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AGRICULTURAL COLLECTIVE CO-OPERATION: A CASE STUDY OF THE SOCIO-ECONOMIC VIABILITY OF THE MAKONI DISTRICT UNION OF CO-OPERATIVES

PART I: THE SOCIO-ECONOMIC FEATURES OF THE COLLECTIVES

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This Consultancy Report, based on a study of the socio-economic features of 14 co-operatives which fall under the Makoni District Union, was prepared by ZIDS on behalf of the Organisation of Collective Co-operatives in Zimbabwe (OCCZIM). The views and opinions expressed in this report are those of the authors and should not be taken to represent those of ZIDS or any other organisation involved in any way in this study.

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PREFACE

This study on agricultural collectives is one instalment of part of the ZIDS research programme on the Agrarian Question dealing with Zimbabwe's reform programme since Independence.

Although it has been conducted as a consultancy project, for which ZIDS is grateful to HIVOS of Holland which provided the funding and to the Makoni District Union for its collaboration, it forms a critical element in the on-going research programme.

The study has also provided a useful platform for testing ideas on participatory research and engagements with popular organizations as opposed to policy research work directed mainly at the State bureaucracies and similar institutions. It is hoped that this will begin a process of useful research practice prevalent in the country.

A particularly useful institutional process in this study has been the active collaboration between ZIDS and various departments, especially at field level, and again with University of Zimbabwe scholars, which we hope will continue.

ACKNOWLEDGMENTS

The ZIDS research team would like to thank the various co-operatives of OCCZIM and the MDU specially for their committed collaboration in the study and for their confidence in us.

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CHAPTER ONE
INTRODUCTION TO STUDY

Background

It is the stated policy of the Government of Zimbabwe (GOZ), developed during the liberation struggle, to promote and organize for the development of collective co-operatives as a vehicle, among other forms of social economic organization of production, to achieve the Government's primary long-term objectives of socialist transformation. Since Independence the State, through its Ministry of Co-operatives (until 1986 only a Department of Co-operatives under the Ministry of Lands, Resettlement and Rural Development and again a department under the ministry in charge of community development), in collaboration with the Ministries of Community Development and Women's Affairs, Agriculture, Mines, Natural Resources and Tourism, Local Government and others, has mobilized a limited range of financial, manpower, technical and infrastructural resources towards the development of co-operatives. These efforts have been constrained, on the one hand, by the specific political and constitutional safeguards contained in the Lancaster House Constitution and on the other hand by the limited resources available in the Government's budgets from its existing revenue base, and the pressing short-term needs, such as overall educational reorganization, defence, and so on.

Co-operativization in Zimbabwe

According to the Department of Co-operatives, there are altogether 1 832 different types of registered co-operatives, and out of these 1 106 are functional. As shown in Table 1, most of these are wholesale and retail, while agricultural co-operatives comprise 20% of the total. The trend suggests that agricultural co-operatives are not the main area of co-operativization in Zimbabwe.

The establishment of co-operatives over time has been characterized by interesting historical features (see Table 2). Before 1960, a rather small number of co-operatives were established, until the heyday of the colonial community development projects (during the early UDI period) when a sizeable number were established.

During the intensive liberation war period, there was a decline in the rate of co-operative establishment.

At Independence, however, a phenomenal quantity leap in co-operative establishment unfolded with a peak in the 1982 to 1983 period, reflecting the socialist zeal, which petered out shortly thereafter both in terms of co-operative registration and co-operative functioning. As is self-evident, the rate of non-functional co-operatives has been higher in the post-independence period. Altogether 66% of the co-operatives are non-functional.

In overall terms, Mashonaland East has the highest proportion of co-operatives (26%), followed by Manicaland and the Midlands. This is accounted for by the wholesale and retail activities in the major towns there.

Table 1

DISTRIBUTION OF COOPERATIVES BY MAJOR DIVISION BY PROVINCE BY REGISTERED COOPERATIVES (REG) AND BY FUNCTIONING COOPERATIVES (FUN)

Major Division	Manicaland		Mashonaland Central		Mashonaland East		Mashonaland West		Masvingo	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
Agri, Fish, For	73	31	54	43	72	33	44	36	20	6
Mine & Quarry	1	0	3	2	10	2	31	30	1	0
Manufacturing	40	31	9	8	107	48	50	37	46	19
Construction	1	1	0	0	16	5	1	1	11	4
W.Sale & Retail	172	135	82	67	214	85	68	53	168	120
Transp & Storage	5	1	2	0	28	9	7	1	4	2
Real Est & Finance	1	0	6	0	30	15	6	2	3	0
Comm, Soc & Pers	3	1	4	4	15	7	3	3	0	0
Total	296	200	160	124	492	204	210	163	253	151

Table 1 (continued)

Major Division	Matabeleland North		Matabeleland South		Midlands		Zimbabwe	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
Agri, Fish, For	32	12	33	19	58	15	386	195
Mine & Quarry	2	2	0	0	4	2	52	38
Manufacturing	18	11	1	0	37	17	308	171
Construction	3	2	0	0	3	1	35	14
W.Sale & Retail	71	27	44	35	151	115	970	637
Transport& Storage	3	1	0	0	1	0	50	14
Real Est & Finance	7	5	1	1	9	2	63	25
Comm, Soc & Pers	2	2	0	0	1	1	28	18
Total	138	62	79	55	264	153	1892	1112

Table 2

DISTRIBUTION OF COOPERATIVES BY YEAR OF REGISTRATION BY NUMBER OF REGISTERED COOPERATIVES (REG) AND BY NUMBER OF FUNCTIONING COOPERATIVES (FUN)

Year	Manicaland		Mashonaland Central		Mashonaland East		Mashonaland West		Masvingo	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
1956	1	1	0	0	0	0	0	0	0	0
1957	1	1	0	0	2	2	1	1	0	0
1958	1	1	0	0	2	2	0	0	3	3
1959	1	1	0	0	0	0	0	0	0	0
1960	2	2	2	1	2	1	0	0	2	2
1961	2	2	1	1	0	0	0	0	6	6
1962	3	3	3	3	1	1	0	0	2	2
1963	1	1	2	2	0	0	1	1	3	3
1964	7	6	2	2	2	1	1	1	3	2
1965	8	7	5	4	3	1	5	4	10	8
1966	5	5	8	8	4	1	0	0	8	6
1967	2	2	2	2	1	1	1	1	3	0
1968	3	3	0	0	4	3	1	1	5	4
1969	0	0	0	0	4	0	0	0	5	4
1970	0	0	2	2	3	2	2	1	7	6
1971	2	2	1	0	2	1	1	0	0	0
1972	0	0	5	2	4	3	4	4	2	2
1973	0	0	0	0	3	3	1	1	1	1
1974	0	0	4	4	2	2	0	0	2	2
1975	6	5	10	10	1	1	0	0	9	5
1976	1	0	7	6	1	1	0	0	9	5

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Table 2 (Continued)

Year	Manicaland		Mashonaland Central		Mashonaland East		Mashonaland West		Masvingo	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	5	3	0	0	0	0	0	0
1979	0	0	1	1	0	0	0	0	0	0
1980	0	0	2	2	3	0	0	0	1	1
1981	5	4	4	2	21	7	4	3	6	5
1982	70	42	15	9	50	20	22	14	34	30
1983	100	49	36	24	148	37	33	14	78	24
1984	15	8	2	0	69	24	15	14	29	7
1985	29	28	13	12	54	26	47	43	9	9
1986	10	7	12	8	59	27	48	40	11	10
1987	10	9	13	13	30	20	9	7	3	3
1988	5	5	1	1	6	6	8	8	1	1
1989	6	6	2	2	11	11	5	5	0	0
Total	296	200	160	124	492	204	210	163	253	151

Table 2 (continued)

Year	Matabeleland North		Matabeleland South		Midlands		Zimbabwe	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
1956	0	0	0	0	0	0	1	1
1957	0	0	0	0	0	0	4	4
1958	0	0	0	0	0	0	6	6
1959	1	1	0	0	0	0	2	2
1960	0	0	0	0	1	1	9	7
1961	1	1	0	0	5	5	15	15
1962	0	0	0	0	4	4	13	13
1963	3	2	1	1	6	5	17	15
1964	2	2	0	0	13	12	30	26
1965	4	3	4	3	12	10	51	40
1966	2	2	2	2	7	6	36	30
1967	1	1	4	4	9	9	23	20
1968	0	0	4	4	4	3	21	18
1969	0	0	0	0	6	5	16	9
1970	0	0	2	1	6	6	22	18
1971	0	0	2	2	1	1	9	6
1972	1	0	0	0	2	2	18	13
1973	0	0	0	0	0	0	5	5
1974	2	2	0	0	1	1	11	11
1975	0	0	0	0	4	4	30	25
1976	0	0	0	0	1	1	19	13
1977	0	0	0	0	4	4	4	4

continued next page ..

Table 2 (continued

Year	Matabeleland North		Matabeleland South		Midlands		Zimbabwe	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
1978	0	0	0	0	0	0	5	3
1979	0	0	0	0	0	0	1	1
1980	0	0	0	0	0	0	6	3
1981	0	0	2	1	6	4	48	26
1982	24	10	13	9	18	13	246	147
1983	59	9	28	14	79	21	561	192
1984	16	9	3	1	32	13	182	76
1985	6	5	4	4	17	8	179	135
1986	4	3	2	2	20	9	166	106
1987	3	3	4	3	5	5	77	63
1988	6	6	1	1	0	0	28	28
1989	3	3	3	3	1	1	31	31
Total	138	62	79	55	264	153	1892	1112

In the agricultural sector and directly related activities the distribution of co-operatives by type of cooperative was skewed against collective cooperatives.

By far the largest group is the Agricultural Marketing and Supply (AMS) (registered 34%, functional 48%), which is followed by collective farming (registered 17%, functional 12%). The former are represented by the Central Association of Co-operative Unions (CACU) while the latter are represented by the Organization of Collective Co-operatives in Zimbabwe (OCCZIM). Out of the 136 functional co-operatives, about 60% fall under the Model B scheme of the resettlement programme.

It is evident from the table that the majority of its affiliated members are collective farming co-operatives of various types, including Model Bs and tractor co-operatives which account for about 30% of its membership.

This is followed by building, carpentry, industrial and other related trades which account for 18%, while consumer retailers and tailoring co-operatives each account for 16% of the total membership. The proportions of the other categories range from 0,5% to about 7% of total affiliated members.

In terms of the provincial distribution of the different categories of co-operatives, we note that collective farming co-operatives appear in all provinces although the frequency differs between provinces. For instance, 20% of them are in Mashonaland East whilst 6% are in Masvingo.

Consumer retailers, building, carpentry, industrial and related trades, as well as tailoring are found in all but one province. Here again there are wide variations in the distribution frequency between provinces.

Overall, when we look at the occurrence of different categories of co-operatives, province by province, we find that Masvingo ranks highest with all categories appearing and with a total of 115 affiliated co-operatives. The majority of them are in tailoring (26%), with consumer retailers and hawker vendors each accounting for 13%, and building, carpentry, industrial and related trades accounting for 9%.

Mashonaland East and Mashonaland Central rank second in terms of the diversity of categories although going by actual numbers Mashonaland East ranks highest with 184, 35% of them being consumer retail activities. In Manicaland, only three categories out of 13 appear with a total count of 74. About 64% of these are in collective farming.

Within Manicaland, the study area province, there are 286 registered co-operatives (204 functional), of which 70 (approximately 26%) are collective agricultural (11% being functional), and 118 registered AMS co-operatives (111 functional). Again, the trend shows a dominance of marketing over agricultural producer co-operatives.(see Table 3.)

Within Makoni District itself, there are a total of 75 registered co-operatives (51 functional), the majority of which are in the wholesale trade (41%). This study focuses on 14 co-operatives situated in Makoni, 12 of them agricultural collectives, one commercial and the other industrial.

Table 3

DISTRIBUTION OF COOPERATIVES BY MAJOR DIVISION IN MAKONI DISTRICT: REGISTERED COOPERATIVES (REG) AND FUNCTIONING COOPERATIVES (FUN)

MAJOR DIVISION	BUHERA		CHIMANI-MANI		CHIPINGE		MAKONI		MUTARE		MUTASA		NYANGA		MANICA-LAND	
	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun	Reg	Fun
Agri, Fish, For	3	0	15	9	7	0	24	11	19	8	0	0	5	3	73	31
Mine & Quarry	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Manufacturing	5	3	0	0	0	0	11	10	21	15	0	0	3	3	40	31
Construction	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
W.Sale & Retail	14	9	11	11	12	9	38	30	72	57	8	7	17	12	172	135
Transp. & Storage	0	0	0	0	1	0	0	0	4	1	0	0	0	0	5	1
Real Est & Finan	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Comm, Soc & Pers	0	0	0	0	0	0	1	1	2	0	0	0	0	0	3	1
TOTAL	23	12	26	20	21	10	74	52	119	81	8	7	25	18	296	200

According to the Ministry of Co-operatives, there were 308 registered collectives and 136 (44%) of these were functioning as of December 1987. About 21% of the functioning co-operatives were situated in Manicaland Province, while Mashonaland East and Mashonaland West had 17% and 15% respectively. The other proportions were as follows: 14% (Mashonaland Central), 13% (Midlands), 11% (Matabeleland South), 7% (Matabeleland North) and 2% (Masvingo).

On the other hand, information obtained from the Department of Rural Development (DERUDE) indicated that there were only 67 Model B co-operatives in Zimbabwe as of August 1987 distributed as follows: 25% in Manicaland, 22% (Mashonaland Central), 18% (Midlands), 15% (Mashonaland West), 13% (Mashonaland East), 3% (Masvingo) and 2% (Matabeleland South), while Matabeleland North had none.

Information obtained from DERUDE also indicates that almost 176 000 hectares had been set aside or acquired by Government for Model B schemes as of August 1987. Again, most of this land was in Manicaland Province, accounting for 28% of total land, while the Midlands, Mashonaland Central and Mashonaland West had 19%, 18% and 15% respectively. The other provinces share the remaining 20%. Just over three-quarters of the total land set aside for Model B co-operatives was actually settled and this amounted to almost 136 000 ha. Manicaland has the largest share with 29% followed by the Midlands with 24%. The proportions for the other provinces, excluding Matabeleland North, range from 2% for Matabeleland South to 17% for Mashonaland Central.

DERUDE also provides details on the number of collectives situated in the different agro-ecological regions. Nearly 60% of the 67 collectives are in Natural Region (NR) II, and those in NR III account for 37%. NR I has 4%, while NR IV has 3%. There are no collectives in NR V.

The Government has not yet fully disbursed the establishment grants of all the co-operatives. These amounts include a total of Z$9 606 363 as work-in-progress (grants outstanding) and a total of Z$4 023 880 in new projects. As for the latter, not a single item has yet been disbursed. Our focus will be on the work-in-progress.

An analysis of the work-in-progress reveals that most of the grants outstanding (50%) are for the purchase of tractors and tractor implements at an average cost of about $80 000. However, for about 55 co-operatives, out of the 70 collectives, this item has not yet been disbursed at all. About 10 collectives have at least received some components of this grant whilst the rest (approximately five) have actually received the full amount. It must perhaps be pointed out that the grant for the purchase of tractors and their implements constitutes the largest single item (more than 50%) of the total grants.

Other important grants not yet fully disbursed, if at all, are vehicle, housing and buildings, transport and land preparation grants. Almost all the vehicle grants (more than 70%) of an average value of $18 379 have not yet been disbursed at all.

We also observe that significant disbursements have been made in crop packs and hand tools and protective clothing grants. It is, however, disheartening to note that, four-five years after the establishment of some collectives, they still have not yet received their crop packs.

There are numerous instances whereby items which are normally complementary, that is, going hand in hand, and being mutually inclusive, have not been disbursed jointly or at the same time. For instance, grants for crop packs and those for land preparation have not been disbursed simultaneously in certain instances or one of them has not been disbursed at all. Another case in point has been the tractor and its implements.

