the prices they receive/ no assistance with transportation which presses heavily on the settler with larger output at some distance from the Scheme headquarters or other trading centre^{at} which buyers may more easily be found.

In addition to these two sources of income, large amounts of beans and small amounts of millet are sold, plus fruit and vegetables in a few instances, eggs, chicken, sheep and cows. A few experimented with sunflower. Other enterprises were sisal manufacture, catching and selling quails, pig-keeping, brewing beer, keeping shops and bars/hotels, trading in agricultural produce, carpentry work and casual labour. Apart from these on-scheme activities, a number of plot-holders were absentees with jobs of varying scale and importance elsewhere.

Milk production at Mautuma was poor. Cattle management was poor. Table 8 provides information on milk production obtained through the Cooperatives and by trial weighing as part of the survey. Whilst there was some variation in yields and some allowance has to be made for underrecording in no case did they achieve anything like the potential of grade cows (most commonly Friesian but few purebred cows exist and there are all kinds of exotic crosses). A modest output should be in the region of 2000-3000 litres per cow over a milking cycle.

The criteria used to assess management apart from the evidences of low output, were use of AI, provision of supplementary feeds, seeding of pastures, veterinary treatments and advice. Few farmers appeared to continue to use AI. One reason given by them was that the places visited were often far and the timing of visits unreliable, not only by hour of the day but the day itself. Thus a cow could miss on consecutive occasions. Second was the question of the reliability of the insemination itself, which Vet staff admitted was poor. Third was the cost. This was however discounted since the owners of bulls charge much more for their services than the cost of AI which was 1/= at the time of the Survey. The introduction of Bulls or more usually failure to cull Bulls born on the scheme is against the regulations governing the schemes, but little seems recently to have been done about it.

Table 8. Milk Production Mautuma over 12 month period

Plot*	No. Milkers	No. Mixed	Kg Weighed	Kg. Sold to Coop.
1	Nil	Nil	Nil	Nil
2	6	5	2533	5.56**
3	3	2	2886.5	644.68**
4	2	2	1401	188.71**
5	3	3	585.5	58.95
6	3	3	1603	28.06**
7	5	4	2501.25	Nil**
8	1	0	Nil	Nil
9	4	4	1850.5	346.69**
10	4	4	1561	1013.37
11	3	3	478.5	401.93
12	1	1	690.5	Nil
13	1	1	376.5	161.29
14	2	2	367	386.37
15	1	1	184	155.57
16	2	2	506.5	482.99
17	2	2	-	Nil
18	5	4	1091.5	730.52
19	1	1	Nil	Nil
20	4	6	2058	4493.46
21	Nil	Nil	Nil	Nil
22	1	1	674.5	439.19
23	Nil	Nil	Nil	Nil
24	1	1	108.5	Nil
25	Nil	Nil	Nil	Nil

* Not actual plot numbers of informants.

** Selling milk privately

NB Some of the difference between total weighed and amount sold is accounted for by domestic consumption including for calves, in other cases there may have been private sales which we did not have evidence about. Complete accuracy for weighed figures cannot also be claimed, plot 20 in particular was most uncooperative over any investigation.

These Bulls are frequently not pure-bred due to the fact that some settlers have also brought local Zebu cows on to the scheme, again in contradiction of regulations. The AI was itself badly managed since farmers were not provided with record cards and thus it was impossible, even for those who did use the service, to check on how it had been followed up. Frequency of calving and so on.

No farmers bought supplementary feeds, which were in any case not readily available nearby. However, most provided chopped maize or edible weeds of a limited amount while milking. On the other hand none of the sample had planted oats or Napier Grass, although one or two not in the sample had done the latter. Even when planted it did not seem always to be used. No farmer had any seeded pasture and some had cultivated so much of their land that they were forced to graze their cattle along the hedgerows. No hay was produced, nor seemingly had any effort been made to encourage or demonstrate to settlers how to do so.

There had been from the outset substantial loss of cattle on the scheme from tick-borne diseases, and other parasitic diseases also caused deaths particularly of calves. The risk of disease was high as a result of the proximity of off-scheme areas with no dipping facilities. It was exacerbated on the Scheme by the fact that the Cooperative Society managing the dips was chronically short of funds and often no acaricide was added to ^{the dip} for weeks. On one occasion the researchers themselves after a prolonged period without fluid, organised fresh supplies and assisted with delivery and dipping. One Kikuyu farmer on the scheme was so incensed by the failure of the Society in this respect that he set up his own crush and began spraying his own cattle and those of his neighbours and ignored the dips entirely. Other farmers hopefully took their cattle to dip every week. No farmers were found in fact ignoring the need to dip or otherwise protect their cattle from ticks. Several however who had acquired sheep did not appreciate the need to dip sheep as potential carriers of ticks while themselves being immune to disease.

Most farmers made use of the veterinary service for treating sick cattle and were quite knowledgeable about the potential causes of disease. The problem was that the Society was supposed to keep a supply of medicine for the Veterinary Scout to use and then charge the farmer against his milk, similarly for dip fees. Whereas however dip fees

had been collected (though no attempt was made to ensure that returns covered costs in this instance) it did not appear that any action was taken to recover costs of vet treatment. A large stack of invoice books were found buried amid other old papers in Cooperative office, with no record of these appearing in the monthly returns. As a result both the Veterinary Officer and lower echelons of staff bought medicine themselves and sold it to the farmers as a private service. A further problem with Veterinary treatment was contacting the Vet. Scout when cattle were sick. Often they came too late, or not at all. Table 9 gives information collected on cattle mortality during the survey.

TABLE 9
Cattle Mortality Mautuma During Survey Period**

Plot	Born	Died
1	2	8
2	1	Nil
3	3	Nil
4	2	2
5	2	Nil
6	5	3
7	1	2
8	4	1
9	Nil	Nil
10	Nil	1
11	1	Nil
12	Nil	Nil
13	Nil	4
14	2	Nil
15	Nil	1
16	1	Nil
17	2	3
18	Nil	Nil
19	2	3**

* No information was obtained from 1 plothead - 4 have no cattle.

** Abortions.

Settlers in general did not seem to have any idea of building up a herd of grade cows. They often sold calves irrespective of whether they were heifers or steers, kept unproductive steers without sufficient pasture, and made no attempt to maintain pure stock. Their only effort was directed towards disease control and in this they were frustrated by the incompetence and poverty of their Societies.

As with milk, maize yields were low. Table 10 sets out the information obtained on maize. This was obtained by weighing wherever possible and otherwise from estimations of that in store plus that sold. A certain amount of the maize harvest is eaten green before harvesting, but this is considered to amount to little overall. Average yield was 15 bags per ha. as against the optimum set by the Agricultural Research Station of 45. There were a number of reasons for such low yields.

TABLE 10
Maize Yields Mautuma 1974

Plot	Total Kg.	Kg. per Hectare
1	829.9	273
2	3153.7	1164
3	2661.8	1934
4	3983.7	1934
5	11453.1	1951
6	1217.2	591
7	4924.3	1844
8	442.6	166
9	5256.2	1998
10	8983.7	2142
11	2655.8	1571
12	1383.2	646
13	4702.9	1662
14	387.3	204
15	3983.7	1538
16	2600.5	974
17	3596.4	1433
18	3873	1295
19	2157.8	658
20	3651.7	1037
21	3873	1313
22	7192.7	2610
23	7291.8	2193
24	8636.6	2440
25	1106.6	No. Inf.

NB. Bags per acre ranged from 1.22 to 11.66

" " ha. " " 3.03 to 29.

Average bags per ha. (90 kg. bag) = 15.

Nearly all settlers purchased not only hybrid maize for planting but also fertilisers and insecticides, although fertiliser was not always used in the right concentration. It was sometimes eked out over a larger acreage where financial resources were inadequate to buy the recommended amount. All farmers prepared land mechanically, but planted by hand and it was observed that whereas line spacing was correct that between plants was not. Thus plant populations tended to be low, potentially reducing possible yields. Nearly all maize is interplanted with beans, but agricultural staff considered this would not appreciably affect maize yields.

The major problems appeared to be of climate and soils. Rainfall is adequate in amount but uncertain as to onset and duration, that is the pattern. According to studies carried out at the Research Station in Kitale⁶ a crucial factor in determining yield is planting date. Regardless of weather conditions at that time maize was planted during the last week in March at the Research Station. Most farmers however wait until the rains are well-established before they plant. Since it is not always clear when they have started this may result in quite a delay. Farmers on the other hand who plant too early when some showers are thought to herald the onset of the long rains, risk loss of the crop through failure to germinate, or more often germination followed by a drought which dries up the seedlings. Most of the farmers planted therefore later rather than early between mid April to Mid-May. This is estimated to reduce yield proportionally in relation to the length of time elapsing after onset of the main rains.

According to rainfall records in two Department of Agriculture Annual Reports for the area the main rains did not appear to have become well established before Mid-April for at least 4 years prior to the Survey years 1973-1974 which also conformed to this pattern.

6. 'Maize Diamonds'. A.Y. Allan. A publications of the Agricultural Research Station at Kitale.

7. For the an analysis of the scientific basis for this assertion, See 6 above.

Another climatic hazard is storms. Driving winds and hail occur at intervals, usually after the maize is fully grown, but sometimes earlier. The force of hailstorms can completely shred the leaves of growing maize and considerably affect yields. Winds more often cause the maize to fall when it is subjected to various animal and insect pests. These calamities were observed in several instances over the Survey period. In one particular case winds having flattened 7 acres of maize, the total yield was little more than 12 bags - a complete disaster for a rather more progressive settler. In the same year in another part of the scheme hail totally destroyed maize at the Farm School and in the immediate vicinity, the force of the storm having drilled innumerable holes even in the sisal. The precise degree to which these incidents affect yields is not measurable, but may as instanced result in a crop of negligible proportions.

The next most important factor is that of soils. Most settlers once they have cultivated a field, continue to do so thereafter without cessation. As has been said all farmers use tractors, however most often they plough and harrow once only with the same rotary plough at the same depth (often very shallowly e.g. 4"). This has gone on for year after year and the result in several instances is the build up of a hard layer below the ploughed topsoil. Subsequent cultivations only stir up this limited top layer which has by now become impoverished. In a few cases which were seen the fields approximated dust-bowl conditions, with stunted maize about two feet high flooded when it rained and rapidly baking hard after a couple of dry days. It would appear that no efforts to encourage soil conservation have been undertaken by Agriculture staff and the settlers themselves seem unaware of the reasons for the deterioration. Whilst few fields have reached the drastic condition described, many show a poor growth, most probably from similar causes.

Apart from these major problems which affect all farmers, there are other minor ones which may harass a minority due to their particular location or special conditions. Few farmers, have maintained even the boundary fences which were put up at the time the Settlement was established, and some even uprooted the wire and sold it. Thus those farmers with fields near to the roads which others may use on taking cattle to the dips often have substantial amounts eaten by other settlers' animals.

A further problem with maize cultivation is the cyclical effect of poor yields. A bad year reduces further the settler's capacity to cultivate in the following year. He will reduce his acreage, plough fewer times, and seek to spread the same quantity of seed and fertiliser over a yet larger area. He may skimp on weeding. Costs of maize cultivation both relative to some other crops, especially potatoes, and to gross returns is high. At the time of the Survey the recommended practices (including ploughing, harrowing, seed, fertiliser, top dressing, insecticides) cost an estimated Shs 460/= per acre (in 1974) whereas the price per bag was only 35/= (in 1974)ⁿ. This does not take into consideration costs of weeding, harvesting, decorticating, bagging and transport to buying stations. The actual amounts spent were much smaller than this, due to savings on the number of ploughings, and the amount of fertiliser used. Many settlers used their own seed and a few oxen for ploughing. Weeding and harvesting were often carried out with the help of neighbours at a minimal cost. Such group work according to communal traditions, might be paid for only with food at the end of the working day. This was more often the case where the group were co-religionists. A large number of different Churches were represented on the scheme, and these provided a unifying force for their communicants. This was of some importance in view of the fact that few of the settlers had kin nearby, other than affines as a result of post-immigration marriages.

The high cost of maize cultivation had the further effect of encouraging settlers to seek other alternative crops. However few readily presented themselves as viable or more profitable alternatives. At the time of the Survey the two most important subsidiary cash crops were beans and sunflower. According to expert informants, yield from a pure stand of beans could not be expected to be more than 5-8 bags according to type. In fact no settlers planted pure stands, but inter-planted in maize in order to maximise returns from the cost of inputs. As a result actual yields were much smaller than this, total yields from a number of fields seldom amounting to more than 3 bags. The return from sunflowers was potentially about the same at 5 bags, but since this has to be planted by itself it proved a much less attractive proposition.

8. It was shortly thereafter increased and is currently (1978) 60/= per bag officially but farmers on the schemes mainly sell to middleman at far less than official rates.

One settler on the scheme had built up a business in trading in sunflower seed and in order to improve supplies provided seed for planting on loan to several neighbours. He said that results were most discouraging and few farmers continued with the experiment after a first attempt. At the time of Survey the controlled price for a bag of beans ranged from Shs.65/= to Shs. 100/= and for sunflower was Shs. 35/=. For the former however farmers obtained a much smaller price from intermediate buyers from 8/= to 25/= per debe, about 1/5 of a bag according to the time of year and the amount coming on to the market. Millet was only grown by a few settlers, and sold in small quantities at a debe a time. Whereas the price per debe was at that time higher at 21/=, total income from this source was very small.

Before the Scheme was established sisal had been a main crop in the area, and the original owner of the European farm which covered much of Mautuma had his own plant for processing

the leaves into fibre. Most of the sisal had since been uprooted but small amounts still remained in some places and most people planted sisal along the boundaries of their plots. In 1974 the price for sisal improved and it became worthwhile for a small factory to re-open in Turbo to make the fibre which was in turn sold to a bag-making factory in Kisumu. It at the same time became profitable for other individuals to take smaller quantities by bus or other means from Mautuma to Kisumu for sale. A kg of sisal fibre fetched Shs 2/30 in Kisumu and was sold at Shs 1/50 in Mautuma. Mostly the sisal leaves were cut and processed by school-children either as an independent enterprise to enable them to buy school clothes and other items or to provide the family with some luxuries such as bread and sweets, or where the family was sufficiently impoverished to provide additional income for staples. Problems of transportation limited this activity as well as the tedious process of breaking the leaves into fibre by hand. Nevertheless during the survey period it was seen to be a useful source of money for small/domestic expenditures.

Table 11 shows the numbers of families in the sample engaged in this and the other enterprises listed

Table 11

Range of Income Earning Activities
at Mautuma

<u>Enterprise</u>	<u>Number Participants</u>
Beans	17
Millet	6
Sisal	11
Sunflower	9
Chickens/Eggs	18
Casual Work	12
Carpentry/Crafts	4
Scheme Business	3
Other*	11

* including vegetables, timber, charcoal

It is important when planning for the development of such small farms not to neglect such activities. The farmer in seeking to maximise his income never puts all his eggs in one basket. Not only do these subsidiary endeavours provide much needed financial resources in between major harvests, but taken together may in fact constitute the major part of his income. The tendency for extension programs to concentrate on single

enterprises of a macro-nature is understandable, nevertheless a more detailed plan could and should take into consideration all possible ways of improving farm profits. It is only the large plantation owner who can afford to concentrate on only one crop.