We also note that most of the disbursements have been in areas which have little overall impact in the production sphere of the collectives in the absence of basic farm machinery. Furthermore, the fragmented way in which the disbursements are being made will critically impair or delay the take-off of these enterprises. All necessary items should be available almost at the same time if they are going to contribute meaningfully to the development of the collectives. As it is, it is sad to note that the assistance so far provided has had minimal impact on most of the collectives.

Finally, in contrast, the amount of resources so far allocated to Model A co-operatives has been phenomenal, and this seems to suggest that relatively more attention has been given to the former.

Assistance to the Model B co-operatives by the Agricultural Finance Corporation (AFC) has been relatively insignificant compared to that given to the Model A co-operatives. Furthermore, such assistance has been hampered by high default rates.

It is very difficult to arrive at a reliable estimate of how much the non-governmental organisations (NGOs) have contributed both financially and materially in the development of Model B collectives. However, it is noted that they have played quite a significant role in trying to fill the gap resulting from the delay in the disbursement of Government grants.

Thus there has been a considerable effort in co-operativization, although as shown by all the above data, agricultural collectives constitute a rather small component of the overall co-operative movement. When looking at the agricultural sector in general, therefore, collectives have access to a very small proportion of the national arable land which is owned by the State, although in general per capita terms collective members have access to more land than the average Communal Area landholding, while they have more or less the same land as the Model A settlers.

Although the figures above indicate rapid levels of co-operative formation, given that less than 100 co-operatives existed before Independence, the number of people involved is low. Less than 10 000 families belong to co-operatives as compared with the over 800000 households that exist in Zimbabwe.

Meanwhile, the technical and administrative budgets of the co-operative department or ministry have never exceeded $6 million per annum - an amount intended to cater for all types of co-operatives. Essentially, even if we added the little amounts of monies provided to sectoral ministries for co-operatives (for example, the Ministry of Mines, Women's Affairs and Community and Co-operative Development, AFC, Agritex, Water Resources and Development and so on), the total State resources allocated to co-operative development in general, and collectives in particular, constitute a small proportion of the National Budget. It has been suggested elsewhere (Moyo, 1988) that this situation was exacerbated by the unwillingness of bilateral donors to support co-operatives. It seems that non-governmental organizations were thus left to fill the resource gap in agricultural collective co-operatives.

The development of collective co-operatives has unfortunately not made a great impact on Zimbabwe's political economy. The level of resources needed to mobilize collectives, so that they have a sound basis for economic viability and eventually play a pivotal role in the economy, is great. This is especially true of the agricultural types which have so far received the greatest emphasis from the Government through land allocations and "establishment grants", even though these have been mostly financed from non-governmental sources.

Indeed, collective co-operatives have received a substantial amount of their operating finance from foreign donor non-governmental organizations due to the shortage of Government funds and the fact that the co-operatives were not able to procure such funds from local financial institutions.

NGOs have been involved in providing basic training and technical assistance at the co-operative level, and in the broader policy planning development of the Organization of Collective Co-operatives in Zimbabwe (OCCZIM).

In the course of the development of collectivization, there has been a rather distorted and unsystematized evolution of a scientific approach to planning collectivization among the State, NGOs and collective institutions in Zimbabwe. This has tended to impede the process of both policy formulation at the national level and that of practically assisting collective co-operatives. This study will elaborate later on some of the resultant problems in this connection.

It is in this context that ZIDS undertook, on contract, to study agricultural collective co-operatives as part of a broader project of technical co-operation and policy advice to the collectives, and for the further development of national policy initiatives on co-operativization.

This particular project was to focus on 14 agricultural collective co-operatives comprising the Makoni District Union (MDU).

Terms of Reference

After initial discussion involving OCCZIM, the MDU and HIVOS, the following broad issues were raised as critical components of the study terms of reference:

- The study programme must give priority to ensuring the profitability of the District Union and its members, taking into account the costs of external and social inputs. The main objective of the District Union must be accumulation.
- The aim should be the maximization of available resources (land, manpower, buildings, etc.) from within the District Union and the resources available nationally.
- The role of inputs from HIVOS should be identified to aid in easing bottlenecks to growth.
- Importance must be given to ensuring the stable employment of members and minimizing the use of external labour.
- Some value-added activities must be identified which will involve initial light capital processing and marketing of the crops to ensure maximum use of labour over the agricultural season.

- The study should take the following factors into account:
  - access to finance (credit)
  - marketing facilities
  - provision of technical assistance
  - basic literacy and numeracy
  - skills and technical education
  - development in self-management skills organization; and
  - education and housing services, maximizing participation and control of members (paraprofessionals, members of co-operatives elected by co-operatives).
- Also there is need to look at designs for management of the MDU project in maximizing not only member participation in decision-making, but also control the efficiency as regards the operations which are being carried out.
- The aim of HIVOS is not to finance co-operatives as such, but to facilitate the consolidation of self-managed unions. This implies prioritizing support for the factors that would otherwise not be available.

General Objectives

In this context, therefore, the general objectives and rationale of the study were to:

- Develop a scientific understanding of the problems and process of establishing collective co-operatives, in keeping with Government-stated policy objectives;
- Develop policy inputs and guidelines for the benefit of various Government ministries and organizations engaged in collective co-operative development;
- Provide substantive research support to non-governmental organizations working with OCCZIM within the framework of Government policy;
- Assist OCCZIM in developing an effective machinery for the promotion of collective co-operative development;
- Assist the MDU in developing its organizational base and planning and working capacity to promote the development of its constituent members;
- Assist the individual co-operatives within the MDU to develop towards economic self-reliance and viability, as well as to develop their socio-political organizations and well-being.

In order to concretely operationalize the research, the following specific study objectives were developed:

Specific Objectives

As the overall study objective centred around assessment of the utilization of resources including land, labour, inputs, machinery, equipment, finance, services, etc, in the production process, and general social services, it was necessary to focus initially on an evaluation of the resources, given the absence of previous research on the material and

production aids of the MDU collective co-operatives. This entailed building up a specific inventory of the following co-operative resources:

- land resources
- human/demographic and skills resources
- farm machinery and equipment resources
- buildings, assets and utilities resources
- labour and manpower resources
- water resources
- input resources
- financial resources.

It was also necessary to articulate the production and management structures of each collective co-operative, and to identify, define and explain various production and social spheres of activity on each collective and expose the allocation of resources among such activities.

As far as resource utilization and efficiency were concerned, the following aspects were to be investigated:

- A study was made of the application of labour to various production activities for the different crops grown, per hectare, by the co-operatives. This was used to derive the labour utilization per crop, labour days per labour category and total co-operative labour utilization. The data was also used to derive labour cycles in order to work out labour distribution and bottlenecks as well as shortages, so that the overall production process could be analyzed paying attention to technological and labour requirements. The efficiency of labour utilization for different tasks was also investigated.
- The nature of inputs utilization per crop for each co-operative was investigated, focusing on varieties of seed and quantities per hectare. Rates of input application per hectare were to be used to assess the efficiency of input utilization. Costs of input utilization per crop and per hectare were also derived.
- The nature and efficiency of utilization per hectare, in terms of tasks performed, time of machinery application per task and costs of machinery utilization per crop and per task were also investigated. This information was assessed in relation to the use of other material inputs in production.
- The study also investigated yields per crop per hectare for each co-operative and used this information to derive revenue per hectare and compare gross-margins for the different crops on each co-operative. This data was used to relate the overall production costs to crop income as a tool for planning the enterprise choice and potential.
- The study recognized that planning on co-operatives differed (and had to differ) according to the type of enterprise (be they peasant or capitalist commercial farms) because co-operatives deal with (or have to deal with) labour as a fixed cost: the number of registered co-operative members at a given time of the crop planning process is fixed, representing fixed full-time labour available to the

enterprise, at a cost which can be taken as the going labour market rate. Assuming that full employment is desirable, the study calculated the rate of under-utilization of labour on co-operatives. This, however, always has to be related to mechanization, other inputs utilization, labour bottleneck identification and cropping programmes.

- A major component would be to identify and investigate labour payments processes, co-operative incomes in terms of "wages", and subsistence needs provision and services, as well as the problems that relate thereto.
- To investigate the organization and operations of the MDU, focusing on services provided to co-operatives. The ploughing and transport services provided by the MDU were highlighted, as were the problems of payment by co-operatives for such services.
- Services provided by Government and NGOs to co-operatives were also to be investigated, with much attention paid to Government establishment grants, AFC loans, donations of inputs and other monies, such as "living allowances", by donors.
- The overall aim of the study was to investigate the viability of the agricultural co-operatives in the MDU and recommend ways and means of improving their capacity for self-reliance in the short term and their profitability in the long term.

Report Organization and Documentation

The MDU study report is in two parts, the first dealing with the socio-economic characteristics of the co-operatives and the second dealing with the MDU management training and overall recommendations.

This chapter of Part I introduces the overall ZIDS-OCCZIM MDU study, through a review of the objectives.

Chapter Two which follows gives a detailed account and explanation of the methodology followed by the research team. Chapter Three presents the study area and introduces the co-operatives in some detail, while Chapter Four deals with the socio-demography and resources of the co-operatives.

Chapter Five discusses the production and resource utilization of the MDU. In Chapter Six the economic viability of the collectives is explored, and Chapter Seven discusses non-agricultural projects and social services in the co-operatives. The management of the collectives is examined in Chapter Eight, while Chapter Nine summarizes the main findings pertaining to the co-operatives' socio-economic and management features. Concluding remarks are then made.

In Part II the report deals with the detailed findings on the administration, finances and organization of the MDU, an assessment of these and recommendations for the MDU reorganization. The MDU's training needs are then discussed together with recommended training programmes. Part II concludes with a summary of the overall study recommendations.

This report is augmented by a number of background/supporting documents which provide details on a range of issues discussed here.

These documents include:

- Detailed comprehensive reports on each collective co-operative in the MDU,

1986.

- A detailed report on Makoni District, 1986.
- An evaluation of the functioning of OCCZIM's headquarters, 1985.
- A survey of pest problems on the collective co-operatives in the MDU, held in Tanhi, December 1986.
- Individual Co-operative Seminar reports discussing production and organizational processes, problems and needs, 1987.
- The Transport Feasibility Study, 1988.
- The MDU Warehouse Marketing Study, 1988.
- The OCCZIM Five-Year Development Plan, 1987.
- Raw data files on the individual co-operatives, 1986.
- Draft collective co-operative Model Bye-Laws.
- Draft MDU Bye-Laws.

CHAPTER TWO
STUDY METHODOLOGY

Overall Approach

Research consultancy work in Zimbabwe has produced a variety of methodologies and critical examination is necessary to determine the appropriateness of these methodologies.

It is important, however, to point out that the research team undertook this study with a direct interest in promoting policy-making and State practices aimed at the establishment of a successful collective co-operative movement. It is our understanding that the growth and development of capabilities of popular organizations, such as OCCZIM, is crucial in the transformation of objectives of the State, and that therefore the research practice required has to involve building up such organizations, according to their level of resources and skills.

We adopted a flexible and empathetic approach which entailed continuous learning in our dealings with the MDU as this was the only way to get involved in resolving their real problems, and thus making a meaningful contribution to their struggles.

Some of the issues which determined the specific study approaches need to be discussed in a little more detail as follows.

It became clear from the outset that, given the undeveloped level of organization, records and skills on the co-operatives, the research work had to extend well beyond the practice of providing written verbal advice on what needed to be done by the MDU, into more active participation during the research in identifying problems and actually taking part, as far as was feasible, in resolving them with the co-operators. While the literature abounds with various definitions and descriptions of practices of methodologies concerning "applied research", "participatory research", and "policy-oriented research", the ZIDS team was simply guided, at the expense of long working hours and an extended study period, to provide as much practical assistance to the MDU as possible, in the field or at the ZIDS office. Even as we report on our study at this point, it is difficult, because of the approach we took, to separate old practices from new ways which were adopted during the study as a result of the nature of collaboration.

For the purpose of elucidating the research methodology, however, it is crucial for us to first outline some of the more specific advisory and "active participatory" tasks which were undertaken during the research. These will also provide some elementary guidelines that could be used for developing this methodology in follow-up and other work. They included:

- To assist the co-operators by working on their own records and by helping them develop a keen awareness of the significance of information and the manner in which to compile it.
- To direct the co-operators as to how to document, store and utilize this information for planning, work organization, accountability, evaluation and monitoring progress, and as a weapon for lobbying.

- To assist each co-operative to produce an overall "balance sheet" of activities, work, finances and returns for the purpose of communicating to ordinary members in the general meetings and information media, and in order to improve on efficiency and democratic practices.
- To assist each co-operative to develop a basis for identifying and specifying its goals, resource needs, service needs, current capabilities and constraints, and to develop solutions to their problems.
- To more specifically develop, through an interactive process and open discussions, particular planning activities related to: financial resources (including crop budgeting and applications for credit), inputs procurement and management, marketing analysis and servicing, and production mix determination.
- To solicit extension services from Government (including linking up co-operatives with various Government departments such as Research and Specialist Services and Agritex)
- To help with manpower development (through training, organization and discussions on needs).
- To organize for constitutional and legal re-arrangements to suit the changing needs of the co-operatives and the MDU.
- To advise on developing co-operative planning, and management structures and control systems.
- To train specific OCCZIM staff in the organizing of departments, on research skills and data organization.
- To develop productive relations between co-operatives, Government and NGOs, through active identification of constraints to such relationships and creating awareness on both sides of the needs and problems requiring collaborative resolutions.
- To evaluate specific needs of the MDU such as the establishment of its headquarters, its machinery pool development, its marketing and so on.

Specific Research Methods Utilized

A variety of research methods were utilized in the study. Most of the work over and beyond research data collection entailed attending various meetings and functions of the MDU and individual co-operatives, meeting Government and NGO officials with and on behalf of the co-operators and the MDU executive, and participating in national policy forums organized by the State, NGOs and OCCZIM. While such activity led to practical advice and assistance on a variety of tasks, the study team in turn collected a wealth of information, details and insights into the actual workings of co-operatives and the collective co-operative movement, as well as on the support structures of the State and NGOs. The aim here was to assess the environment within which co-operatives operate. Other research methods utilized at various stages throughout the study included:

- A review of the co-operative bye-laws and the MDU constitution, plans, minutes, existing and new records and cropping budgets, co-operative reports and minutes.
- A review of the literature on collective co-operatives and other forms of co-operativization in Zimbabwe.
- An analysis of secondary data on Makoni District from various Government publications, Department of Co-operatives information, the resettlement programme monitoring data and the Agritex plans for Model B resettlement schemes in Makoni District.
- Guideline observations on the collective co-operatives and informal interviews with ordinary co-operative members.
- Informal but structured interviews with the MDU Executive Committee members.
- Informal interviews with OCCZIM Headquarters staff and field officers.
- Pilot group interviews (brainstorming workshops) held at Tanhi Collective and based on a ZIDS presentation to 45 co-operators from all the MDU co-operatives, on the study, design, objectives, data requirements and general issues of concern to the co-operators.
- A pilot case study of Zingondi and Tanhi collective co-operatives, which examined in detail the structure of these co-operatives, their modes of production, the relevance and applicability of pre-designed questionnaires and data sheets, existing records, an identification of suitable types of key informants on collectives, and the intricacies of interview methods and types of questions relevant for the study. The results of this pilot study were later discussed with the MDU Executive Committee members.
- Structured questionnaire and data sheet completion interviews on each collective co-operative with the assistance of pre-trained field interview research assistants, Agritex extension officers and MDU and OCCZIM Headquarters officials. The interviews were backed up by thorough field supervision by the research team and numerous follow-up trips for data verification and gap-filling.
- Unstructured interviews with officials in the Department of Community Development (Decode), Agritex, Local Government and various NGO, and "key" informants in Rusape and Harare.
- The Tanhi evaluation workshop, 1986.
- The individual co-operative evaluation and needs identification workshops, 1987.
- The Mukute MDU planning workshop, 1987.
- Transport feasibility survey, 1988.
- Warehouse marketing survey, 1988.