Table 11 also indicates the extent of involvement in off farm activities. In addition 6 out of the 25 plotholders in the sample were in regular employment elsewhere. The Absentee, provided he has a good manager in the form of a wife or employee, has several advantages over the full time farmer. The farmer who also has another source of regular income in the form of a business near to his farm is even better placed. Firstly he is not totally at the mercy of farm crises. He has the resources to ride over a bad year. Secondly he has money whenever need arises for farm work. The settler who is solely a farmer may find he has exhausted his money when he needs to weed his crops, and may delay doing so until he has from somewhere scratched the means. He may find that he does not have sufficient money for sufficient fertiliser, so makes do with a smaller amount. The settler who has off-farm resources most usually uses these for all things necessary to ensure a good harvest. Sometimes the harvest may be so poor that the full-time farmer gets into debt merely to provide his family with food. For the man who has other sources of cash this is never necessary.

The last source of income is sales of livestock. At the time of the Survey several of the sample had no cattle. Few had more than two or three. Table 12 shows numbers of cattle from census taken at the beginning and end of the Survey period. Farmers were not ready to provide information on sales of cattle. According to their terms of settlement they are not supposed to sell cattle without the permission of the Settlement Department. Several therefore seek to maintain on their plots 1 or 2 cows only being equivalent to the number they were originally given as part of the loan and often aver that these are in fact the originals. They try to minimise the offspring that these cows could have produced in the interim period and to say that all have died. From observations it was however clear that cattle are frequently sold, most usually to pay for school fees or medical charges, but often also to get money for farm inputs or merely to augment the income from sales of crops needed for domestic use.

TABLE 12

Ownership of Cattle
at Mautuma

Plot	Cattle		Cattle	
	First Interview Fullgrown* Calves		Final Interview Fullgrown Calves	
1	NIL		NIL	
2	6	6	13	4
3	5	0	2	1
4	2	1	2	2
5	3	1	3	1
6	3	3	3	1
7	6	4	5	5
8	0	2	2	1
9	4	3	4	2
10	2	2	6	0
11	3	1	3	0
12	1	0	1	1
13	1	1	1	1
14	2	2	2	1
15	1	1	4	2
16	1	1	4	2
17	2	1	2	1
18	5	4	6	3
3B1 19	2	2	0	0
20	5	2	13	2
21	NIL		NIL	
22	?	1	4	1
23	NIL		NIL	
24	NIL		NIL	
50 25	NIL		NIL	

* Including Cows, Heifers, Steers, Oxen, Bulls
the

NB. Only 1 farmer in either of two samples was observed to have sheep, though perhaps 6 or more on the whole scheme possessed them. One farmer had pigs and two on the scheme turkeys, none however in the sample.

Recorded sales and purchases are set out in Table 13

It was estimated from observation and discussion that the price of a cow was sh 500/=, to sh 900/= a heifer according to age from sh 200/= to sh 500/= and Calves of either sex from sh 120/= to sh 300/=.

TABLE 13
Sales and Purchases of Cattles
Mautuma 1973-1974

Cattle Sold		Cattle Bought	
FG	Calves	FG	Calves
	NIL		NIL
0	0	3	2
0	1	0	0
2	0	1	0
2	0	0	0
0	1	0	0
0	0	0	0
0	0	3	0
1	0	0	0
1	0	0	0
1	0	0	0
2	0	0	0
2	0	0	0
2	0	0	0
1	0	0	0
0	0	1	0
1	0	0	0
2	0	0	0
2	2	0	0
0	0	1	0
	NIL		NIL
	no information		
	NIL		NIL
	NIL		NIL
	NIL		NIL

Total incomes for Mautuma Settlers in spite of the range of sources was low in relation to their needs. Information collected from all sources is set out in Table 14. A few families were extremely poor. Whilst in one or two cases this was due to the recklessness of the household head - one spent his time 'walking about' and seemed not to contribute to agricultural work at all, one, who also never worked, spent according to his wife all his money on entertainments and much of that appeared to be from harambee contributions which he assisted the local chief to collect-this was not always the case. Most of the worst off settlers had reached that position as a result of crises on the farm or in the family from which they had been unable to recover. Foremost of these was loss of cattle from disease, secondly serious sickness of the wife which required sales of livestock to pay for treatment.

The information presented above further underlines the need when planning for any farm enterprise to consider it in relation to the whole range and pattern of activities of the farmer. This point will be further discussed in what follows.

Table 14
Income from All Sources
Mautuma Sample

Plot	Gross Income Coop. Sales	Net Coop. Income	Total Farm Income*	Total Recorded Income**
1	NIL	NIL	531/95	594/45
2	3/45	NIL	5242/=	10,835/45
3	399/65	310/55	2466/40	3,224/05
4	86/=	55/20	1972/95	2183/95
5	36/55	10/75	2279/20	2660/75
6	14/30	1/70	2807/60	3295/90
7	NIL	NIL	3105/=	3605/=
8	NIL	NIL	10/=	688/50
9	214/95	134/60	2248/80	3099/75
10	628/30	380/=	3604/80	4567/10
11	249/20	140/30	1958/20	
12	NIL	NIL	2000/=	2870/=
13	100/=	75/20	1341/50	1807/50
14	264/35	147/=	2077/=	2361/35
15	96/45	68/90	1238/30	2104/75
16	299/45	184/35	2505/20	3136/65
17	NIL	NIL	1322	1602/=
18	452/80	304/85	3761/75	4349/05
19	NIL	NIL	4227/=	4227/50
20	2785/95	2568/05	2980/=	5765/95
21	NIL	NIL	637/30	875/30
22	298/25	229/75	918/80	1566/55
23	18/90	17/70	475/=	1464/90
24	NIL	NIL	1503/=	2481/=
25	NIL	NIL	405/=	872/=

* Including net Coop. Income

** Not including salaries obtained off-scheme but only 'gifts' to wives from such wages.

Melangine Sources of Income.

The major source of planned income at Melangine is milk and pyrethrum, supplemented by vegetables and wool. In practice while milk is still of importance, potatoes have supplanted pyrethrum as the second income earner, and pyrethrum, wool, peas, cabbages, and maize provide minimal support. In addition sales of livestock were a subsidiary income earner, and a few farmers sold fruit, charcoal and sunflower. Four of the sample had an interest in a transport business, others in trading. A particular feature of the Melangine sample was the proportion of adult dependents and often their children also living on the plots compared with those in Mautuma. Table 15 sets out this information. All adult dependents have to be allocated a portion of the plot for subsistence crops, thus reducing the amount available for

TABLE 15

Number of Adult Dependents on
each Plot - Melangine

Plot	Number of Adult Dependents
1	6
2	6
3	0
4	1
5	0
6	3
7	2
8	2
9	0
10	3
11	0
12	6
13	1
14	0
15	5
16	1
17	0
18	3
19	6
20	4
21	4
22	0
23	4
24	2
25	0
26	3
27	0
28	0
29	0
30	0
31	0
32	2
33	0
34	3

pasture and cash crops. The Settlement Officer said he often had to deal with demands from plot-holders to chase away adult sons and their families as they were reducing the profitability of the holding. This of course he was not empowered to do. Such adult dependents did not contribute to the work force on the plots. They went to work elsewhere for cash. This prescription did not only apply to male dependents, not only daughters but wives often go to work for money for others. Several of the women were members of a 'Roofing Society' to which they contributed, each in turn getting money to buy mabati to roof her house⁺. Whilst at the present the effect on loan repayment of extended family commitments on the plots was probably not great, it is likely that it has more relevance to the future viability of the schemes. At one time before independence there obtained the concept of a 'yeomanry' of small farmers with a proportion of landless persons providing a labour force. This has tacitly been dropped, nevertheless the fact that it was in the minds of the Scheme planners meant that no provision was made for future family expansion on the schemes, and there were political pressures which forced the allocation of plots on land which had at first been earmarked as commons due to their inadequacies.

As has been said the most reliable income earner at Melangine is milk. Cattle management at Melangine was at a considerably superior level to that at Mautuma. Four of the sample bought supplementary feeds and nine others had small amounts of oats or other fodder crop. One or two were seen (on the scheme but not in the sample) to have made some hay. Several had also seeded their pastures at some time, and made attempts to fence pastures within their plots. One farmer had sought the assistance of the Planning Section of the Agriculture Department for his plot. As will be commented further later on, it would appear that not only were the settlers more aware and interested in improved methods of husbandry, but both the Veterinary and Agriculture staff provided better service than was seen at Mautuma. As a result more recently there have been few deaths of cattle and milk yields were better. Settlers had both more cows on average each and more milk from each cow than at Mautuma. The reason for the former also lies in the fact that since the area is further from the Reserves, and most of the forest area has been cleared, ticks present a lesser problem. In fact in spite of their better performance in other respects most settlers took cattle for dipping once a fortnight or less instead of weekly.

Information which was collected on milk yields is set out in Table 16.

TABLE 16
Milk Yields Melangine

Plot	No. Milkers	No. Milked	Kg. Weighed	Kg. Sold to Coop
1	3	2	3292.25	957
2	2	2	619.25	565.5
3	4	not recorded		1848.5
4	6	5	982475	4401.5
5	2	1	567	NIL
6	4	3	1623.25	202
7	3	1	1894	1907.5*
8	3	1	1813.25	979.5
9	NIL	NIL	NIL	NIL
10	5	3	1796.5	1116.5
11	3	2	3016.5	2885
12	1	1	1737	1422
13	5	3	645175	2484
14	1	2	not recorded	248
15	7	Not recorded		8197
16	2	2	921	518.5
17	3	NIL	NIL	NIL
18	5	4	206975	2653*
19	4	1	2302	26325*
20	2	1	1624	1971*
21	3	not recorded		726
22	3	2	20045	4289*
23	6	3	4260.75	38605
24	6	3	3066.25	3709.5*
25	6	4	3656.25	5242*
26	2	2	2179.25	1871.5

NB Substantial private sales must have taken place in several instances but were not admitted to.

* Where weighed kg is less than that sold error may be due to omissions by recorder due distance of farm from his home and breakdowns of motor cycle.

Melangine settlers consume a considerable quantity of their own milk, being known by outsiders to be heavy tea drinkers. There was also some local private sale to hotels or individuals, but the balance of milk after domestic needs were met, was sold by most farmers only through the Cooperative.

All farmers used AI and only one bull, a grade one, was seen on the scheme. The veterinary department kept a regular check on such animals and insisted that they be sold or castrated. The fact that all the farmers used AI meant Extension staff had improved occasions for contact and were better informed about each settlers livestock. Whenever AI did not take after two or three attempts the Vet. Officer himself visited the farm and checked out the animal for possible disease. This in addition to specific calls to treat sick cattle was also an opportunity for giving advice. Every farmer kept his AI cards and these had been filled in more or less by the AI assistant. It would appear from these that calving intervals are longer than they should be. This is do to the failure rate of AI and the fact that it may not be immediately evident that it has not taken, thus causing further delay in having a repeat. Farmers were generally conversant with the signs that a cow was ready for AI, in contradiction to Hautuma where most paid little attention and perhaps only noticed that they were 'frisky'. The data collected from the AI records on calving are presented in Table 17.

TABLE 17

Malaysian Calving Intervals*

Plot	Cows					Cow
	1	2	3	4	5	
1	17	11	11	-	-	-
2	21	14	no. inf.	-	-	-
3	12	15	no. inf.	-	-	-
4	11	15	11	12	-	-
5	14	-	-	-	-	-
6	16	14	16	no. inf.	-	-
7	12	no. inf.	no. inf.	-	-	-
8	14	-	-	-	-	-
9	16 ¹	no. inf.	14	15	-	-
10	no records kept					
11	13	no. inf.	-	-	-	-
12	12	-	-	-	-	-
13	18	no. inf.	12 ¹	13	no. inf.	-
14	15	11	11	12 ¹	11	11
15	12	10	-	-	-	-
16	no. inf.					
17	15	15	11	13	10	-
18	no information					
19	no records kept					
20	12	14	14	-	-	-
21	13	11	12	-	-	-
22	19	12	11 ¹	no. inf.	12 ¹	no. inf.
23	15	14	12	12 ¹	12 ¹	13 ¹
24	25	no. inf.	16	12	13	14
25	no. records available					
26						

* Number of months for each cow between last and previous calving date. Due to incompletely filled AI cards information was not always available.

Another problem with AI is the difficulty of getting a particular type of semen. The AI assistants said that wherever possible they tried to match the breed of cows to be inseminated but evidence of the lack of success of this is the number of mixed breed cows now on the Schemes. One Veterinary Officer complained that for political reasons they sometimes had to accept bulls as donors who were also themselves not purebred. The effects of such mixes on milk yields is not known, but it is to be supposed is not irrelevant. With care however it was not impossible to maintain a pure bred herd. One of the sample had in fact done so and had gradually built up his original two Friesians to a herd of nearly 30. With the exception of a couple of young steers these were all cows or heifers, since he also quickly sold or slaughtered male calves.

As has been said the rate of mortality among cattle was very low at Melangine although in the early days of the scheme one or two of the sample lost all their original cows. At that time there was much more forest on the scheme and these settlers were among those allocated forested plots. Over the Survey period only 8 deaths were recorded. These were all Calves and 4 occurred on one plot (it appeared from starvation). A sharp contrast with Mautuma.

Next to milk potatoes provide not only a major source of cash but also a basic item of diet. The most usual meal is potatoes fried a little in fat and then shredded cabbage added and the whole boiled. This was consumed at any hour of the day, for breakfast, lunch or supper. Potatoes grow extremely well. Whilst there are no recommendations to use fertiliser nearly all the settlers in fact did use some and discussed knowledgeably the advantages of particular types. The preferred brand was Di-ammanium phosphate but during the Survey this was hard to obtain so other compounds were used.

Up to three harvests were obtained from one planting of potatoes by the expedient of leaving tubers in the ground after each. Yields were about 100 bags an acre and buyers came round to the plots to collect them. Prices varied between 10/- and 45/- a bag over the Survey period depending on the time purchased in relation to the main harvests. Whereas the bulk of the crop was sold at one time, smaller amounts were also taken to market by the women on a weekly basis, and some potatoes formed part of subsistence crops. All potatoes are marketed privately and not through the Societies so that

complete accuracy cannot be claimed for the figures on sales set out in Table 18.

TABLE 18

Sales of Potatoes
Melangine

Plot	Acres	Main Sales of Bags	
		1st Harvest	2nd Harvest*
1	1	30	failed**
2	1	7	15
3	1	45	78
4	1	8	not yet
5	1/4	30	20
6	1	10	16
7	1	48	not yet
8	1	15	not recorded
9	4	90	220
10	5	-	not yet
11	1/4	10	failed**
12	1	20	NIL
13	2	30	8
14	1	40	not yet
15	1/4	5	5
16	1/4	nil	nil
17	1	not recorded	25
18	1	not recorded	nil
19	2 1/2	100	40**
20	NIL	-	-
21	1	4	8
22	1/4	31	25
23	1	20	nil**
24	1/4	24	15
25	1	-	failed**
26	1/4	20	failed**

*In some instances a new planting in others regrowth of volunteers.

**Due to frost

It may be noted at the point that in contrast to Mautuma subsistence plots were distinct from fields of cash crops, the former being cultivated by women. At Mautuma little effort had been made to plant such things as vegetables for home use. At Melangine not only were a variety of vegetables such as cabbages, onions, peas, lima beans, beans and potatoes planted on subsistence plots but women sold some of these to buy tea and sugar and other domestic items, including sometimes clothes or such things as cups. It was not possible to quantify such sales due to lack of cooperation on the part of respondents. In one instance for example in a home regularly visited on a friendly basis the wife sold fruit every week near the bus stop but was exceptionally vague about both quantities and

receipts. Other women only admitted / what the researchers actually saw them selling.