This combination of specific research methods was used over a two-year period as detailed below:

Phases of Study

The study was organized into five phases beginning in 1985 as follows:

Phase I: October-December 1985

The first phase entailed discussions concerning the study objectives, programme and terms of reference between ZIDS, OCCZIM Headquarters and OCCZIM-MDU. This was followed by a review and analysis of background information on Makoni District, and the MDU, and informal interviews with Government, NGOs and MDU Executive Committee members, aimed at assessing the study context in the field. This was backed up by the literature reviews and secondary data analysis carried out in Harare and Rusape. Visits to familiarize the research team with agricultural collective co-operatives were also carried out during this period. The aim here was essentially to develop the conceptual framework for the study.

Phase II: January-March 1986

This entailed the revision and elaborate specification of the study objectives, preparation of research materials, questionnaires, the study programme development, training of research assistants and developing links with Agritex and OCCZIM field staff. The revised study objectives were then discussed with the MDU Executive Committee members and a district level collective co-operative meeting was organized at Tanhi.

The pilot study and questionnaire testing were also conducted, culminating in the development of appropriate procedures and research tools.

Phase III: March-September 1986

This period entailed the administration of the formal structured field interviews, data processing, data verification and follow-up information gap-filling. Initial analysis of findings was conducted and discussed in progress reports with the MDU and HIVOS. The period also involved extensive advisory work with the MDU, OCCZIM Headquarters and NGOs, and participation in three national seminars on co-operatives in Zimbabwe.

Phase IV: October-December 1986

During this phase, study findings were presented to the MDU Executive Committee and general meetings, to HIVOS, and then to a seminar organized at Tanhi in December. Thorough discussions led to the identification, through resolutions tabled at this seminar and then adopted in January, of the priorities, problems and needs of the MDU which were used in revising the study findings and conclusions.

Phase V: January-April 1987

Final report preparations for each collective co-operative were carried out during this period, together with the planning of research follow-ups.

Phase VI: May-September 1987

This period saw the organization of and participation in seminars on individual collective co-operatives to disseminate and discuss the study findings in greater detail. Reports on these seminars were prepared, distributed and individually discussed. Various policy dialogue initiatives with different ministries and NGOs were pursued with the expectation that a national seminar on agricultural collective co-operatives could be held at the end of the study. There was also the organization, implementation and documentation of the Mukute Planning Seminar. Finally, the progress of the study was reviewed.

Phase VII: October 1987-March 1988

This period was devoted to:

- The organization and implementation of the in-house MDU management evaluation, training and establishment of new management practices and procedures, with Mr Matsvai.
- The warehouse marketing survey and write-up.
- The transport feasibility survey.
- The final MDU report write-up.
- New projects formulation.

Having outlined the broad research approach and programme, it is necessary to review briefly the research design and data collection process on production, management and other aspects on the individual collective co-operatives.

Data Collection on Individual Co-operatives

As indicated in the earlier sections, there has been very little work done on agricultural collective co-operatives in Zimbabwe, particularly on the material production and socio-political activities which could be used to guide a research endeavour such as this one. Moreover, the nature of record-keeping on collective co-operatives as well as in Government and NGO donor offices was so poor that basic data collection activities and routines to ensure validity and reliability had to be undertaken.

In the following three sub-sections, we discuss the data needs and the approach taken to assess co-operative resource utilization and production, management and social aspects.

Resource Utilization

To suit the data collection process, each co-operative was broken down into work-activity stations, from the Executive Committee member station to, on the one hand, a variety of physical production stations (depending on the given co-operative's situation which had to be pre-assessed on the ground before any data collection took place) and, on the other hand, the social consumption work-activity stations.

The work done on each station was observed. This work (whose relationship to other stations was noted) was measured in terms of manpower (numbers and skills) engaged on that station, and hours of work per month carried out on that station on different types of work (whether manual, skilled and/or managerial planning activities). The labour time in terms of person-days and time periods in the year for each station were thus identified and recorded as components to be used in building up the labour budget of the entire co-operative. This labour was then later costed (according to market rates of agricultural labour) to get the overall labour costs of the co-operative.

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The stations thus ranged in type from a variety of stations for the production of the given number of specific crops on each co-operative (which was broken down into sub-stations representing different fields allocated to the same crop to ensure identification of work and resources applied to a given crop and for verification purposes), to the co-operative feeding unit (cooking, fuel collection and maintenance), to specific projects such as welding and carpentry, and to health and education work-activity units.

The labour data from the different stations could thus be used to describe and analyse the distributions of labour in terms of time, costs and skills, according to different types of activities and levels of work. It is this data which was used to determine the relative effectiveness of labour utilization and its comparative complementaries or contradictions with other inputs utilization on the co-operative, as well as its comparison to farming "norms" in Zimbabwe.

Each station was also used to collect information on the variety of material inputs, such as seeds, agro-chemicals, machinery and equipment, fuels and miscellaneous materials, utilized on the given co-operatives. These detailed data were measured in terms of physical quantities, rates of application and financial costs.

The above resource data were used to compile the collective co-operative "balance sheets" referred to earlier, which it is hoped will form part of the basic planning tools on the co-operatives. Separate accompanying reports on individual co-operatives provide more details on these "balance sheets".

Apart from this, the data were also used to calculate returns to production (gross-margins in particular) and overall statements of losses or gains in each co-operative, as detailed in the accompanying reports. The data were also collected at this level of disaggregation in order that specific analysis of resource-use efficiency (such as per hectare, per person, per dollar and per time-unit) could be carried out for various planning purposes, and to encourage inter-co-operative comparisons of resources used and their efficiencies.

The most difficult and elusive data to acquire, however, pertained to actual yields and losses of output in the field and in storage. This had to be painstakingly built up from various field visits, as it was critical in determining overall co-operative gains or losses.

Management

This area proved to be the most problematic although it was facilitated by a compilation of comprehensive resource inventory (physical and human) on each co-operative, and by the resource utilization data collected from the various work-activity stations as defined above. Besides, the concrete management process was not easily articulated by co-operators, who had blended management models provided them by various organizations with concrete realities. Since the information was determined by existing practices and because it treated current and sensitive "political" issues it was difficult to obtain.

A main element of this exercise was to define the existing management structure on each co-operative, a process which was guided by the identification of work-activity stations. The problem here was that often the co-operators rushed to provide the research team with an outline of management structures which had been recommended to them either by Government officials or donors, and not the actual structure observed and practised on the co-operative. Apart from the problem that co-operators tried to provide data seen to be politic, there were also difficulties as co-operatives varied so much as regards what would be referred to as management activities by co-operators and their executive committees, what was expected of executive committees by members, and what the research team observed in terms of work, organization and supervision.

As a result, the implementation of existing bye-laws and democratic practices, in terms of co-operative meetings and information dissemination, also had to be closely scrutinized through observation, and formal and informal interviews, in order to arrive at an understanding of the exact management practices and structures. Problems of data gathering were, moreover, compounded by the annual turnover of personalities serving on the Executive Committee, so that it was always possible that the information given on current management structures, processes and procedures was unreliable. This was not surprising given the short life of agricultural collective co-operative activity in Zimbabwe. Information gathering, therefore, depended on a combination of subtle observation, discussions and interviews.

Most problematic, however, was to identify the content and meaning of the management aspect of the collective co-operative, particularly with regard to issues such as the organization and division of labour, labour supervision, planning production, marketing and distribution of outputs (in cash or kind), authority and responsibilities definition, household autonomy versus collective responsibility in work and resource allocation, and the general organization of dealings with external organizations. Interviews and observations on the co-operatives with ordinary members and Executive Committee members were used to understand these aspects, which were then more thoroughly discussed at group meetings and seminars.

The social relationships developed between the ZIDS team and the co-operatives, being based on mutual trust and concern for promoting the collective movement, were critical in determining the level of access to information and insights into the management aspects dealt with by the study. Frequently, the timing of interviews and discussions on certain issues had to be carefully organized and planned. Of particular importance in this exercise, however, was the seminar and group discussions approach used throughout the study. Once an open frank platform was established through democratic participation in the discussion of issues, it was possible - although time-consuming - to press for information on a range of otherwise sensitive issues. A seminar organized by OCCZIM and HIVOS at Rujeko Co-operative during the major data collection period was also to be useful in opening up discussions on a variety of organizational issues reported here.

Social Details

Apart from collecting material on the direct agricultural co-operative work, the team distributed special questionnaires to be filled in at the individual co-operative member level where possible. These were on the socio-demographic and educational details of the individual members in collective co-operatives and were cross-checked with Executive Committee members. In a few cases it was also possible to get information on private household work activities (such as private plots) and consumption. On the whole, however, household member incomes and consumption of food and clothing were difficult to obtain and, therefore, had to be pieced together from fragments of information gathered during the study period. In the end the information on current training and schooling, housing, collective feeding and recreation, where these occurred, was used to analyse only the level of social services in the co-operatives.

The findings from the various exercises discussed above are presented in the rest of Part I and Part II. Before that we discuss the study area in the following chapter.

CHAPTER THREE

STUDY AREA

Location

Makoni is one of the eight districts of Manicaland Province. The district generally lies to the east of Zimbabwe and to the south-east of Harare. Rusape, which is the district administrative centre, lies 177 km along the Harare-Mutare highway whilst Mutare, the provincial capital, is 94 km to the south-east.

The districts is approximately 3 017 km^2 in area. It borders with Mutoko to the north, Murewa (north-west), Macheke (west), Buhera (south), Mutare (south-east) and Nyanga to the north-east. It has six communal areas, six resettlement schemes (Model A and Model B co-operatives) and about 155 commercial farms.

Agro-Ecological Zone

The district lies mostly in Natural Regions IIb, III and IV. The central region of the district mainly lies in IIb which is suited for intensive farming systems based on crops and/or livestock production, and this is where the majority of the co-operatives are situated. The northern part of Makoni District lies in Natural Regions IIb and III, while the southern area lies in Natural Regions IIb, III and IV.

Soils

The soils belong mainly to the siallistic, fersiallitic and orthoferallitic groups and are derived mostly from massive granites and sandstones.

Vegetation

The savannah type of natural vegetation predominates in the whole of the Makoni District. The common tree species are *Julbernardia Globiflora* (Mnondo), *Brachystegia speciformis* (Msasa), *Uapaca Kirkana* (Muhobohobo), *Acacaia Woodii* and *Brachystegia Tamarindoides, Vangueria infausta* (Munzvirwa), *Strychnos Cocculoides* (Mutamba) and *Frythrina Abyssinica* (Mutiti) in the central and southern regions of the district; and *Terminus Sericae, Acacia Camplyocantha, Coleosperum* (Mopani), *Adansonia Digitale* and *Brachystegia Bochimini* (Mfuti) in the northern part of the district.

The common grasses include the following species: *Hypaurthenia,* which is found in all areas of the district but mainly in the south; *Filipendula, Setaria spp, Trachypogon spp, Eragrostic Digitaria ssp, Pancicum ssp, Adopogon ssp, Heteropogen* and *Sporobolus ssp* species which cover the central areas. In the marginally wet areas *and vleis are Artistida, Macilenta, Monocycymbim Ceresiforma and Laudetia Simplex.* The associated grass species in the north are *Eragrostis* and *Chloris gayana.*

Climate

The mean annual rainfall ranges between 750-900 mm, whilst the mean annual temperature varies from 17,5-20 degrees Celsius.

Altitude

The altitude of Makoni District lies between 900-1 700 metres above sea-level. The central area of the district, which is dominated by a plateau, lies at 1 200-1 7000 metres above sea-level in many areas in the northern and southern regions of the district.

Drainage

The area is generally well drained with Macheke, Rusape, Nyazura, Nyatanda, Mwarazi, Chinyika and Nyanganzi as the major rivers.

Population

The total population of the district is approximately 225 287. The majority of this population is concentrated in the Communal Areas and resettlement schemes (Models A and B) whilst only 3% of the population is found in the small and large-scale commercial farming areas.

Land Distribution

Makoni District is approximately 3 017 km^2 in area. Large-scale commercial farms (LSCFs) occupy approximately 3 304 ha of this area, whilst Communal Areas and resettlement schemes (Models A and B) take up more than 271 000 ha and 225 000 ha of the total land respectively. The small-scale commercial farms (SSCFs) and State land occupy more than 30 000 ha.

Large-Scale Commercial Farms

The large-scale commercial sector is organized into four Intensive Conservation Areas (ICAs). Chinyika ICA covers 3 304 ha. Headlands is the largest ICA, occupying 41% of the total area under LSCFs in this area, with a total of 93 063 ha. It currently has about 55 operational farms. Rusape ICA is the second largest with a total area of 77 561 ha and about 60 farms. Lastly, Tsungwisi ICA has 52 041 ha of land with about 40 farms. The major crops grown in these areas are flue-cured tobacco, white maize, fruits and pasture hay, both under dry and rainy conditions. Except for Chinyika, livestock production is one of the main activities in the ICAs.

Small-Scale Commercial Farms

There are seven small-scale commercial farming areas (SSCFAs) scattered all over the district. Altogether, they cover an area of about 27 921 ha. These are:

- Tanda, which is situated to the north, covering an area of about 6 712 ha divided into 51 farms.
- St. Faith, which is to the north-east, covering an area of about 2 925 ha and 85 farms.
- Aonga, which lies to the south of St. Faith and covers only 476 ha with seven farms.
- Dope-Ndope, which occupies 1 858 ha with 10 farms.
- Dowa West, which is situated in Devedzo area and covers 6 602 ha with a total of 71 farms.
- Dowa East, which is the biggest of all the SSCFAs with a total of 70 farms on 7 569 ha.
- Ephiphany, which covers 1 791 ha with 39 farms.

Resettlement Schemes (Model A)

This sub-sector was introduced after Independence to ease the problem of the landless, particularly as regards overcrowding. It covers a total of 214 871 ha of land organized in the following schemes.

- Mayo/Kudhara: lies to the north of the region with a total area of 76 240 ha and a total of 7 651 families.
- Mudzi: has 14 700 ha of land and about 1 663 families.
- Chinyika: is situated on the central eastern region of the district and is the largest of the six schemes. It occupies 52% of all Model A land in the district and has a total of 19 402 families.
- Makoni/Maungwe: has a total of 8 592 ha and about 2 945 families.
- Mt Zinga: covers 1 392 ha.
- Chirimatsitu: covers 1 347 ha.

Like the SSCFAs, the resettlement farmers rely mainly on contracted tractor work from the DDF Tillage Unit and draught power. They also rely heavily on family labour. Their main crops are similar to those grown by the SSCFs.

Communal Lands

The five Communal Areas in Makoni District cover about 271 300 ha of land distributed as follows:

- Tanda: situated to the north-east and occupying about 51 600 ha.
- Chikore: with approximately 16 300 ha.
- Weya: lies to the north-west with an area of 19 000 ha.
- Makoni: covers an area of 51 300 ha.
- Chiduku: is the biggest with a total of 135 100 ha.

Again, the cropping enterprises in these areas are similar to those of the latter two sub-sectors and the farmers rely almost exclusively on family labour and draught power.

Co-operatives

These were introduced after Independence. They are dotted all over the district, covering an area of more than 15 000 ha. The cropping patterns and other aspects of this sub-sector will be picked up in later sections.

Socio-Economic Infrastructure

The socio-economic infrastructure in the area closely parallels that of the national economy as a whole, and is characterized by distributional distortions in favour of the former white areas.

Education and Health

There about 161 primary and 49 secondary schools in the area. Primary school enrolment is approximately 77 000 with a staff complement of 1 989 teachers. This suggests an average teacher-pupil (T/P) ratio of 1:39. Secondary school enrolment is estimated to be about 16 000 with a total of about 600 teachers. The TP ratio is around 1:28. In general, most of these primary and secondary schools are run by the district councils although there are some which are run by mines, farms, churches (missions) and the Government. The area is serviced by a few rural clinics, two mission clinics and two rural hospitals, staffed by village health workers, five doctors and a few nurses.

Communication

The area has a reasonable network of roads maintained by different authorities, including about 134 km of State tarred road, and has also a railway line to Mutare. There are about 70 bus permits in the district. There are three post offices with exchange facilities, namely Headlands, Rusape and Nyazura.

Service Centres

The district is served by five service centres in the commercial areas, namely Rusape, Inyati, Mayo, Eagle's Nest and Nyazura in addition to one district service centre at Tsanzaguru. These are complemented by a total of 17 rural service centres spread throughout the district.

CHAPTER FOUR

SOCIO-DEMOGRAPHY AND RESOURCES

Introduction

Before presenting an analysis of actual resource utilization patterns and efficiencies, and indicating the scope for future resource developments within the co-operatives and the MDU management and services centre, it is necessary to give the background to such resources. This chapter discusses first the socio-demographic characteristics of the co-operatives and their various land, labour and capital resources.

Socio-Demography

The data on the socio-demography of the co-operatives pose a few problems as the records relating particularly to children and members' dependants, along with their sex and age distributions, were either non-existent, inconsistently supplied, or concealed.

It was, therefore, necessary to painstakingly verify all information given. Here we present the best information that could be assembled throughout the period. The qualitative aspects of the co-operative human capital are discussed separately under the section on resources.

The sex, age and education levels of the people on the co-operatives constitute some of the many determinants of the productive capacity and consumption patterns. It is, therefore, necessary to give a brief description of how the total MDU population is made up.

Table 4 below shows that the total MDU population is about 10 000 people. The total membership is about 45% of this population whilst the remainder is accounted for by dependants who are mainly children of school-going age. It is also interesting to note that the male membership accounts for about 55% of the total membership. Whilst this is so, it must be noted that in some co-operatives, women constitute a greater proportion of the general membership. At Wiriranayi co-operative, for example, women constitute about 74% of the membership.

The number of child dependants varies widely between co-operatives as can be seen from the Table. This population has critical implications for the provision of social services, such as schools and recreation facilities, and it also affects the level of savings and investment in the co-operatives. Thus, on average, the dependency ratio is approximately two dependants to one member and, given the low investment capacity of the co-operatives, this ratio already represents a heavy burden in the production of basic needs.

Table 4

MDU POPULATION

Co-operative	Male	Female	Sub-Total	Child	Total
Bethel	29	24	53	46	99
Kubatana	20	10	30	92	112
Kuedza Masimba	27	10	37	25	62
Magura Batanai	19	20	39	82	121
Mukute	11	6	17	15	32
Nyahambe	14	13	27	18	45
Nyamukamani	21	21	42	68	110
Rujeko	34	26	60	67	127
Ruponeso	-	-	-	-	-
Tanhi	28	18	46	29	75
Wiriranayi	9	26	35	50	85
Zingondi	27	20	47	53	100
TOTAL	250	204	454	545	999

Source: Field Survey, 1986

It was not easy to obtain data. However, from the scanty information and general observations, the age structure can be described as predominantly over 35 years old. It was also observed that the membership is mainly comprised of married couples.

In terms of the education levels of the members, it was observed that the academic levels were generally low. From Table 5 below, it can be observed that about 53% of the total membership are in the Grade 1-7 category, whilst only 5% of the total have at least post-primary education, that is secondary education. At least 8% are illiterate whilst only 3% have taken up adult literacy facilities at the co-operative. Indeed, the co-operators' response to the adult literacy campaign has not been encouraging. The men, in particular, have not responded well. It was noted, however, that adult literacy classes were not flourishing for a number of reasons, including the lack of adult literacy teachers, facilities for night schooling and stationery to work with.

Table 5

EDUCATIONAL LEVELS

Category	Bethel	Kuba-tana	Kuedza Masimba	Magura Batanai	Mukute	Nyaha-mbe	Rupo-neso	Total
None	-	-	-	3	-	-	-	36
Grade 1-3	-	14	3	14	2	-	-	103
Grade 4-7	8	11	18	20	15	-	-	134
Form 1-2	1	3	1	-	-	-	-	15
Form 3-4	-	1	-	-	-	-	-	7
Higher	-	-	-	-	-	-	-	-
Diploma	-	-	-	-	-	-	-	-
Adult Literacy	-	11	-	-	-	-	-	11
TOTAL	9	29	33	37	17	-	-	306
CO-OP MEMBERSHIP	53	30	37	39	17	-	-	454

NOTES:

1. Sub A-Std 1 have been included under category Grade 1-3.

2. Std 2-Std 6 have been included under category Grade 4-7.

3 Co-operatives have not furnished educational levels of all their members .

*4. *No returns received.*

5. A blank space means no information was furnished.

The central issue to be resolved, however, is the economic position of the co-operatives and in turn, therefore, of co-operators themselves. As it is, neither party seems to be able to raise enough money for the children's school fees.

Pre-schools have not yet taken ground in the co-operatives. The reasons for this are varied as there is a shortage of funds, of facilities and of trained teachers.

More critical, however, seems to be the attitude of some members towards sending their children to these playcentres. They just cannot entrust their children to the care of others, particularly at a very young age.

Again, some members without children do not approve in general that the co-operative should make any financial outlays towards children's projects. But these schools may be the answer to the problems women face trying to make their contribution to the labour processes. The schools would mean that, instead of attending to children whilst at work, women could concentrate completely on their work.

A look at the distribution of co-operative members's children in the various school grade reveals that there is a concentration of children in primary schools, notably in Grade 1. In fact, more than 80% of those at school are at primary school and the remainder are in secondary school. It is the latter category which has presented concern in terms of school fees as primary education is provided free.

One other notable feature of the children's education is the shortage of schools within close proximity. In fact, no co-operative runs its own primary school. Kuedza Masimba is the only co-operative with a study group type of school on its premises. This has meant that children have to travel as much as 15 km to and from the nearest school.

Co-operative Resources

In this section we discuss the nature and distribution of the co-operative resources in the MDU. These resources have been classified into three broad categories; namely land, labour and capital. A discussion of how these resources were actually combined to attain certain goals will be dealt with later on in the presentation.

Land

With the exception of Mukute, all co-operatives occupy previously white-owned large-scale commercial farms which were acquired by the Government of Zimbabwe. In all, the MDU co-operatives cover a total area of 18 887 hectares. Excluding Mukute Co-operative, this gives an average farm size of about 1 573 hectares. The overall potential arable land is 7 262 hectares, or 38% of the total land. This gives an average size of about 559 hectares (Mukute excluded), or 38% of the total farm sizes.

Excluding Mukute Co-operative, all the land was purchased by the Government for a total of approximately Z$865 529. This figure represents average land acquisition costs of about Z$72 127. Mukute used to be privately owned land which was later offered for co-operative use at no cost; hence it was left out in the calculations of the average land acquisition costs.

The other 12 farms did not vary greatly in terms of size and yet there was wide variability in the land acquisition costs of the farms, with one even costing as much as $97 400. This variation seems to be indicative of the varying potential and enormously different infrastructural developments of the farms at the time of acquisition.

For instance, Bethel and Magura Batanai, almost the same size, have land acquisition costs of $120 000 and $51 000 respectively. This appears to be a reflection of the non-homogeneity of the different farms, particularly in respect to overall land potential and infrastructural developments.

Generally, the enterprises differed significantly in terms of infrastructural developments at the time of acquisition, and this is also reflected in the variations in land development costs and the relative distribution of the land which is potentially available for cropping within the Makoni District Union.

From our findings, the following points are worth of note:

- The total potentially arable land in the union is about 7 262 hectares, or approximately 40% of the total land. Excluding Mukute, this represents an average arable land of about 622 hectares.
- Although an average of about 40% of all land is potentially arable, further disaggregation reveals wide variations in the proportions of such land available in the respective co-operatives. This proportion ranges from 17% for Nyamukamani to 90% for Mukute. However, if we exclude Mukute in our current

analysis, the range drops down to 43% (i.e. 17% to 60%). Going by the actual available land, we also detect similar variations with five farms registering areas above the average figure.

- It is also generally assumed that co-operatives with very low proportions of potentially arable land have higher livestock carrying capacities. For instance, while Ruponeso and Kubatana both have less than 20% of potentially arable land, they also have the highest carrying capacities of 346 and 560 respectively. The carrying capacity has been estimated at four hectares to one livestock unit, after taking into account the fact that not all non-arable land is suitable for grazing.

In terms of crop production, the co-operatives have a relatively diversified base.

In fact, the union has the potential to grow a wide range of crops, and maize, flue-cured tobacco and groundnuts are generally recommended for the major crop enterprises. Some co-operatives with irrigation potential and infrastructure, notably Bethel, Nyamukamani and Nyahambe, can include barley, a winter wheat and market gardening in their enterprises.

Another notable feature in some co-operatives is the production of deciduous fruits and forestation programmes according to Agritex recommendations. How far these recommendations are actually taken up will be dealt with in later sections.

Agritex also made recommendations on specific land rotation practices, cropping programmes and yield projections, but these recommendations will be examined in later sections. We now turn to a discussion of manpower resources in the union.

Manpower

In the previous section we have outlined the various important aspects of land resources available in the union. This section focuses on the labour resources in the union. Clearly, the nature and current level of manpower will be a critical determinant of the success or failure of the MDU's efforts.

Table 6 below shows the number of members available to work in the MDU collectives.

Table 6

MEMBERSHIP

Name of Co-operative	Membership	
	Recommended	Actual
Bethel	102	41
Kubatana	95	26
Kuedza Masimba	80	31
Magura Batanai	77	43
Mukute	-	14
Nyahambe	50	14
Nyamukamani	50	-
Rujeko	87	59
Ruponeso	65	3
Shingirai	53	16
Tanhi	105	48
Wiriranayi	50	37
Zingondi	-	41
TOTAL	814	373

Source: Agritex Reports (Farm Plans); Field Survey

A look at Table 6 reveals the following:

- Generally, the current membership levels fall far short of those recommended. In fact, the current total membership is below 50% of the recommended membership.
- The differences between the recommended and the actual membership figures vary markedly from co-operative to co-operative. While some have an actual membership level of more than 60% of the recommended potential, others are operating at as low as 5%.
- Overall, it can therefore be safely established that the District Union as a whole, and a number of its co-operatives, are currently operating under difficult conditions as regards labour resources as they do not have nearly as many members as it was envisaged they would have after five years in operation.

While Table 6 gives a general perspective of the available labour resources, more interesting is the pattern which emerges when one assesses the actual movements of such labour annually.

Table 7

MEMBERSHIP MOVEMENTS 1982 - 1987

Co-operative	1982	1983	1984	1985	1986	1987
Bethel	63	-	-	-	53	41
Kubatana	-	-	-	-	31	26
Kuedza Masimba	-	10	-	-	40	31
Magura Batanai		57	57	-	38	43
Mukute	-	21	-	-	27	14
Nyahambe	-	-	-	-	21	14
Nyamukamani	24	-	-	-	38	-
Rujeko	21	-	-	-	59	59
Ruponeso	-	-	-	-	10	3
Shingirai	-	-	-	14	-	16
Tanhi	-	-	-	-	48	48
Wiriranayi	-	-	-	-	35	37
Zingondi	43	-	-	-	37	41
TOTAL	127	112	57	14	437	373
AVERAGE	10	9	4	1	34	28

Source: Agritex Reports and Field Survey

From the information available it is clear that the overall membership has been swinging markedly over the years. The reasons could not be conclusively determined during the interviews. However, it was generally suggested that those who had left had unfulfilled expectations about the real material prospects of the co-operatives. A number of co-operatives were riddled with conflicts between the leadership and ordinary members and within the latter group. It has, moreover, been suggested that one of the reasons why membership has been unstable was because trained members encountered many frustrations when it came to applying their skills. This aspect will be looked at later in the section on training.

The actual qualitative aspects of the labour can be gleaned from the scanty information on available skills. Generally, the skills distribution appears impressive with a diversified range of skills. Another salient feature is the notable absence of master farmers in the union. A study of the available skills shows that they are mostly non-agricultural skills. This suggests that the existing skills cannot adequately tap the agricultural potential of these enterprises.

Further, such skills are not evenly distributed amongst the MDU co-operatives. These and other observations will be picked up in later sections.

Farm Machinery and Equipment

The level of mechanization is one of the critical considerations in running large-scale operations on viable lines. Such equipment/machinery should be appropriate to the co-operative farming needs and should be reliable and contribute significantly to the welfare of the general membership. This section is a descriptive analysis of the existing machinery and equipment in the MDU co-operatives, pointing out the salient features.

From our various MDU studies, we have observed that the District Union has a seemingly diversified range of equipment. The equipment ranges from tractors, tractor cultivators, tractor ploughs, discs, ridgers, planters, motor engines to shellers and a variety of ox-drawn implements.

The following observations arise from our analysis of the machinery in the union.

Although the overall range of equipment is seemingly diversified, this does not indicate a sufficient level of mechanization. This becomes apparent when the following points are taken into consideration:

- Such equipment is not evenly distributed within the co-operatives of the union. While some farms are relatively mechanized, others have practically no equipment of their own, for example, Wiriranayi;
- Most of the equipment is old and needs attention, so operations have been marred by numerous breakdowns. In fact, the equipment/machinery has not been properly looked after. It has been left to the ravages of the weather.

Some of the equipment would appear to be under-utilized. For instance, Nyahambe and Wiriranayi co-operatives have a sound irrigation infrastructure which, because of lack of capital to acquire water engines and overhead irrigation equipment, is not being used.

Of all the co-operatives being studied, only two have a truck each, i.e. Tanhi and Mukute, and one or two others have trucks which have broken down. Therefore, the transport situation is clearly of serious concern.

Most of the equipment was provided under the Government of Zimbabwe establishment grants scheme for Model B agricultural co-operatives. It is estimated that more than 50% of the establishment grants have yet to be disbursed. Clearly, the nature of the equipment so far disbursed and the timing of such disbursements have a critical bearing on the level of the operations of the farms.

Therefore, in the light of the above, it could be assumed that the level of mechanization presents a binding constraint on the operations of the enterprises. But this needs further investigation, as it would have to be decided if, in terms of current operational levels, the existing equipment was being utilized to the fullest so as to justify expenditure on additional equipment. Before we assess the additional requirements, it is therefore only logical to determine the potential of the existing pool which currently is seemingly diversified. A discussion of how the equipment was used, together with other factors of production, will be pursued later.

CHAPTER FIVE

CO-OPERATIVE PRODUCTION ACTIVITIES AND RESOURCE UTILIZATION

Background to Resources

It is evident from the previous chapter that the MDU co-operatives have a diverse and uneven range of resource endowments in terms of land, capital developments, machinery, equipment and general infrastructure. This diversity is a phenomenon of the resources of agricultural collective co-operatives throughout the country. Indeed, it reflects the variety of farms offered on a "willing seller-willing buyer" basis, and therefore the varied circumstances under which farms were purchased for resettlement, as well as the differing resource requirements that were necessary to establish these farms as collectives. It is quite important to note also that the human resources available to set up the co-operatives varied in each given situation.

Consequently, the range of potential production activities on the co-operatives, the actual production activities carried out, and the nature, rates and levels of resources utilization on these co-operatives are diverse and complex. It is, therefore, necessary to be very cautious in assessing the co-operative production and use of resources individually, and in comparing different co-operatives, let alone in making comparative assessments with other production systems in Zimbabwe. In spite of the existing limited experience and established yardsticks for assessing collective co-operative production performances, we provide below an overall analysis of the production activities of the MDU co-operatives. As mentioned earlier, the reader is referred to the individual co-operative reports for further details.

We begin first in this chapter by discussing the land resources utilization and cropping programmes, then we present the co-operative labour, machinery and inputs utilization and discuss the issues arising out of this. We then assess the co-operative economic viability in respect of agricultural programmes in Chapter Six.

Land Resource Utilization

Land Uses

The land resources of the MDU co-operatives are utilized for a variety of purposes and in different ways. The primary land use activity is crop production. As would be expected given the agro-ecological potential of the area, as discussed earlier, the land is suited to intensive crop production, followed by livestock production, which is not carried out on an intrinsically commercial basis. There are other numerous activities which use up the land and although these are not intensive, not commercially oriented and do not take up much space, they are nevertheless of critical importance to the basic livelihood of the co-operative population. These include: woody biomass exploitation for woodfuel, construction and for other purposes; wildlife exploitation for domestic consumption; grasses for thatching buildings; and others. Although these latter land uses are not discussed quantitatively in this report, it is important to recognise their integral importance to the sustenance of the co-operative populace, given the undeveloped or poor domestic infrastructures and services on these farms, which were never meant to sustain communities such as co-operatives, but instead only to utilize labour at below subsistence levels.