In contrast to potatoes and other vegetables pyrethrum can only be sold through the Cooperative Societies who have the necessary facilities to dry the flowers before selling to the Pyrethrum Board. The major problem with marketing is that the individual better farmer does not always obtain the advantage of the higher prices paid for better quality flowers as the product of several members will be sold together. The prices for pyrethrum have remained so low, comparative to other crops, however that it would appear few farmers look on pyrethrum as a profitable crop, but continue to grow it as one of the conditions of settlement. Even so in 1968 major uprooting took place in response to the action of the Board to reduce prices.

From information extracted from the Society files it was possible to get a complete account of income earned by each member of the sample from pyrethrum. This is set out in Table 19.

TABLE 19
Sales of Pyrethrum Melangine
1974

Plot	Kg. Sold to Coop.
1	1314.5
2	59
3	588
4	nil
5	nil
6	nil
7	nil
8	584.5
9	653
10	609
11	nil
12	661.5
13	499
14	1305.5
15	585
16	2552.5
17	742
18	418
19	nil
20	551.5
21	409.5
22	529
23	1065
24	372
25	940
26	364

Pyrethrum yields also appeared very poor mainly due to the persistence of blind plants or poor yielding varieties which farmers refused to uproot since they appeared so healthy with lots of leaves. Another reason was the presence of many gaps and lack of action to gap or replant. In general for the reasons stated above farmers seemed to pay little attention to pyrethrum.

Similarly to Mautuma some settlers obtained the major part of their income from on scheme interprises or were absent in employment elsewhere. Information on source and proportion of income is set out in Table 20. Non-from income included trading in vegetables, running buses and matatus, there were 2 witch-doctors, charcoal-burning and casual work.

Table 20
Melangine Farm Income

Plot	Gross Coop Earnings	Net Coop. Earnings	Other Farm Earnings	Total Income
1	1793/80	1128/05	3216/05	4253/20
2	1770/35	1079/85	2625/85	2625/85
3	1770/35	1079/85	2625/85	2625/85
4	3113/95	1993/70	5504/50	8618/45
5	NIL	NIL	NIL*	NIL*
6	126/30	71/80	3077/=	3203/30
7	1294/45	570/40	1874/50	3168/95
8	1150/55	479/45	2330/=	8268/55
9	625/15	419/25	1311/15	1937/30
10	1299/=	683/80	7335/25	8634/25
11	1813/55	1408/80	NIL	1813/55
12	1461/60	744/45	1343/=	2804/60
13	1271/20	938/80	59/=	1689/20
14	2012/75	1804/85	2375/75	5188/50
15	636/20	461/25	1255/=	1941/90
16	7505/05	7265/05	500/=	8035/05
17	1019/50	675/85	2600/=	4119/50
18	272/15	45/75	3822/=	4264/15
19	1666/15	621/60	490/15	2156/30
20	2197/55	1176/40	1071/=	3340/55
21	1612/10	983/75	409/80	2021/90
22	957/70	506/20	600/=	1857/70
23	3900/=	3056/80	268/=	4163/=
24	2507/=	1673/40	1570/05	4657/10
25	3191/55	2513/65	615/50	3807/05
26	3623/55	2670/=	1232/05	4855/60

* Both husband and wife absentees in salaried employment
Plot only recently purchased

The point already made must be stressed that the settler with alternative non-farm sources of income is at a great advantage in maintaining the viability of his plot, as he both has resources to develop it and to ride over the bad harvests, or occasional disasters such as loss of livestock. He is also able to finance much domestic expenditure from his other earnings without drawing on farm income, and thus a greater proportion of this may be used for cultivation and improvement. It is however equally possible that the lump sums obtained at harvests may be used for other non-farm ventures creating a two-way flow of money. A further factor in relation to such settlers must also be pointed out. This is that those who have developed other businesses on the scheme itself generally demonstrate better management capacity and initiative. Not only have they most often saved from their farm earnings to branch out into other things thus demonstrating their farming abilities, but are capable of organising a wider range of things at the same time.

The last main income earner is sales of livestock. Even larger amounts of money are obtained from selling cattle at Melangine than at Mautuma because in general herds are larger, thus producing more calves. It was also possible to document such sales more readily by using the AI records on calving. Tables 21 and 22 presents information on ownership and sales.

TABLE 21
Melangine Cattle Census

Plot	Number 1st Interview		Number Final Interview	
	Fullgrown	Calves	Fullgrown	Calves
1	3	0	5	1
2	3	0	3	2
3	8	0	9	1
4	10	4	8	3
5	1	1	3	2
6	6	2	5	1
7	5	1	4	4
8	7	1	10	0
9	2	0	2	0
10	6	2	7	1
11	3	2	5	1
12	2	2	5	1
13	1	0	1	1
14	8	2	7	1
15	2	1	4	0
16	10	2	10	3
17	5	0	2	3
18	5	0	4	0
19	9	2	9	2
20	5	1	6	3
21	6	0	4	2

(Table 21 contd.)

Table 21 Contd.

Plot	Number 1st Interview		Number Final Interview	
	Fullgrown	Calves	Fullgrown	Calves
22	5	0	4	2
23	6	0	14	0
24	7	1	8	4
25	7	2	8	0
26	6	0	no information	

TABLE 22

Melangine Cattle Sales*

Plot	Cattle Sold		Cattle Purchased	
	FG	Calves	FG.	Calves
1	0	2	0	0
2	0	0	0	0
3	0	1	0	0
4	6	3	0	0
5	0	0	0	1
6	3	2	0	0
7	1	0	0	2
8	0	2	3	0
9	0	0	0	0
10	2	0	0	0
11	0	2	0	0
12	0	0	0	0
13	1	0	1	2
14	2	3	1	0
15	0	0	0	0
16	0	1	0	0
17	3	1	0	0
18	3	2	1	1
19	0	0	0	0
20	0	0	0	0
21	2	0	0	0
22	1	0	0	0
23	0	4	8	0
24	0	0	0	0
25	0	0	0	0
26				

no information

* Sales were probably much higher in respect to calves as will be noted from the census the ratio of calves to fullgrown cattle is low, and all bull calves or bullocks were seen to be sold or slaughtered. These are merely recorded sales sometimes bullocks are sold to purchase a heifer

Prices were in the same range as those at Mautuma. Sheep which were budgeted for the scheme have, unlike cattle not done well. They tended to die in the early days and continue to do so from a possible variety of ailments. In the numbers they are kept, the income from sale of wool is negligible, and since most settlers are trying to build up their numbers there appeared to be few sales. A Census was taken of sheep at the beginning and

end of the Survey period and some record maintained in the diaries of births and deaths in between. The Census information is set out in Table 23.

TABLE 23
Melting Sheep Census

Plot	No. first Interview			No. Final Interview		
	Rains	Ewes	Kids	Rains	Ewes	Kids
1		NIL			NIL	
2	1	3	0	3	11	2
3		NIL			NIL	
4	4	3	1	3	4	0
5		NIL		1	4	0
6	1	4	0	1	5	3
7	0	2	2		NIL	
8	1	5	0	2	4	1
9	0	2	3		NIL	
10	1	5	0	3	6	2
11		NIL		0	5	1
12		NIL			NIL	
13		NIL			NIL	
14	3	7	0	3	11	3
15		NIL			NIL	
16	0	1	0	0	1	1
17	3	4	0	3	7	4
18	0	6	0	2	4	0
19	1	7	2	4	8	5
20	1	2	1	1	6	1
21	1	3	0		no information	
22		NIL			NIL	
23		NIL			NIL	
24		no information		4	14	5
25		no information		4	6	2
26	1	2	0	1	7	0

In comparison with other farm enterprises it may be seen that they have so far been of less importance to the farm economy. Nevertheless their potential importance should not be neglected. It would seem that the Veterinary Department tends to place so much stress on cattle that they do not provide an adequate supportive service for sheep. As has been said enterprises for the small farmer should not be looked at in isolation but considered as part of a number of mixed-farm enterprises, all contributing to the over-all profitability of the farm.

Extension Programs

Reference has been made several times throughout this narrative to the role of extension workers in promoting or neglecting agriculture and animal husbandry. When the Scherms were first established both agriculture and veterinary personnel were seconded to the Settlement Department and posted to the various settlements. The ratio of extension staff to settlers is only by Cooperative staff but also by Name Economists and far higher than in traditional areas and they are supplemented not/Health Assistants. Whereas however at the beginning they no doubt gave substantial guidance to the new settlers, more frequently these days ^{they} provide little advice and support for the farmer. Nevertheless there were substantial contrasts between Muatuma and Melangine, some of which have already been mentioned.

Veterinary and AI assistants have been more active on Melangine and thus more successful in controlling disease and maintaining better herds. Whilst they were aided by a more healthy milieu, and seemingly by more interested farmers, the degree of reliance on AI and the higher standard of managements shown by the latter testify to the good work which has been done by the Veterinary Department in the past. At least a part of the apathy in Mautuma is due to the poor service which has been given, so that there is a descending spiral of involvement in AI. programs. Even in Mautuma however the Veterinary Assistant was seen to be the most active of extension staffs and the one who most often visited farmers. He was not often however supported by senior members of staff in the area, whose presence was never reported.

Whereas ^{each} specialised Department is independent in its policies and programs, nevertheless they are to some degree interdependent in their work. The Veterinary Department were seen to be severely hampered in Mautuma by the weakness of the Cooperative Societies, about which little seemed to be being done. Dip maintenance virtually ceased during the fieldwork period and by the end groups of farmers had banded together to buy dip fluid independently and to run their local dips, of which there were 5 on the scheme, independently and without reference to their Societies. The Societies being so far in debt to the various suppliers of dip fluid that they were unable to obtain further credit and seldom had the cash to buy directly. In Melangine on the other hand, the Society was sufficiently sound to maintain the dips in good order.

The Veterinary Department was further assisted by having very specific tasks to carry out which generate their own schedule of work, and which are readily understood and observed by the settlers. The Agriculture staff has a more amorphous program, thus very much more depends on the initiative of individual members of staff in promoting particular projects in their areas.

In general they have less direct contact with the farmers and seldom visit them, their efforts being sporadic in relation to official visits of headquarters staff or the organisation of Agricultural shows. At these times they concentrate on selected farmers who have already emerged as more progressive than the others. Another activity is obtaining information for their monthly reports. The figures presented must however be viewed with some discretion.

In Mautuma the most usual comment of farmers in relation to Technical Assistants and Agricultural Assistants was that they were last seen passing in the road and might at best wave a greeting. Several seemed to spend their entire time in local bars. There was no program of activities in Mautuma: no demonstration plots, no variety trials and no apparent focus for advice. The Assistants were well known, most having lived in the area since the start of the scheme and having their own plots there. Even on the latter there was no evidence of superior science or management. What they had to say about cultivation had been heard many times and it was thus most understandable that their presence had deteriorated into a mere formality. According to visitors books which had been kept when the scheme was first established, these same officers at that time paid routine visits to each of the farmers and their advice was recorded in these books. The subsequent dwindling must at least be largely due to lack of active programme from higher levels of the Department. In other neighbouring schemes it would appear that the initiation of particular programs, such as the seeding of pastures was left to Peace Corps of other Volunteers who were from time to time posted to the area. The statistics on the wall charts of the Settlement Department Office at Lumakanda also pays tribute to their industry of those who were attached there their maintenance having been discontinued in 1968 the year of their departure.

In Melangine on the other hand there were various variety trials and there had also been demonstrations at different times of particular crops. Improved seeds and other inputs were kept at the Settlement Office and the Melangine residents were particularly fortunate to live nearby. The Technical Assistants lived on the scheme and some had their own plots, at least one of which was somewhat better cultivated than his neighbours. It was evident not only that the staff were active, but that the Settlement Officer himself encouraged a more team approach to programs. In Mautuma inter-Departmental conflicts were often acute.

Nevertheless a mutual problem experienced by all Agriculture staff was their status within the Settlement Department. Their parent Ministry tended to neglect their interests, particularly in respect of participation in in-service training schemes, and they were out of the normal promotional ladder. At the time of the Survey they were in process of being transferred as employees of the Settlement Department instead of being merely on secondment but initially this was having a deleterious effect. Personal files were lost at headquarters and many went for months without pay as a result. Whilst not being directly pertinent to the effectiveness of extension programs, nevertheless these issues are symptomatic of a certain lack of positive direction in the agricultural policies of the Settlement Department and of the degree to which field level staff may have to depend on their own efforts.

Extension staff of the Departments of Health and Community Development were peripheral. Health Assistants sole present activity was examination of meat sold at butcheries on the scheme. At one time they said that there were programs for protection of water supplies and other health measures but such activities were no longer projected. In view particularly of the amount of sickness observed at Mautuma a more positive programme would have been advantageous and might well have a beneficial effect on the efficiency of the formers. The negative aspects of poor health and disease have already been commented. There were additionally dispensaries on both schemes, staffed by the Department of Health. These provided treatment but not preventive programs.

At Mautuma there were no other extension programs, except those provided at courses run by the Church financed Farmers Training Centre at Lugari, and these had a bias towards agriculture. In Melangine a Home Economist ran women's courses and clubs at various places, more particularly at schools. These did not seem to have any appreciable impact on farm profitability and thus on loan repayment. But were evidence of the all-round more progressive atmosphere of the Melangine Scheme.

The Cooperative

Various statements have been made in the course of this narrative to the inadequacies of the Cooperative Societies and further criticisms will be added. The Cooperatives on the Schemes are a focus for many extension efforts, and they are also a crucial cog in the loan administration machinery. Their importance not only in respect to loan repayment but also to the viability of the Schemes as new rural communities should not be underestimated. It would appear however that in their approach to the establishment and development of Cooperatives on the Schemes, the Department of Cooperatives has adopted too conservative an approach.

There is general cooperative 'education' for all members geared to persuading farmers of the benefits of cooperation, of pulling together in one direction instead of dividing their strength. The most common poster seen is of two goats tethered, at first pulling to reach grass on either side of them which neither can quite reach, and then of them agreeing to first eat one clump together and then the other. The second program of the Department is of providing courses for the Cooperative leadership and officials. Lastly their field staff exercise a supervisory function over all the Societies, especially in respect to financial transactions and records.

It would appear that whilst in general terms their educational programs benefit those to whom they are directed, their supervisory functions are poorly performed. It would also appear that there are some subjects which are not covered in their courses which could much improve cooperative efficiency, whilst greater guidance could be given to enable the Societies to offer improved services to the farmers. Some examples may be given, in addition to those mentioned in other places herein. Firstly the Scheme societies have responsibilities for such things as vehicles and tractors, dips and dryers. Whilst courses are sometimes given for say dip attendants, no courses are given in the overall supervision of such facilities to the Secretary Managers or Committee members who have to control the work of dip attendants and other specialist staff.

Secondly some basic office management appears to have been totally neglected. The Societies may lack even cupboards let alone filing systems. There is no systematic record keeping, even of financial records e.g. receipt books for services provided. Problems have also arisen due to various changes in presentation and maintenance of basic financial records over the years, so that there is no sequence for these things which may be followed. In view of problems of space and other facilities, some central Cooperative archive might be an answer, but firstly members need to be made aware of the importance of proper care of records.

Another area which has been neglected is that of actively seeking markets for new crops. The case has already been mentioned of the maize fiasco. Cooperatives tend to rely on marketing to Government Boards or other concerns, such as factories, which seek them out, rather than they taking a more active role in marketing members' produce. It is thus too often left to individual large farmers to benefit from the more exotic crops such as flowers.