Land Use Potential and Arable Land Accessibility

Due to the data quantification problem and the primacy of crop production, most of the discussion on land use necessarily has to focus on cropping land uses. From Table 8 it can be seen that following Agritex calculations of land use potentials, the MDU co-operatives have access to 5 697 hectares of net arable land altogether. On average, and excluding Mukute which is anomalous for reasons stated earlier, each collective co-operative has access to 476 hectares of arable land. This shows that out of the total land mass accessible to the MDU co-operatives, only 30% of this land is practically arable. On average, each co-operative has only 34% of such arable land available to it. This percentage varies from 11% to 59%.

This finding is a reminder of the need for particular caution in evaluating levels of land utilization among collective co-operatives in comparison to other production systems. It is interesting to note also that if we calculate the per capita access to practically arable land in the MDU co-operatives, we find an average ratio of 13 hectares per adult member. The ratio on individual co-operatives ranges from four to 33 hectares per member.

These analyses clearly demonstrate that the collective co-operative members in the MDU have only approximately 12 arable hectares more than the average Communal Area farmer in the better-off agro-ecological zones. This slight advantage, however, is desirable and crucial for the development of production systems which can capitalize on the benefits of economies of scale.

It should be noted at this stage that the co-operators only have access to such land because it is essentially owned by the State, and that the problem of land tenure security for the co-operator also has a strong bearing on actual land use. Indeed, all co-operators, not only those in the MDU, are unanimously concerned about tenure security and consistently raise its demotivating impact. This in itself suggests the need for caution in any attempts to explain actual co-operative land utilization levels, let alone in making comparisons with other production systems.

Actual Cropping Land Use

Our discussion of actual cropping land use focuses on major co-operative crops, with less emphasis placed on co-operative gardens which were either very small or inconsistently maintained. The same holds for individual private plots, which were also often either small and inconsistently maintained, or were concealed during the data gathering. Moreover, data gathering on co-operative gardens and individual plots using normative field survey techniques was cumbersome, and in some cases created social problems between the researchers and the study population. While various approaches and methods were used to acquire such data, it is generally incomplete.

The data in Table 8 reveals that the co-operatives on average crop only 59 hectares or 13% of the total net arable land available per co-operative, while the rate of utilization ranges from 2% to 54% and in absolute terms ranges from four to 156 cropped hectares per co-operative. These rates are, of course, lower than those of land utilization in the Communal Areas, but are comparatively not very much worse than the rates of land utilization by large-scale commercial farmers of Zimbabwe's prime lands in the Mashonaland provinces. (See also Moyo, S. *et. al.* in *The Journal of Modern African Studies*, 23, 2 (1985), pp 251-285).

When we make allowance for land fallow, assuming a 50% rotation, we find that the rates of land utilization change drastically with the average rate rising from 13% to 26%.

It should be noted here, however, that the differing rates of land utilization among the co-operatives can in part be explained by differing years of establishment from 1982 to 1986 and, of course, the variation in resource endowments mentioned earlier. Even the Agritex plans expected a gradual increase in levels of land utilization.

When we assess the total crop land utilization in per capita terms, we find that while on average each co-operative had access to six hectares on a 50% rotation assumption basis, the average cropped hectares per co-operator were only two. This reflects an average per capita rate of arable land utilization (at 50% fallow) of 27%, with a range from 5% to 11%.

Table 8

CROP AND LAND UTILIZATION MDU (1986)

Co-operative	Net (ha)	% of Land	(ha)	% of Net	Net Arable +
Bethel	697	31	156	31	251
Kubatana	372	15	20	5	186
Kuedza Masimba	457	33	88	19	229
Magura Batanai	660	41	60	9	330
Mukute	8	89	8	100	4
Nyahambe	346	30	14	4	173
Nyamukamani	195	15	51	26	98
Rujeko	889+	48	133	15	445
Ruponeso	167	11	4	2	84
Shingirai	230	20	24	10	115
Tanhi	189	17	103	54	91
Wiriranayi	450++	30	37	8	225
Zingondi	1231++	59	67	5	615
TOTAL	5 697	30%	765	13%	2 847
AVERAGE	438	34%	59	22%	219

Source: Agritex Makoni District Co-operative Plans, GOZ 1982/86; Field survey 1986.

*Notes:**: Refers to total land*

+: Based on 50% fallow

+: Figures are for potential arable land

The inter-co-operative per capita range of land utilization was below one hectare to three hectares.

Again, in order to compare the per capita crop land use data with average rates in the Communal Areas, we first need to add a one hectare average minimum which brings us to two cropped hectares per co-operator, so as to allow for the individual plots which exist in the MDU co-operatives. Having done so, we find that on average, the co-operators cultivate slightly more land per capita than the average Communal Area farmer in similar agro-ecological regions.

This absence of a drastic difference in per capita hectares, where co-operators would have been expected to cultivate many more hectares per capita, suggests a range of problems in the co-operatives. Clearly, there is an incapacity to take advantage of economies of scale. Whether this is primarily a problem of under-capitalization, variable capital or management will be explored later.

It is perhaps useful, however, to compare the actual total land utilization levels of the MDU co-operatives with what was expected of them by Agritex. To do this we utilize the expected cropped hectarage for 10 co-operatives after three years of establishment, and do not include the newer co-operatives or those without plans. Of course, the comparison is based on our reluctant acceptance of Agritex cropping build-up assumptions, some of which relate to membership build-up and the availability of adequate means of production. From this comparison we find that, on average, all the co-operatives cropped 70% less hectares than was expected of them by Agritex. The rates of performance in this respect can be seen to have varied widely.

Surely, there is something drastically wrong for such differences to occur between expectations and actual performance. Membership levels also never reached those assumed in the Agritex plans. Altogether, however, the rates of land utilization in the MDU co-operatives in 1986 were rather low, indicating a wide scope for improvement in the cropping programmes. Whereas the issues of land tenure and per capita access to land were raised as intervening factors which require consideration in explaining land utilization levels, there are other factors related to non-land resource utilization which are critical explanatory variables.

Towards the end of this chapter a more holistic assessment of this level of land utilization will be attempted. For now, we turn to a discussion of livestock activities.

Actual Livestock Land Use

While it is usual that under-utilization in terms of crops is counter-balanced by livestock husbandry in some of Zimbabwe's large farms on prime agro-ecological land, the MDU co-operatives have very minimal involvement in livestock activities. In fact, only Tanhi and Magura Batanai have fair numbers of cattle, while the overall livestock herds are very low, suggesting that livestock land utilization is not a significant factor in explaining the co-operatives' production forms and general resources utilization. Surprisingly, however, Ruponeso and Kubatana were planned by Agritex as mainly livestock enterprises, and yet their livestock numbers are rather low. The problem could be that the co-operators do not have the management skills necessary for commercial ventures with livestock.

We should point out that most of the MDU livestock is not kept for strictly commercial purposes but rather either for individual household income and food security, or for co-operative draught purposes. The general ownership pattern, however, shows that most of the livestock in the MDU is individually owned and is hence not part of any planned commercial livestock enterprise.

It is also worthwhile to note, at this point, that most of the MDU co-operatives which are bordered by Communal Areas suffer from illegal land utilization, that is, poaching by their neighbours.

Such poaching takes the form of illegal grazing, woodfuel collection, water use and fishing. Only three of the co-operatives, which are not wholly bordered by Communal Areas, are free of these related problems. (See MDU Part II for further information related to land use conflicts.)

Given the above situation, there seems to be scope for the systematic development of livestock enterprises on a commercial basis, to complement the cropping enterprises of the MDU co-operatives. Of course, this would require careful planning and an appropriate establishment approach within the context of collective management and property ownership. In a later section we will discuss the existing very small livestock enterprises in the MDU as part of our general development of the resource utilization argument. We now take a look at the actual cropping programme.

Cropping Programmes

The discussion in this section examines the types and extent of crops grown, and land productivity. Crop rotations will only be briefly discussed later because for various reasons the information on this is weak. For example, it should be noted from the start that on all the co-operatives there was little technical knowledge about and familiarity with the farm land units composition (very few had maps of the farm in usable scales) in terms of quality, conservational divisions and farm operation blocks. Basic elementary land use and physical skills are desperately required, since only a few co-operatives were able to converse in these terms. In general, therefore, soliciting data on crop production was arduous and time-consuming as mentioned earlier.

The records on crop rotations were non-existent, while physical cross-checking of rotations encountered inconsistencies.

Aside from the vegetables, which only one of the co-operatives produced as a major crop, the MDU co-operatives together produced in 1986 a range of 14 annual crops, 10 of which were field crops, while the rest were perennial fruit tree crops.

Maize was the most popular crop grown by all the co-operatives, followed by sugar beans, which were grown by three co-operatives and then groundnuts, sunflowers and peaches, each grown by two co-operatives.

Potatoes, peas, rapoko and soyabeans were each grown by only one co-operative within the MDU. Besides field annual crops, only two co-operatives, Tanhi and Zingondi, produced fruits, and these were mainly peaches with an average of about 27,5 hectares, while very small quantities of apples, apricots, plums and grapes were grown by these co-operatives.

Table 9

TOTAL HA CROPPED PER YEAR BY COOP (HA) 1986/87

CROP/ COOP	MAIZE	SUGAR BEANS	GROUND-NUTS	SOYA-BEANS	SUN-FLO-WER	PEACHES	PEAS	POTA-TOES	COT-TON	RAPOKO	APPLES	APPRI-COTS	PLUMS	TOTAL
Bethel	120 00			320			4,0							156
	77%			20%			3%							100%
Magura Batanai	55,5	4,0												55,5
	93%	7%												100%
Muiuie	14,0		1.0							0,5				15,5
	90%		7%							3%				100%
Nyahumbe	6,75				4,0				3,0					13,8
	49%				29%				22%					100%
Rujeko	90,2	10,0	33,0											133,2
	68%	8%	24%											100%
Tashi	60,0					29 2	5,5				4,0	1,5	1,5	103,2
	58%	8%				28%	5%				4%	2%	3%	100%
Wiriranai	34,0	3,0												37
	92%	8%												100%
Zingozdi	41,0				26,0									67
	61%				39%									100%
Kusedza Mashamba	88,0													88,0
	100%													100%
Tauyanarwo	27,75				8 0									353
Ruombwe	15,0													15,0
	100%													100%
Kubatana	20.0													20 0
	100%													100%
Total	576,2	17,0	34,0	32,0	12 0	55,2	4,0	5,5	3 0	0,5	4,0	1,5	3,0	748
	77%	2%	5%	4%	2%	7%	1%	1%	0	0	1%	0	0	100%

In terms of hectarages, 80,54069 (77%) of the cropped land was under maize, followed by peaches with 7,77245 (7%). The third most important group of crops were groundnuts and soyabeans with an average of 4,5% of the cropped hectarage of the MDU co-operatives, while sugar beans and sunflowers were the next important crops. The rest of the crops took 1% or less of the total MDU cropped hectarage.

From Table 9, we also see that while the overall crop diversity for the MDU co-operatives as a whole was wide, diversification on an individual co-operative was narrower. The highest crop diversity was found in Tanhi which had six crops, four of which were different fruit fields that were inherited at its establishment. When we looked beyond Tanhi and disregarded other inherited fruit trees, we found that the highest level of crop diversity was three field crops per co-operative. However, less than 30% of the MDU co-operatives, namely Bethel, Mukute (which has a very small cropped hectarage at any rate), Nyahambe and Rujeko, had up to three annual or field crop enterprises. Even when we include fruits, only six co-operatives (43%) had three or more crop enterprises, while 22% of the co-operatives had only one crop enterprise, and the rest had two.

In any case, in spite of the above nominal index of crop diversification, there was a heavy concentration on maize by most of the co-operatives, ranging from a minimum of 49% at Nyahambe, to 100% at Kubatana. When we remove the area under fruits in those co-operatives which inherited fruit trees, the overall average percentage of cropped hectarage under maize was slightly over 80%. In other words, aside from fruit, each of the additional crops to maize were farmed on rather small scales.

This ranges from a maximum total for the MDU of 34 hectares under groundnuts, 32 hectares under soyabeans, 17 hectares under sugar beans, 12 hectares under sunflower, through to less than six hectares for each of the other field crops.

On an individual co-operative basis, however, this form of crop diversification scale was also evident. The highest hectarage of any single field crop besides maize was 33 hectares of groundnuts at Rujeko, followed by 32 hectares of soyabeans at Bethel. Otherwise, for the rest of the individual co-operatives, none had a single second crop besides maize cropped to more than 10 hectares. At the various MDU workshops, this small scale of crop diversification was reported to be an "experimentation process" by the co-operators.

Regarding cropping programmes, therefore, the MDU co-operatives have most in common maize growing, narrow crop diversification and small-scale experimentation with other crops besides maize. There are very few co-operatives with similar crop enterprise combinations, and in general not more than four co-operatives grow the same secondary crops after maize. In other words, the MDU co-operatives have diverse secondary crop enterprise interests. This is a particularly important finding in terms of considering possibilities for sharing resources, training and services in the MDU within the agronomic and marketing spheres, and it carries major implications for the co-operative district union concept. These are issues to which we shall return in later sections.

In the following subsections we, therefore, discuss the application of inputs to the land, among the different crops.

Resources Utilization

The discussions on inputs resource utilization centre around three aspects, namely labour, machinery and equipment, and fertilizers and agro-chemicals. The idea here is to present aggregate levels of the different resources utilization rates per hectare and in relation to output, and to set the stage for the analysis of gross margins and viability of the cropping programmes.

Labour Utilization

In the previous section we discussed the nature and quantity of the MDU membership, highlighting a few issues including the discrepancy between the actual and the recommended membership levels. This section deals with how this labour force was actually used in various activities, particularly in the crop production processes.

Before our analysis, it is necessary at this point to note that our data collection exercise in this area encountered a number of problems. These problems emanated from the fact that no records of labour, in whichever form, were kept by most of the co-operatives at the time of the survey. Therefore, the data presented here and in the following two sections should be treated with a certain amount of caution as the figures are basically estimates.

Nine labour categories were identified to be relevant in our analysis of labour utilization for maize. These include the tractor driver, the production manager, the general worker, the child, the guard, the irrigation officer, the horticultural officer, the shelling machine officer and the scale attendant (See Table 10 below). This seems to suggest the existence of a division of labour, if not a certain amount of specialization, in the production processes of the MDU co-operatives. How labour in these categories was actually used will be analysed later in this section.

In terms of the total labour input into crop production activities, about 236 767 man-hours were used (see Table 11 below). A breakdown of this figure into labour days brings it to about 29 596. A further breakdown of this figure brings it to an average of about 65 labour days. In relative terms, it means that less than 30% of the available fixed labour time was actually used. This is obviously an unacceptably low level of utilization, taking into account the average annual labour application rates in the agricultural sector.

This shocking state of affairs is, however, not without its explanations. It has been pointed out that crop production is the dominant, if not the only major enterprise in most of the co-operatives. It is also a fact that the crop production season normally effectively takes up to about six months, meaning that labour is not meaningfully engaged for the remainder of the year.