Lastly, Cooperative officers seem to have neglected basic financial procedures in the management of Scheme Cooperative money. Whilst preparation of trial balances seemed a constant activity - in fact never finished! - there appeared no forward planning or attempt to balance expenditure with income, nor even as is commented elsewhere any effort to ensure that money in the bank covers cheques drawn. These are very serious defects to which attention must be paid.

Loan Administration

The reasons for the better rate of repayment in Melangine has been made evident in the foregoing account. Higher natural potential, with settlers more oriented towards taking advantage of these opportunities, assisted by more definite and effectively implemented agricultural and veterinary programs. The probable factors determining farmers' orientations needs to be discussed further, However before continuing with that subject it is pertinent to consider the factor of loan administration. Even though Melangine has a better record it is still far below optimum. There were also cases where farmers seem to have invested surplus income in other enterprises while still having appreciable amounts of loan arrears.

Originally it was intended that loan repayments be a first charge on income obtained from produce sold through the Cooperative Societies. This was calculated to be 50% of such income. In spite of the fact that receipts often proved to be much less than that projected, in some instances being nil, the percentage was left for some time unchanged. Later settlers intervened to instruct their Societies to deduct at lower rates, or omit deductions in some months. The Settlement Department condoned this and in fact do not have the power to enforce a particular rate, although they may exhort and threaten to achieve it.

To a certain extent settlers instructions in respect of the proportion of income to be deducted may have been made under genuine misapprehensions. It was found in discussion with Cooperative Committee Members on a number of Schemes that they were ignorant of the amount they should pay for each instalment, taking arrears into consideration. This was reinforced by similar findings from the interview data on the two samples. Many are anxious in fact to know what they owe with a view to completing payment if they should have money available. One man at Ol Kalou made a business charging 40/- a time to calculate what each settler owed.

The loan billings do not provide complete information on commitments. They indicate only total arrears, repayments received over the intervening period between bills, interest on arrears, instalments due and total outstanding arrears. They are sent 6-monthly. Apart from inadequacies of presentation already referred to, a major problem with the loan accounts is that payments may not be credited on the bills for up to a year after they have been deducted from settlers' incomes. This is due to delays in forwarding cheques by the Societies, and by the Cooperative Officer, and also to delays in handling them at Headquarters. Each Society draws its own cheques/^{which} are then taken to the Cooperative Officer assigned to the Scheme, who has to countersign them and forward them to Headquarters. He usually waits until those from all Schemes in his area have been received before he does so. Once received at Headquarters the cheques have to be cleared through the Bank before they are credited. Thus not only is the farmer unaware of the total due including not only the amount outstanding as a result of arrears and that which will become due over the whole loan amortization period, but is unable to easily check that all his payments are in fact credited. Furthermore the bills, in so far as they only show total arrears, most depressingly and incomprehensibly ^{to} the settler, show an increasing and not a decreasing amount due.

Following the urgent complaints of one settler at Mautuma that his loan deductions were not appearing on his bills, the loan accounts for all the sample were investigated. It was discovered that the cheques for several schemes for a period of two months had never been forwarded to Headquarters but still reposed in the desk drawer of the Cooperative Officer and had been there for so many months they were no longer valid. The Accounts Department of the Settlement Department provided the further information that it was not unusual for cheques to be dishonoured when they were received, since no one had ensured that money remained in the accounts to cover cheques drawn but not yet presented.

Each bill should show 6 credits. Those examined, covering the whole life of the Schemes almost never did. It was impossible to know without detailed investigations unfeasible for the individual settler, if this was because no deductions were made for some months, or if the amounts had not been forwarded, or after forwarding had not been credited for the reasons given above. Where deductions are made and not credited this amounts to fraud on the part of the Society and reflects very badly on the competence if not honesty not only of Society officials and employees but Cooperative Department staff. The accounts section personnel of the Settlement Department at headquarters

cannot also be exonerated at least from negligence in not adequately and strongly taking this matter up.

The role of the Cooperative Department is a key one, not only since it is the medium for loan instalment collection, but as has already been pointed out because the Societies administer or are involved in various extension programs of other Departments. Each Scheme has its own Society and this was a requirement of the original provisions for the schemes. Few Settlers had had experience of Cooperative movements before coming on to the Schemes. None of those in the samples had ever been a member of any Society before. Thus the guidance of Cooperative staff was doubly important.

Throughout the survey complaints were heard at all levels about the Societies, more particularly in Mautuma, but those at Melangine were not exempt. In fact in the latter case settlers boasted of buying cheap fertiliser which had been stolen from the Cooperative by some of its officials. Unfortunately the Cooperative Department seem to be unaware of the deficiencies or sufficiently complacent to take no action in the case of the surveyed schemes. Complaints centred on the corrupt practices of officials, committees, and Cooperative Department personnel. There were allegations of financial benefits passing to the latter in recognition of their support for particular office bearers. Cooperative Secretary/Managers, dependent for their positions on the same office bearers on the Committee, were also often pressured to give loans from cash held in the Society from such things as tractor hire. Sometimes payments made for use of such facilities never appeared in the Society's accounts and Committee Officials tended to view such things as their right to use free of charge. These issues under members' confidence. In relation to loan repayment it was evident that the degree of financial irresponsibility on the part of all concerned was such that much ^{more} stringent procedures and controls would appear necessary if Societies are to continue to be vehicles and intermediaries in loans to their members. They have certainly been a major factor in prevailing poor rates of repayment up to the present.

As has been said the Settlement Department does not have the power to enforce repayment at particular rates. It does however have the power to penalise a farmer. It goes without saying that none of the settlers still having outstanding loans would be readily considered for further ones, although it is evident that in some instances such assistance could assist settlers substantially. More important the SD has the ultimate right to evict a settler from his plot if he does not repay his loan and is incorrigible. This power however been of more theoretical than practical value. Since the inception of the schemes up to 1974 only 90 of the total of 47,000 settlers

have been prosecuted in this way and in almost every case final eviction was waived on higher authority.

Over the Survey period a campaign was started to try to reduce arrears and threatening letters were sent by Settlement Officers to all the settlers. This resulted in small amounts of direct payments being made, most usually in the region of 50/-, which given the amounts of arrears were purely nominal. In addition some settlers pay lump sums direct to the Settlement Department either as regular commitments from their salaries or when a particularly large harvest warrants this. They tend to have confidence that such payments will be credited to them. As has been said a few farmers would like to complete repayment of their loans but are discouraged by lack of information about the amount owing. Whereas this can be discovered through writing to the Accounts Department of the Settlement Department headquarters, it may be some time before a reply is received and since 50% of the settlers have never had any formal education while most others only reached standard 3 or 4 they find difficulty in dealing with such paper work.

A further factor discouraging the more affluent is that it is uncertain whether they will be given Title to their plots even if they do complete repayment,⁹ and the necessary preliminaries to this have only been completed for some schemes. Since the better off settlers have their eyes on improving themselves further, it is therefore often considered by them to be better to use money for other investments than repayment. Titles are commonly used where loans from commercial institutions are obtained and the major advantage in having such complete ownership of a plot is that it can be used as security. A few settlers were given final Title to their plots near Melangine during the Survey which was a great encouragement to others and again evidence of the greater progressiveness of that area. But no one at Mautuma aspired to such things, and no record was found on any issue of Titles in the area.

As is commonly the case the positive inducements to repayment are not even stated let alone stressed, and with loans for inputs are not even an element of the loan package.

9. It was noted that recently the President gave an undertaking that the issue of Titles would not be delayed (VOK News 28/5/79).

Characteristics of Better Repayers

We have considered in general terms the factors influencing levels of repayment from which it ^{has} been demonstrated that the major reason for poor rates of repayment is inadequate income in relation to domestic needs. Incomes have been shown to be low as a result of a complex of factors of which the most important are ineffective farm management and defective agronomic practices compounded by natural factors. The former in turn are dependent partly on the individual susceptibilities of the farmers but are in no way ameliorated by positive agricultural programs. Furthermore the system of loan administration favours default by incorporating neither negative nor positive inducements to repay, while inefficiencies amount in some cases to fraud and both undermine further settler confidence and help to sustain an actual resistance to repayment.