Table 10

LABOUR UTILIZATION PER LABOUR CATEGORY BY COOPERATIVE BY CROP

LABOUR CATEGORY COOP	TRACTOR DRIVER	PRODUCTION MANAGER	GENERAL WORKERS	CHILDREN	GUARDS	IRRIGATION OFFICER	HORTICULTURAL OFFICER	SHELLING MACHINE OFFICER	SCALE ATTE-NDANT	TOTAL
Bethel	597.0	467.5	10661.0	0.0	0.0	152.0	0.0	0.0	0.0	12277.5
	(4.9)	(3.8)	(86.8)	(0.0)	(0.0)	(1.2)	(0.0)	(0.0)	(0.0)	
Kubatana	NA	345.0	6248.0	0.0	0.0	0.0	0.0	0.0	0.0	6593.0
	(0.0)	(5.2)	(94.8)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Kuenza Masimba	334.0	0.0	24729.0	0.0	0.0	0.0	112.0	0.0	0.0	25175.0
	(1.3)	(0.0)	(96.3)	(0.0)	(0.0)	(0.0)	(0.4)	(0.0)	(0.0)	
Magura Batanai	784.8	1152.0	23028.0	3600.0	240.0	0.0	0.0	0.0	0.0	28804.8
	(2.7)	(4.0)	(79.9)	(12.5)	(0.8)	(0.0)	(0.0)	(0.0)	(0.0)	
Mukute	52.0	608.0	8122.0	16.0	0.0	0.0	0.0	0.0	240.0	9038.0
	(0.6)	(6.7)	(89.9)	(0.2)	(0.0)	(0.0)	(0.0)	(0.0)	(2.7)	
Nyahambe	203	198.0	3208.0	72.0	0.0	0.0	0.0	0.0	0.0	3498.3
	(0.6)	(5.7)	(92.7)	(2.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Ruomowe	0.0	375.0	7766.0	0.0	155.0	0.0	375.0	0.0	0.0	8672.0
	(0.0)	(4.3)	(89.6)	(0.0)	(1.8)	(0.0)	(4.3)	(0.0)	(0.0)	
Rujeko	730.5	440.0	26632.0	0.0	0.0	0.0	0.0	0.0	16.0	27818.5
	(2.5)	(1.6)	(95.7)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	
Tashi	471.3	614.4	13162.0	396.0	0.0	0.0	0.0	20.0	20.0	14683.7
	(3.2)	(4.2)	(89.6)	(2.7)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	
Tauyanarwo	100.0	276.0	3800.0	0.0	0.0	0.0	0.0	0.0	0.0	4376.0
	(4.6)	(8.6)	(86.8)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Wiriranyi	0.0	287.0	7452.0	1548.0	540.0	0.0	0.0	0.0	0.0	9927.0
	(0.0)	(3.9)	(75.1)	(15.6)	(5.4)	(0.0)	(0.0)	(0.0)	(0.0)	
Zingondi	348.0	340.0	7688.0	0.0	0.0	0.0	0.0	0.0	0.0	8376.0
	(4.2)	(4.1)	(91.8)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Rupaneso	0.0	170.0	2169.0	16.0	0.0	0.0	0.0	0.0	0.0	2355.0
	(0.0)	(7.2)	(92.1)	(0.7)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Total	3937.9	5472.9	144665.0	5648.0	936.0	152.0	487.0	20.0	276.0	161594.8

Table 11

TOTAL LABOUR HRS PER CROP BY COOP

CROP/ COOP	MAIZE	SUGAR BEANS	GROUND NUTS	SOYA-BEANS	SUN-FLO-WER	PEACHES	FEAS	POTA-TOES	COT-TON	RAPOKO	APPLES	APRI-COTS	PLUMS	TOTAL
Bethel	12277,5			3666,5			1128							17072
	72%			21%			7%							100%
Magura	28804,8	3310												32114,8
	90%	10%												100%
Mukute	9038		314	348						2643				12343
	73%	3%	3%							21%				100%
Nyahambe	3458,3				212				425					4135,3
	85%				5%				10%					100%
Rujeko	27818,5	2112	6552											36482,3
	76%	6%	18%											100%
Tanhi	14685,7					28623,2		1933,5			3089	2111,5	2022,5	53465,4
	28%					54%		4%			6%	4%	4%	100%
Wirirenayi	9927	1017												10944
	91%	9%												100%
Zingoudi	8376					14696								23072
	36%					64%								100%
Kuedza Masimba	25675													25675
	100%													100%
Tauyanawo	4376				368									4744
	92%				8%									100%
Ruochbwe	8672													8672
	100%													100%
Ruponeso	2355													2355
100%														100%
Kubatana	6592													6592
100%														100%
Total	20262	6439	6966	4014,5	580	53319,2	1128	1933,5	425	2643	3089	211,5	2022,5	236767
	68%	3%	3%	2%	0	18%	1%	1%	0	1%	1%	1%	1%	100%

This then assumes that all the labour was actually used, or was supposed to be used, in crop production processes. However, even if labour used in other income-generating activities, which shall be discussed in later sections, is accounted for, this does not make much difference as such other activities are very small, both in terms of scope and operations as well as in their capacity to absorb labour. Indeed, when such activities are critically assessed, their effect has been to somehow take away labour from the crop production processes, particularly where they run concurrently with the crop growing season. Unfortunately, the amount of such labour time that went into these other activities could not be quantified.

Another explanation for this low labour utilization is the low motivation of the workforce. Returns are so low as not to guarantee a reasonable income, if any. This low motivation, coupled with low morale in the co-operatives, has tended to affect the supervision of this labour force. In some instances, widespread labour indiscipline/delinquency has been reported. It is not surprising that this unacceptable state of affairs was not noted by the co-operatives themselves, until the survey results were being disseminated, as no labour records, such as up-to-date registers and labour schedules, were kept by the majority of these co-operatives.

Another salient feature on the Table is that most of the labour was taken up in maize production. Maize accounted for close to 70% of all labour applied in crop production, followed by peaches which accounted for about 18%. This, of course, is to be expected given that, as discussed in an earlier section, it is precisely these crops which occupied the highest acreage, roughly 77% and 7% respectively. Likewise, labour application in groundnuts ranked third with 3% whilst the area put to this crop also ranked third at 5%.

Therefore, in terms of the distribution of labour time to the various crop enterprises and their respective acreages, an interesting observation emerges.

The observation is that crop labour utilization is roughly in the same proportions as the respective acreages grown to these crops. This seems to suggest that all the crops use labour in roughly the same intensity. If this is the case, it follows therefore that those co-operatives which cropped the highest number of hectares, regardless of the crops grown, also accounted for the highest labour application rates.

This, however, does not seem to be so when a co-operative by co-operative labour utilization analysis is done. For instance, in terms of actual cropped areas, Bethel accounts for the highest proportion of total cropped area, 21% of 748 ha, followed by Rujeko (18%), Tanhi (14%) and Kuedza Masimba (12%). But when it comes to labour utilization, Tanhi is ranked first, accounting for 22% of total labour hours, followed by Rujeko (15%), Magura Batanai (14%), Kuedza Masimba (11%), Zingondi (10%) and Bethel (7%). This, however, could be explained by the fact that some co-operatives, particularly Bethel, are relatively mechanized whilst others, notably Rujeko, are relatively labour intensive.

Another factor is that there appears to be labour over-utilization in some of the co-operatives because of the unprogrammed nature of the labour activities, resulting in waste in terms of labour efforts being duplicated or being applied to unproductive purposes. It can, therefore, be suggested that there is misuse of labour in the co-operatives.

From Table 11 it can also be observed that maize takes up 70% of the labour on average in each co-operative. Of course, this varies from one co-operative to the other with some co-operatives that grow more than one crop using up to 92% of their labour time in maize whilst others use only 28%. In fact, a low proportion of labour utilization in maize implies a significant amount of crop diversification in that co-operative.

In terms of labour utilization in the various labour categories, a few observations are worthy of note. Although the information in the Table below pertains to maize production only, it is generally illustrative of the whole cropping pattern.

When the total labour contribution to maize production, irrespective of the activities, is considered we observe that almost 90% of this is accounted for by the category "general worker" whilst the remainder is shared amongst the child (4%), production manager (3,5%), tractor driver (2,5%) and the rest (Table 10). The reason behind this ranking seems to be in the number of workers involved. For instance, the caterogy "general worker" comprises the majority of the co-operatives excluding tractor drivers, who are normally not more than two, one production manager and a few other "specialized" people. As the largest category it logically accounted for the biggest contribution. All co-operatives have this category in any case, unlike other categories like horticultural officer, irrigation officer and shelling machine operator which are totally irrelevant in some co-operatives.

It should be noted that these categories must be viewed as depicting the numbers of people who actually worked in that capacity, say, tractor drivers as opposed to how many are actually employed as tractor drivers on the co-operative.

Although children's labour accounted for about 4%, ranking second, it should be noted that this is quite an insignificant contribution. In any case, such contribution was mainly confined to light work.

On average, the general workers accounted for about 85% of the total labour contribution, again reflecting a dominance of general workers in this category. As stated earlier, lack of irrigation equipment, shelling machines and scales, horticultural enterprises and other facilities renders some of the categories we used irrelevant in some co-operatives. Therefore, no comparative analysis can be done in these categories. Of course, the fact that some tractor drivers were never engaged at all or for less than optimal time is indicative of the fact that tractors were often not available or were inadequate and/or that the area grown to the crops involved was comparatively small.

An analysis of the labour applications in the various labour operations (Table 12) also brings out interesting results. Again, this Table reflects information on maize production. As would be expected in the absence of sufficient mechanization and lack of both finances and know-how in the use of herbicides, weeding was the single longest operation, accounting for 37% of the total labour time. This, however, changes when a comparison between co-operatives is done, with co-operatives like Tanhi, which is relatively mechanized and applies herbicides, registering 24%, and Magura Batanai, not mechanized, registering 23% in weeding operations.

Overall, fertilizer application accounted for 25% of the labour time, and this was again partly due to insufficient mechanization levels. Harvesting ranked third for the same reasons. Finally, another time-consuming effort went into planting (9%), processing and packing.

Here, it is interesting to note that at the individual co-operative level, there is no clear pattern in terms of time allocation to various activities. Whilst in some weeding is the biggest labour-consuming operation, in others it is either planting or fertilization, or even harvesting. As indicated above, this seems to be a reflection of the different mechanization levels in these operations. But it might well reflect the problem of labour supervision of production processes, as labour may be supervised without tension in planting more easily than in weeding and harvesting.

An area which seems to be consistent is that of discing and ploughing, where the latter is consistently more time-consuming than the former in all co-operatives' comparable data.

Another interesting area is that of harvesting. For the four co-operatives on which figures are available, the average is about 33% of all labour operation time. It does appear, therefore, that this is actually the most time-consuming exercise.

In summary, it must be noted that data on labour utilization does not present a defined trend. Whilst there is generally labour under-utilization there is also a wide range of such under-utilization of labour when comparisons are made between co-operatives. Labour application rates per hectare of maize production also varied from 102,5 hours per hectare to 645,6 hours per hectare. Such labour variations were as a result of different methods of labour application, as well as different levels of mechanization (as shall be discussed later), use of labour-saving chemicals such as herbicides and labour supervision, among other factors.

It was quite clear that labour management was a problem area. The absence of management skills capable of planning and supervising the implementation of labour programmes was quite evident in the co-operatives.

This meant that the available labour was not systematically applied to the various activities in the right quantities and at the right time, resulting in labour bottlenecks in certain periods and labour surpluses in others.

At Tanhi co-operative, for example, maize weeding and fruit picking activities competed for the same labour at the same time. This meant that one of the two activities had to be neglected in preference for the other and it was the maize crop which suffered in this regard. Such clashes were not managed properly nor were they foreseen. An alternative would probably have been to make use of herbicides in maize production.

Table 12

LABOUR UTILIZATION PER LABOUR ACTIVITY BY COOP

LABOUR ACTIVITY COOP	PLOU-GHING	DISCING	PLANTING	WEEDING	FERTILI-ZATION	LIMING	CULTI-VATION	SPRA-ING	IRRI-GATION	PICKING HARVE-STING	PROCE-SING PACKING	TRANS-PORTING	TOTAL
Beina	530.0	201.0	554.0	5732.0	3840.0	0.0	317.5	208.0	779.0	0.0	0.0	116.0	12277.5
	(4.3)	(1.6)	(4.5)	(46.7)	(31.3)	(0.0)	(2.5)	(1.7)	(6.3)	(0.0)	(0.0)	(0.9)	
Kubatana	127.0	0.0	736.0	4048.0	1472.0	0.0	44.0	0.0	0.0	0.0	0.0	165.0	6592.0
	(1.9)	(0.0)	(11.2)	(61.4)	(22.3)	(0.0)	(0.7)	(0.0)	(0.0)	(0.0)	(0.0)	(2.5)	
Kusedza Maximba	296.0	176.0	264.0	19052.0	5600.0	0.0	56.0	128.0	0.0	0.0	0.0	103.0	25675.0
	(1.2)	(0.7)	(1.0)	(74.2)	(21.8)	(0.0)	(0.2)	(0.5)	(0.0)	(0.0)	(0.0)	(0.4)	
Magura Batanai	688.0	0.0	288.0	6600.0	7800.0	0.0	348.0	0.0	0.0	12784.0	0.0	296.8	28804.8
	(2.4)	(0.0)	(1.0)	(22.9)	(27.1)	(0.0)	(1.2)	(0.0)	(0.0)	(44.4)	(0.0)	(1.0)	
Muku e	12.0	8.0	2592.0	0.0	2576.0	0.0	80.0	92.0	0.0	3360.0	240.0	78.0	9038.0
	(0.1)	(0.1)	(28.7)	(0.0)	(28.5)	(0.0)	(0.9)	(1.0)	(0.0)	(37.2)	(2.7)	(0.9)	
Nyahambe	20.3	0.0	1064.0	1632.0	782.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3498.0
	(0.6)	(0.0)	(30.4)	(46.7)	(22.4)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Rombwe	56.0	0.0	3000.0	4776.0	800.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	8672.0
	(0.6)	(0.0)	(30.4)	55(1.)	(9.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.5)	
Rujeko	220.0	120.0	1512.0	2848.0	10628.0	360.0	0.0	0.0	0.0	832.0	11280.0	18.5	27818.5
	(0.8)	(0.4)	(5.4)	(10.2)	(38.2)	(1.5)	(0.0)	(0.0)	(0.0)	(3.0)	(40.5)	(0.1)	
Tanhi	295.3	445.4	312.0	3576.0	1485.0	0.0	508.0	252.0	0.0	7200.0	600.0	62.0	14685.7
	(2.0)	(3.0)	(2.1)	(24.4)	(9.3)	(0.0)	(3.5)	(1.7)	(0.0)	(49.0)	(4.1)	(0.4)	
Tauyanarwo	232.0	0.0	1280.0	2080.0	560.0	0.0	224.0	0.0	0.0	0.0	0.0	0.0	4376.0
	(5.3)	(0.0)	(29.3)	(47.5)	(12.8)	(0.0)	(5.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
Wiriranayi	0.0	0.0	2592.0	2304.0	3744.0	0.0	1287.0	0.0	0.0	0.0	0.0	0.0	9927.0

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	(0 0)	(0.0)	(26 1)	(23 2)	(37 7)	(0 0)	(13 0)	(0.0)	(0 0)	(0.0)	(0.0	(0 0)	
Zingoni	152.0	72.0	104.0	6928.0	992.0	0.0	80.0	0.0	0.0	0 0	0.0	48.0	8376 0
	(1 8)	(0 9)	(1.2)	(82.7)	(11 8)	(0 0)	(1.0)	(0.0)	(0 0)	(0.0)	(0 0)	(0 6)	
Ruponeso	800.0	0.0	815.0	639.0	100.0	0.0	0.0	0.0	0.0	0 0	0.0	0.0	2355.0
	(34.0)	(0 00	934.5)	(27 1)	(4.2)	(0 0)	(0 0)	(0.0)	(0.0)	(0.0)	(0 0)	(0 0)	
Total	3428.6	1022.4	15114	60215	40329	360	2944.5	680	779	24176	12120	927.3	162095.8

It was also observed that the incidences of reporting late for work and going off early were reaching alarming proportions in some co-operatives. This effectively meant short working days, and these were not properly supervised for that matter. Some co-operatives, notably Wiriranayi, even had a short working week of four days, as well as a short working day of about six hours. The short working week arose mainly from the fact that there were two religious sects, one of which respected Sunday as its resting day whilst the other, which was predominant, observed Saturday. The other day, Friday, was devoted to individual private activities.

These issues will obviously affect the output levels and the productivity of the enterprises as a whole. Certainly, the existing labour force could perform much better than it is currently doing, given enough motivation, good planning, management and supervision skills, and so on.

Equipment Utilization

A discussion of the use of equipment in the production processes necessarily calls for a review of both the quantity and nature of equipment generally available in the co-operatives in order to put our analysis in the proper context.

The following observations are noteworthy: that there seems to be a generally low level of mechanization in the union arising from lack of enough major/basic farm machinery such as tractors and implements, that the available equipment is mostly old and marred by numerous breakdowns and expensive repairs and, therefore, not very efficient. It was also pointed out that the Government of Zimbabwe has the responsibility of providing these co-operatives with the kind of equipment needed for the scale and complexity of the operations expected of these enterprises. It is against this background that we shall make our analysis. The equipment used in all the co-operatives included tractors, tractor discs, tractor ploughs, ox-drawn cultivators, hand tools, spraying and irrigation equipment, planters, etc. (See Table 13).

Table 14 below shows the total time consumed by the equipment whilst engaged in the various operations in the production of different crops in the co-operatives. All in all, equipment in its totality clocked around 230 283 hours or 28 785 equipment days (based on an eight-hour working day).

It is not surprising that these figures compare well with the total labour days for the simple reason that on average each equipment had one worker attending to it each time the equipment was in use. To put it in another way, there was never a time when labour was at work without the aid of some form of equipment. As shall be discussed later in this section, hand tools such as hoes, shovels, spades and forks accounted for the bulk of this time.

From Table 14, it can be observed that 83% of this time was absorbed in maize production alone. This was followed by peaches which accounted for 7%. Although there are a few insignificant exceptions, it can be generalized that the time consumed by equipment in different crops somehow follows the respective areas put to such crops. In other words, it was more the area put to a particular crop that determined the extent of equipment use in the production of that crop than anything else.

Table 13

EQUIPMENT UTILISATION PER OPERATION

OPERATION/ ACTIVITY	TRACTOR	TRACTOR PLOUGH	TRACTOR DISC	TRACTOR PLANTER	TRACTOR CULTIVATOR	TRACTOR TRAILER	OX PLOUGH	OX CULTIVATOR	OX HARROW
Ploughing	1 881 (39%)	1 881					101		
Discing	772 (16%)		772				32		746
Planting	832 (17%)			832			80		
Weeding									
Fertilisation									
Liming	72 (1%)								
Cultivation	144 (3%)				80			670	
Thinning									
Prunning									
Spraying	64 (1%)								
Irrigation									
Harvesting									
G/Picking									
Shelling Packing	70								
Transporting	1 100 (23%)					1 100			
TOTAL	4 885 (5%)	1 881	772	832	80	1 100	213	670	746

Table 13 (continued)

OPERATION/ ACTIVITY	OX PLANTER	SCOTCH-CART	WATER PUMP	PIPING	SPRAYING EQUIPMENT	HAND TOOLS	WHEEL BARROW	OTHERS	TOTAL
Ploughing						880			4 743
									(5%)
Discing									2 332
									(2%)
Planting	184					14 404			16 33[illegible]
						(16%)			(1[illegible]6%)
Weeding						52 572		640	53 21[illegible]
									(52%)
Fertilization						21 014			21 014
						(23%)			(21%)
Liming						96			168
Cultivation						128			1 02[illegible]
									(19%)
Thinning									
Pruning						*			
Spraying					536				600
Irrigation			152	*					152
Harvesting									
G/Picking									
Shelling								240	260
Transporting		197					86	132	2 615
									(3%)
Total	184	197	152		536	89 094	86	1 01[illegible]	102 440
						(87%)			

** Figures were not provided.*

Table 14

EQUIPMENT HRS PER CROP BY COOP

CROP/ COOP	MAIZE	SUGAR BEANS	GROUND NUTS	SOYA-BEANS	SUN-FLO-WER	PEACHES	PEAS	POTA-TOES	COTTON	RAPOKO	APPLES	APRI-COTS	PLUMS	TOTAL
Bethel	11806			3227			1253							16 286
	(72,5%)			(19,8%)			(7,7%)							(100%)
Magura Batanai	12909,6	1320												14 229,6
	(90,7%)	(9,3%)												(100%)
Mukute	9034	352	301							2644				12 331
	(73,2%)	(2,9%)	(2,4%)							(21,4%)				(100%)
Nyahambe	3518,5				224				658					4 400,6
	(80%)				(5,1%)				(15,0%)					(100%)
Rujeko	5138	1506												6 647
	(77,3%)	(22,7)												(100%)
Tenhi	5305,4					16107,2		2511,5			3106	2139	2033	31 252,1
	(17,0%)					(51,5%)		(8,0%)			(9,9%)	(7,0%)	(6,5%)	(100%)
Wiriranayi	10629	1008												11 637
	(91,3%)	(8,7%)												(100%)
Zingondi	83608													83 608
	(100%)													(100%)
Kuedza Mwimba	26816													26 816
	(100%)													(100%)
Tauyanarwo	5271				416									5 687
	(92,7%)				(7,3%)									(100%)
Ruombwe	8516													8 516
	(100%)													(100%)
Rupotaso	1561													1 561
	(100%)													(100%)
Kabatana	7212													7 212
	(100%)													(100%)
TOTAL	1914246	4 189	301	3 227	640	16 107,2	1 253	2 511,5	658	2 644	3 106	2 189	2 033	230 283,3
	(83,1%)	(1,8%)	(0,1%)	(1,4%)	(0,3%)	(7,0%)	(0,5%)	(1,1%)	(0,3%)	(1,1%)	(1,3%)	(1,0%)	(0,9%)	(100%)

If we take maize as an illustrative crop in our equipment operations analysis, we see that hand tools, comprising mainly of hoes, forks and other such items, accounted for the bulk of the equipment hours. They accounted for 87% of the time. This is followed by tractor hours which accounted for about 5%.

Most of the hand tools time was consumed in weeding which accounted for 59% whilst fertilizer application ranked second, accounting for 23%. A significant operation using hand tools was planting which contributed 16%. Coming to the tractor, most of its activities were centred on ploughing, transporting, planting and discing. Ploughing accounted for 39% of its time, followed by transporting (23%), planting (27%) and discing (16%). Since each time the tractor was engaged in these activities, it was paired with the appropriate equipment, this necessarily implies that the time clocked in these particular activities is the same.

Overall, weeding consumed the bulk of the equipment time, accounting for 52%, followed by fertilizer application (21%), planting (16%), ploughing (5%), transporting (3%), discing (2%) and the rest in that order.

One of the salient features which can be deduced from Table 13 is that most of the activities are not mechanized. It is only in ploughing, transporting, planting and discing that such mechanization exists on a meaningful scale. The tractor is obviously the dominant and most versatile of all the co-operative machinery.

Another interesting feature to emerge from our research was that there were cases of co-operatives that utilized combinations of tractor operations and draught-power operations, or tractors working with ox-drawn implements. A classic example of the latter is Tanhi were three cultivators, which should be ox-drawn under normal circumstances, were actually drawn by a tractor. In fact, cultivation was felt to be more cost-effective using six span of oxen rather than tractor cultivation.

It was also interesting to note a number of innovations which were executed with ingenuity. For instance, one co-operative attempted to mechanize top-dressing spraying by means of a tractor-drawn boom sprayer with bored hoses while maize shelling was propelled by a tractor engine.

In addition, a number of co-operatives had boreholes which were broken down but needed only repair or electricity connections, and only one co-operative undertook active irrigation of crops.

Most of the spraying time was devoted to horticulture, particularly the Tanhi orchard. This orchard also accounted for almost all the pruning time, followed by the Zingondi orchard.

Further, wide variations in the rates of tractor utilization per hectare were detected amongst the co-operatives. This can be explained in some cases by the work routine followed in the co-operatives and by the fact that some of the equipment was inefficient because it was old and would frequently break down.

Some co-operatives had to hire tractors for ploughing and discing purposes in the absence of their own and given the demand placed on the MDU pool, this left these co-operatives at the mercy of certain individuals who charged more than the average rates. A case in point here is Rujeko which hired tractors for ploughing and discing for $65 per ha and $35 per ha respectively when the DDF Tillage Unit and MDU rates were $55 per ha and $28 per ha respectively.

It is also important to note that transporting activities consumed considerable tractor time (23%). The tractor ferried both inputs, such as fertilizer and seed, and the workforce to the fields. In addition, a scotchcart and a wheelbarrow were used for the same purpose. We also noted that such transport machinery is not in abundance in the union although it is relatively cheaper and quite handy.

Input Utilization

Once again this is an area which presented the research team with data collection problems as proper records had not been kept by the co-operatives. We, however, managed to salvage some data from the scanty records available and through recall interviews. Be this as it may, the information presented here is sufficiently indicative of the general state of affairs.

The inputs used can be categorized as follows: seed, fertilizers and chemicals. Table 15 gives a qualitative account of the type of inputs used by each co-operative for the various crops. Seed was left out for the obvious reason that, except for perennial crops like fruit and vegetables, seed was definitely applied to the other crops.

It is clear from the Table that all the co-operatives applied at least one of the two inputs to at least one crop. This can be seen immediately as maize grown by all co-operatives had at least one form of fertilizer used always on it. Almost all the co-operatives also used chemicals on the maize crop.

Therefore, speaking of both fertilizer and chemicals, these inputs were perhaps applied at the expense of other crops. Another crop which can provide comparable data is sugar beans. All the co-operatives that grew it also applied fertilizer to it, but only one actually had no such inputs at all, a possible reflection of their resistance to pests and diseases. Generally, all horticultural crops received chemical inputs of one form or the other.

Going by this information, we are led to believe that there seems to be an awareness of the benefits accruing from the use of fertilizers and chemicals, wherever possible, as reflected by the frequency of use tabled above. Of course, the use of such chemicals would depend on the need, the ability to identify this need and the finances to buy these inputs, among other factors.

Regarding the actual quantities of inputs used, may we start by pointing out that information pertaining to chemicals, particularly their exact brand names and the units in which they were purchased, could not be ascertained easily. For this reason, we have deliberately excluded chemicals in our analysis of the input quantities. It is, however, important to note that this area of chemicals will need further research.

Table 16 shows the combined quantities of inputs which were used by the co-operatives. The information in this Table shows that almost 300 tonnes of inputs were applied by the co-operatives for their various crops.

Table 15

FERTILIZER AND CHEMICAL APPLICATION 1986/1987

	MAIZE	SUGAR BEANS	GROUND NUTS	SOYA BEANS	SUN FLOWER	POTA TOES	COTTON	RAPOKO	PEAS	PEACHES	APPLES	OTHER FRUITS
Bethel	*+			*+					*-			
Kubatana	*-											
Kuedza Masimba	*+											
Magura Ba antsi	*+	*-										
Mukute	*+	*+	--						--			
Nyenambe	*+				*-		*+					
Rujeko	*+	*-	*-									
Ruponeso	*-											
Shingirayi	*											
Tanhi	*+					*+				*+	*+	*+
Wiriranyi	*+	*-										
Zingondi	*-									-+		

Source: Field Survey, 1986

** Fertilizer application*

+ Chemical application

- Fertilizer and/or Chemical not applied

A blank space indicates that that particular crop was not grown.

Fertilizers accounted for 91% of this tonnage whilst seeds accounted for the remainder. It is also evident that compounds accounted for 55% of the total fertilizers whilst the various straights accounted for the remainder. Therefore, the ratio of compounds to straights is roughly 50%. Maize seed accounted for 63% of the total seed quantities, whilst the fertilizers going into maize accounted for roughly the same proportion. The ratio of compounds to straights in maize production is again very close to 50%, whilst that of seed to total fertilizers, for the same crop, is about 14%.

Table 16

QUANTITIES OF INPUTS

		FERTILIZER (kg)		
Crop	**Seed (kg)**	**Compounds**	**Straights**	**Total Fertilizer.**
Maize	17 100	114 150	117 300	231 450
	(63%)	(77%)	(97%)	(86%)
Other Crops	10 090	34 700	4 200	38 900
	(37%)	(23%)	(3%)	(14%)
TOTAL	27 190	148 850	121 500	270 350

From our calculations, we see that maize fertilizer accounted for 77% of total compounds, whilst maize straights accounted for close to 100% of total straights when all crops were considered. Overall, maize fertilizers accounted for 86% of total fertilizers going into all crops. These figures supported our earlier view that maize production receives considerable attention relative to other crops. It is, therefore, necessary to carry out further investigations into the kinds of inputs directed at this crop.

The seed maize varieties used in the union were R201, R215 and SR52. The majority of the co-operatives used R201, followed by R215 whilst SR52 was not popular, having been used by only one co-operative. This trend must have developed because the co-operators realized that R201 and R215 are short to medium duration varieties and do not require as much rainfall as SR52. SR52 is a long-maturity variety which requires plenty of rain. It is obviously unsuitable then, given the erratic weather patterns. It was interesting to note that although SR52 was not often used, its qualities, mainly its ability to achieve higher yields per hectare relative to other varieties, were noted. This obviously demonstrates the fact that the co-operators have a certain degree of knowledge on which they have based their decisions about which varieties to select, contrary to popular belief.

Another salient feature is that there is no clear pattern in the quantities of seed used by the co-operatives. One would generally have expected those that put more land to maize to also have used proportionately more seed. This does not, however, appear to be the case. For instance, Bethel, with 120 ha under maize, used 40% less maize seed than, for instance, Magura Batanai which has only 56 ha under maize.

This is quite evident when per hectare seed application for the various co-operatives is considered. The range is alarming. Whilst Kubatana applied 9 kg per hectare in maize seed, Nyahambe applied 285 kg per hectare. Some of the rates are as follows: Magura Batanai (74 kg), Rujeko (25 kg), Tanhi (32 kg), Kuedza Masimba (18 kg) and Zingondi (23 kg). On average, 30 kg of maize seed was applied per hectare in the union. At this point it is important to note that, on average, 25 kg of seed is recommended per hectare.

This suggests that the majority of the co-operatives do not actually know the requirements of maize for one hectare, so some co-operatives are applying above the requirements and others below, resulting in either waste or reduced seed and consequently reduced productivity. This is an obvious area for training attention, otherwise a lot of money will go down the drain.

Similar trends are also observed in the use of fertilizers. Again, Bethel, with the largest area put to maize, accounted for the second largest proportion of fertilizer quantities for all the co-operatives, whilst Zingondi with only 41 ha of maize, a third of Bethel's, accounted for 34%. Similarly, Tanhi, with 56 ha, used 9%, less than Magura Batanai with the same acreage.

Compound D (CD) and Ammonium Nitrate (AN) are the only fertilizers which were used in maize production. Whilst the overall proportion of CD to AN stands at about 55%, wide variations are observed when an analysis is made between co-operatives. This proportion ranges from 12% to a maximum of about 95%. These differences are difficult to explain. What is clear, however, is the fact that this is not accounted for by the differences in the PH levels in the soils because the majority of them did not have their soils tested. As a rule of thumb, the ratio should be around 50%.

Observations from an intra-co-operative analysis of per hectare fertilizer application rates are equally interesting. Although the average is about nine bags per hectare, the range is alarming, with Zingondi having used about 50 bags per hectare of both fertilizers and Rujeko about three bags. Of course, the figure for Zingondi is highly suspect, but what seems obvious is that there was an over-application of fertilizers. Magura Batanai used 17 bags per hectare, Nyahambe 11 bags, Kuedza Masimba nine bags, Bethel 11 bags and Tanhi seven bags.

Considering that the generally recommended rates for both fertilizers are 12 bags per hectare in the rough proportion of about one to one, clearly there are instances of both over and under-application. As the majority did not have their soils tested, these differences cannot be explained by the PH levels in the soil. It would seem that there is no knowledge of the actual soil requirements as regards fertilizers. This obviously will affect the output and productivity.

In short, therefore, we noted that input application amongst the co-operatives did not follow the correct and recommended farming practices. The individual rates showed wide variations ranging from over-application to under-application. As soil tests were seldom done, it would appear that the decision to apply fertilizers, let alone to determine the quantities to be applied, was taken rather haphazardly. This is yet another area that should be focused on in training.