A stated objective of ^{this} study has been not only to pinpoint the reasons for good or bad rates of repayment but to attempt to draw a profile of the good and bad repayer. Findings in times respect are somewhat amorphous and may be ^{stated} briefly, before presenting some practical proposals for future rehabilitative action.

In respect to the personal characteristics of good repayers there is little to distinguish them in objective terms from those who had the worst repayment records. Using standard criteria of age, education and experience, family size, or present work situation there were no significant differences between the two groups. The best repayers were those with less the Shs. 1000/- of arrears of which 8 were in Melangine while only 3 come from the Mautuma sample, (reflecting the general scheme ^{differentials} discussed).

All of the best repayers are married with children and most have either alternative sources of income themselves or a relative living with them who has. All have at least two milk cows. Apart from this their only common characteristic is that, apart from one who has a well-paid off-scheme job, all have gross incomes from all sources of more than Shs. 3,000/- per year and those in Melangine all have more than Shs. 1,000/- gross income through the Cooperative a year.

Three out of the 11 are absentees with jobs elsewhere. Income from these jobs was not included in gross calculated incomes which was all from the farm or non-agricultural but on-scheme enterprises. 6 had education up to Form II but 5 were illiterate. Their ages ranged from 33 to 80, although in case of the elderly settler it was probable that much farm management devolved

on a son resident on the plot. Their work histories showed no common features ranging from carpenter and cook, to farm labourer. Of those in employment presently one was a carpenter, one a clerk and one held a senior administrative post in Government. In all of these respects they do not differ at all from others in the samples with poor repayment records.

Less tangibly, they all provided significant impressions of above average management capability on interview. All maintained better records. All were keen to discuss their future plans for their farms as well as to analyse their problems in the past. In particular their standard of livestock care was higher, and most were expanding their herds. This is not necessarily immediately apparent from the figures shown, however these are set out in Table 24 below.

Table 24:
Livestock Census and Management
Good Repayers

Plot	Number of Cattle	Number of Sheep	Feeds Purchased	Fodder Grown
MA 1	3	0	0	0
2	2	0	0	0
3	9	0	0	0
ME 1	10	7	Bran	Oats
2	8	11	Nil	Maize
3	6	7	Bran	Nil
4	13	2	Bran, Molasses	Oats
5	6	5	no. inf.	Nil
6	14	23	Bran, Molasses	Oats
7	8	8	Bran	Nil
8	8	0	no. inf.	Nil

In other words the potentially good loan repayer must have the capacity to so utilise his loan as to improve his income. If one looks by contrast to the poorest repayers they are not distinguished by any readily quantifiable criteria from the better repayers. Table 25 sets out this comparative information in relation to age, education, experience, family status and present employment. It may be seen that this group in none of these respects differs noticeably from the other. However their plots were relatively undeveloped and thus their farm incomes most usually low. Their most

conspicuous feature might be assumed from this to be some degree of apathy towards farming as an occupation, as well as lack of entrepreneurial ability an attribute which may possibly only be measured through psychological tests of a type not yet developed for this purpose.

Table 25.

Comparison Personal Characteristic's
Good/Poor Repayers*

	Age		Education		Household Size		Past Job Experience**	
	Good	Poor	Good	Poor	Good	Poor	Good	Poor
1	37	38	SVI	SVIII	6	10	Carpenter	Policeman
2	33	60	SIV	nil	3	3	ditto	Headman/Cook
3	40	45	SIII	nil	18	15	Forestry lab.	Sawyer
4	40	55	nil	nil	27	11	Farm lab.	Tractor Driver
5	43	73	nil	SII	21	11	Milkman/cook	Railway lab.
6	37	35	Technical	SIII	1	6	Water Dev. oft.	Farmer
7	50	60	nil	SI	9	8	Farm lab.	Farm lab.
	63	40	nil	SVII	12	7	Herdsman/Telephone	EAR/Buses
9	42	51	F2	nil	8	8	Milk Recorder	Farm lab.
10	80	46	SV	nil	4	11	Farm lab.	Farm lab.
11	60	49	nil	nil	5	12	Milkman	Milkman

This analysis leaves aside the question of the small minority who, while showing every evidence of capacity to repay, did not do so, but branched out into other activities. As has been said for such loan administration is the crucial factor.

Recommendations

The prescriptions for action to improve the loan repayment position are evident from the foregoing. They include:

(1) A complete overhaul of the Cooperative Societies, the components of which should be

(a) Improved financial management through more scrupulous and responsible guidance by Cooperative staff especially in respect to the proper forwarding of loan deductions and concern for proper banking practice.

(b) Greater involvement of cooperative members through educational programs designed for the illiterate and semi-literate, and provision for more general meetings and a system of documentation more accessible to the uneducated. Attention could be paid to literacy programs in conjunction with these things.

(c) Review and possible writing off of the AFC group loan commitments to facilitate the reintroduction of maize marketing by the Cooperatives.

(d) Attempts through a team approach (ideally suited to the Settlement administrative organisation) to improve the volume and range of produce being marketed since the key to cooperative success is profits and these are based primarily on commission on produce sold.

(e) Improved administration of other cooperative activities, especially of facilities such as tractors to ensure receipts for hire are credited to the Society and that officials are charged for work carried out for them.

(f) Borrowing by members from the Societies should be suspended until they are financially sound and more stringent enforcement of repayment instituted where loans have already been given or may in future be allowed again.

(2) A dynamic agricultural and veterinary program focussing on diversification of crops and livestock (particularly small animals and poultry), improved farm management, agronomy and animal husbandry. Particular topics may be chosen for a concentrated program for a limited period e.g. soil conservation, farm planning, vegetable growing, fodder crops. The Settlement Department should also not only officially recognise the existence of but actively encourage the keeping of small livestock such as sheep, and pigs and

provide the necessary advisory and supply services for the purpose. The example of Dundori in keeping farm inputs for sale to the settlers at the Settlement Office should be followed, attempting wherever possible to make available such supplies as near to the farmers as possible. Efforts should be made not only to introduce some novel crops but to organise their marketing through the Societies. Greater devolution of authority might be allowed to permit District level officers to develop such diversified programs more specifically tailored to particular local conditions. The Agricultural and Veterinary staff of the Department could also produce simple illustrated pamphlets on every aspect of farming. The only ones readily available appear to be expensive books which can only be purchased from shops in Nairobi. There are also some poorly printed handouts produced by the Agriculture Department some years back.

(3) Improved loan administration including:

- (a) Positive inducements to repay in the form of immediate issue of land titles to those completing payments and the development of further improvement loans for such title holders.
- (b) Selected application of punitive measures where feasible, including forcible sale of livestock, especially steers.
- (c) Elimination of the practice of deductions which are never credited.
- (d) Enforcement of a minimum rate of deduction on produce sold through the Societies after investigation of each farmer's loan position. Where possible the amount should be sufficient to cover and reduce loan arrears as well as to meet current principle plus interest. In other cases every effort should be made to assist settlers to increase their rate of repayment over time by specific farm improvement measures. In view of the ratio of staff to farmers a much more individual approach should be possible than would be the case in conventional farm areas.
- (e) Where all livestock were lost early after coming on to the scheme consideration may be given to writing off that part of the loan. Similar consideration may be given to reducing the original charge for land where it has subsequently been shown to be excessively bad, as is the case in a few instances.
- (f) Consideration should be given to changing the billing format to provide more information to individuals on the state of their loan accounts, particularly the total debts due. A code scheme for entries as is used by the East African Power and Lighting might also facilitate ease of comprehension: The key to the code being printed on each bill.