As regards chemical use, the survey found that only a few co-operatives actually used chemicals on a significant scale. There, however, did not appear to be a large incidence of pest and disease attack in most crops which warranted the use of such chemicals. Nevertheless, it was noted that the Tanhi orchard had shown a decline in peach yields and a severe infection of the root knot nematodes was detected by Plant Protection and Research Institute (PPRI) specialists. The Bethel peas crop had sustained an 8% nildew infection whilst part of the maize crop had severe symptoms of phosphorous, zinc and nitrogen deficiencies, probably because less than the recommended rates of fertilizers had been applied.

Although data on crop rotation was generally available, there were indications that, in most co-operatives, maize was being continuously cropped in the same fields for up to three years, a practice not recommended if serious pest and disease problems are to be avoided, as this type of mono-cropping encourages a build-up of damaging pests and diseases, particularly the stalkborer and streak virus, which can cause a yield loss of up to 70%.

The misuse of pesticides on agricultural collective farms raises a lot of concern. This was revealed in a study done by the PPRI. The main highlights of this study are discussed below.

There is a generally widespread misuse of pesticides in the union, coupled with the general lack of understanding of the causes of crop and pest and disease problems. For example, the report indicates that:

> There is no clearly defined crop rotations, diseased plant debris remains in the field long after harvest; an absence of regular soil analysis has led to a depletion in soil fertility and, as a result, pests and diseases are now rife amongst the crops growing in the co-operative farms.

Further, the report also noted that the members were generally illiterate and had little access to the technical know-how required to use pesticides safely - that is, lacking the ability to understand the highly technical "directions for use" which appear on the pesticide labels.

As a result, the report continues by pointing out that they are easy prey for unscrupulous pesticides sales representatives from multinational chemical companies. These representatives promote the sale of highly toxic chemicals, e.g. organophosphates, carbonates, or organochlorines, and synthetic pyrethroids, without stressing the need for protective clothing. The report quoted the case of Bethel Co-operative which had a purple triangle organochlorine and a red triangle organophosphate, without any of the recommended protective clothing being made available. In addition, it was observed that the members regarded "mushonga" or pesticides as a cure-all for pests and diseases and appreciated neither the economics nor the hazards involved in using inorganic pesticides.

The report identified several causes of pesticides misuse, noting that these stemmed partly from exploitation by chemical companies, and lack of strict Government regulations or poor policing of the existing ones.

The following is a list of identified misuse:

- None of the co-operatives have purpose-built pesticides stores and the existing makeshift stores do not have sufficient ventilation to prevent the build-up of toxic fumes.
- There is no proper protective clothing available so that overalls are worn without any other clothing underneath. There are no rubber gloves or gumboots, and no plastic jackets or trousers. If a respirator exists, the cartridge is not replaced regularly, rendering it completely useless. Individual co-operators protect themselves as best as they can by using their own clothing. This contaminated clothing is then washed without any precautions being taken, putting the launderer at risk.
- There is a general misunderstanding of the term "poisoning"; many co-operators complain of headaches and dizziness following exposure to pesticides, without realizing that these are symptoms of poisoning. The delay in the onset and the familiarity of the symptoms only adds to their confusion.
- There are no shower facilities available and so co-operators are unable to wash thoroughly with soap and water after they have been using pesticides.
- Illiterate people are often given the responsibility of applying dangerous pesticides, while on some co-operative farms, e.g. Tanhi, just one person does all the spraying and thus faces the hazard of continuous exposure to chemicals which have a cumulative effect.
- Spraying equipment is poorly maintained, leading to the leakage of toxic chemicals onto the body of the user and inefficient disposal of the chemical onto the target pest. For example, an old man at Bethel Co-operative was discovered spraying dimeton-s-methyl (a red triangle organophosphate with a high dermal toxicity) without the recommended protective clothing, that is, rubber gloves, boots, overalls and hood (as stated on the label), and using a knapsack sprayer that had a faulty nozzle. The faulty nozzle prevented the pesticide from reaching the underside of the tomato leaf which was the niche of the target pest, in this case red spider-mite. The old man was actually risking his health and wasting pesticide for absolutely no return, as the red spider-mite was never in contact with the pesticide.
- No records are being kept of the pesticides that are used or of the people who are exposed to them. If someone suffers from "mild" poisoning there is no one to report to and if the poisoning is severe, staff at the local clinics are not yet trained to administer the correct treatment. In a recent case of organochlorine poisoning at Bethel Co-operative, a car had to be found to transport the victims to hospital in Harare (145 km away).
- None of the co-operatives has adequate measuring equipment for diluting pesticides in the correct proportions, for example, graduated jugs, plastic funnels, or containers for decanting. All mixing is currently being done at the end of a hosepipe.
- There is no source area within the farms which could be used as a dump for empty pesticide containers or pesticide residues; this material is currently buried in a haphazard manner.

- The MDU does not yet have a safety officer who could be responsible for overseeing the safe use of pesticides.

These findings have prompted the plant protection specialist to design some general guidelines for the safe use of pesticides in agricultural collectives.

In addition to this, it has been recommended that each co-operative should have a crop protection officer whose main duties include the identification of pests and diseases, dealing with sales representatives of pesticides companies, and ensuring the safe use and storage of chemicals.

Further, some training courses have been arranged for the MDU collectives. These courses are specifically designed to meet the needs of farmers whose exposure to formal education is limited, but whose need for highly technical and scientific information is urgent if the co-operative farms are to become viable enterprises. Some of the training issues will be dealt with in later sections. In conclusion, the following additional points need to be noted:

- The extension services in the co-operatives were clearly inadequate. It was, however, noted that the co-operatives were considered as commercial enterprises so that Agritex's services were only available on request.
- The timeliness of pesticide/fungicide application is important so that if chemicals were applied too late, not only is the crop lost, but the chemicals are also wasted.
- When applying inputs, co-operatives do not normally adhere to the book so that the quantity of inputs, particularly seed applied to an area, is left to the discretion of the individual doing that activity. Personal judgement prevails, rather than recommended practices.
- Apparently, the shortage of finance for input purchases was not a major constraint as most of the co-operatives had either managed to obtain AFC loans or had stock carried forward from the previous season. This, coupled with the absence of standard application procedures, partly explains why Zingondi's inputs were so high. This co-operative had inputs, particularly fertilizers, far in excess of its requirements. Whilst the AFC provided for a larger acreage, the co-operative only ploughed a small proportion of what they had indicated on the loan application. This means that whilst the loan was considered disbursed and assumed to be in use, with interest accruals, the facility was, meanwhile, either being unproductively used or simply lying idle. This has obvious implications on the ability of the co-operative to meet its debt obligations.

Actual Crop Output and Yields

We shall conclude this paper chapter by giving a summary of the output of the different crops. Again this data, although indicative of the general trend, should be treated with caution as it is mainly an approximation in the absence of proper records.

A total of 17 290 bags of maize were harvested by the co-operatives. This figure comes to about 1 573t from a total of about 576 ha of maize. This represents an average yield per hectare of about 2,7t in an area where the average yield per hectare is around 5t. Thus the main finding here is that yields were slightly more than 50% of area potential.

The yields vary widely between co-operatives, ranging from about 6t for Nyahambe to about 1t for Kubatana and Nyamukamani. Rujeko and Bethel had yields of about 4t per hectare whilst Mukute, Kuedza Masimba, Tanhi and Zingondi had average yields of 2t. Ironically, Zingondi registered the highest fertilizer application rate per hectare which was far in excess of the recommended levels.

Of course, these yields are generally sub-standard for an area with so much potential in maize production. These poor yields actually challenge the co-operators. Asked why they put so much land to maize, they almost always said that it was easy to grow and that they could grow it better than other crops.

It is interesting to note that Nyahambe, the co-operative which had the least acreage put to maize and total area put to crops in general, achieved the highest yields per hectare. It would, therefore, appear that the available labour had relatively ample time to concentrate on improving productivity.

Data on other crop yields was generally scanty, which makes it difficult to carry out a proper analysis. What information there is generally indicates that the yields were on the whole very disappointing, except those for potatoes, peaches and other fruits. For the other crops, the main finding is that yields were far less than 50% of expectations, probably around 20-40%.

Such poor yields are mainly explained by the improper farming practices that are being used by most of the co-operatives. Inputs are not being applied in the right quantities and labour and equipment are being insufficiently utilized. In some cases, weed, pests and disease control are not being carried out at the correct time and consequently they are not very effective and so the inputs involved go to waste.

CHAPTER SIX

CROP ECONOMIC VIABILITY

Problems of Evaluation

Assessing the economic viability of the crops was one of the important aspects of the co-operative effort as a whole. The intention of this exercise, it was hoped, was to evaluate the nature and quantity of incomes derived from the economic activities, less the associated costs. This, however, presented a number of problems, the major ones being the accounting inadequacies and the fact that none of the co-operatives costed their labour at all.

Another critical area was that of the level of indebtedness of the co-operatives to various lending organisations and the consequent loan repayment levels which could not be ascertained in the absence of AFC and other lender records. Equipment and machinery were not depreciated and neither were the records on allowances and share distribution properly kept. In most cases, this data was either partially recorded or not recorded at all. When attempts to verify it were made, the results were inconsistent.

In this respect, our analysis of the economic viability is rather limited to a few critical issues. This section will present a broad overview and highly aggregated analysis. We should point out that a highly disaggregated micro analysis of the viability of the co-operative enterprises, particularly on the crop production aspects, is an area which warrants further research. We would also note that our analysis is necessarily restricted to crop production viability, particularly maize production, because of the relative data inadequacies in other enterprises.

Labour Costs

According to the Agricultural Industry Employment Regulations No. 15 of 1988, the agricultural wage was set at about $75 per month. This figure was based on a nine-hour working day for 26 days a month. However, in view of the circumstances prevailing in the co-operatives, we have adopted, for the purposes of this analysis, an eight-hour working day and 26 days a month.

We have then arrived at an hourly wage of $0,56. By simply finding the product of hours worked in the various crop enterprises in the respective co-operatives and findings the per hectare averages the following picture emerges (see Table 17 below).

Table 17

AVERAGE VARIABLE LABOUR COSTS

	Maize	Other Crops	Total
Bethel	37	48	39
Magura Batanai	185	298	193
Mukute	232	593	278
Nyahambe	180	34	106
Rujeko	111	73	99
Tanhi	94	289	183
Wiriranayi	105	122	106
Zingondi	74	204	124
Kuedza Masimba	105	17	105
Nyamukamani	109	-	95
Ruponeso	122	-	122
Kubatana	119	-	119

Average Variable Labour Costs

The average computed labour cost for maize production is around $101 per ha whilst that for other crops is about $156 per ha. For the total crops combined, the average is $114 per ha.

The average labour costs fluctuate widely between the co-operatives with a range of almost $200 per ha for maize and more than $500 per ha for other crops. The same fluctuations are observed when the average per hectare costs for all crops combined in each co-operative are considered. This range varies from $39 to $278. On the surface, and going by the respective ranges and averages, maize appears to have a relative cost advantage over other crops.

These relative cost variations between crops and within the same crop by different co-operatives are a manifestation of a number of factors. These include the use made of the available labour in the respective co-operatives, the labour allocation between competing crops, the level of mechanization as well as the nature of the crops in the co-operatives. For instance, labour allocation at Tanhi favours the peach orchard whilst in some co-operatives crops such as sunflowers do not receive much labour attention.

In a Windmill technical publication, *The Profit Planner,* of 1986, the variable labour costs per hectare on low yield (4 000 kg per ha) for maize is $201. Thus a broad statement of analysis to be derived from this is that the variable labour costs per hectare in co-operatives are generally below the national average. Roughly, the co-operative labour costs are between 60% and 80% of the national average. The reason is mainly that there is generally an under-utilization of the available labour in this crop.

Equipment Costs

DDF Tillage Unit charges were used, although subsidized, for costing the use of major equipment (that is, tractors and tractor-drawn implements). These should provide us with minimum costs per hour of equipment utilization. We have deliberately excluded other equipment in our costing.

Please note that the following DDF rates are for the tractor and its relevant implement.

Table 18

DDF TILLAGE RATES

Operation	Time taken/ha	Rate/ha	Rate/hr*
Ploughing	3 hrs	$55	18,33
Discing	1&half hrs	$28	18,67
Planting	1&half hrs	$22	14,67

Source: Ministry of Local Government and Housing, DDF Computations

Table 18 below is a summary of the tractor and implement hours in the three major operations, namely ploughing, discing and planting. An additional classification "other" has been included in order to cater for other tractor operations such as cultivation, liming, spraying, shelling and transportation. These figures are combined for all the co-operatives.

Table 19

TRACTOR OPERATIONS: TIME AND COSTS

Operation	Time (hrs)	Computed costs ($)
Ploughing	1 881	34 479
Discing	772	14 413
Planting	832	12 205
Others	1 440	11 078
Total	4 885	72 175

In order to approximate the rates for the liming, spraying, shelling and transportation activities, the planting rate was deflated by 50%.

Overall, the average tractor costs per hectare are about $125, and when this is broken down into operations the average per hectare rates are as follows: ploughing $59, discing $25, planting $21 and others $19.

As evident from the Table, the total tractor operation costs come to about $72 175 for all the co-operatives.

About 50% of these costs were observed in ploughing whilst discing accounted for 20% and planting and other activities 17% and 15% respectively. Thus, not only is ploughing relatively expensive, but it accounts for the bulk of the operating costs. The other three operations share the remainder of the costs in roughly the same proportions.

Another observation is that whilst the per hectare rate for ploughing is higher than the DDF charge, the rates for discing and ploughing operations are relatively less than the DDF ones.

Of course, both these total and per hectare rates vary throughout the various co-operatives for a number of reasons. These reasons include the fact that some co-operatives did not go through all the mechanized operations, particularly discing, planting, cultivation and others because of lack of equipment and finance. In cropped areas, the respective co-operatives also vary markedly. The per hectare cost variations for the different operations are also bound to vary according to the level of efficiency. It should be noted that efficiencies depend on a number of factors including the condition of the equipment and the expertise of the equipment operator as well as the level of supervision. Table 20 below shows the estimated per hectare overall tractor costs for the different co-operatives.

Table 20

TRACTOR COSTS PER HECTARE

Co-operative	Maize	Other Crops
Bethel	133	152
Magura Batanai	175	271
Mukute	43	50
Nyahambe	107	55
Rujeko	134	95
Tanhi	148	400
Wiriranayi	-	-
Zingondi	132	14
Kuedza Masimba	162	-
Nyamukamani	210	-
Ruponeso	-	-
Kubatana	-	-

Although the average per hectare tractor costs for maize are around $133, we note significant variations from this figure when individual co-operatives are considered. About half of them are near this figure, but the others are either well above or well below. There does not appear, therefore, to be a general pattern in equipment utilization.

The average per hectare costs for the other crops are between $150 and $200. Again, there are very wide variations around these figures with the majority well below these figures.

Tanhi has a high per hectare average for "other crops" mainly because of the extensive tractor use in transport, spraying and other duties particularly in the orchard.

Input Costs

Discussion on this aspect is mainly centred on Table 21 below which shows the computed approximate average input costs per hectare.

Table 21
INPUT COSTS

	Total	Maize per ha	Other Crops	Total
Bethel	44 246	369	7 281	51 527
Tanhi	14 112	252	14 217	28 329
Nyamukamani	5 511	128	25	5 536
Wiriranayi	6 727	198	2 628	9 355
Nyahambe	227	32	4 157	4 384
Zingondi	7 412	181	26	7 438
Rujeko	19 244	214	4 779	24 023
Magura Batanai	22 225	397	1 161	23 386
Mukute	2 686	192	518	3 204
Kubatana	1 941	97	-	1 941
Kuedza Masimba	18 109	206	-	-
Ruponeso	-	-	-	-
TOTAL	142 440	247	34 792	177 232

The above Table shows that whilst the average per hectare input cost amounted to about $250 for maize, the comparable costs for the other crops were around $200. Again, when individual co-operatives are considered there appears to be wide variations around the figures.

Table 22
MAIZE PRODUCTION COSTS

	Total	Per Hectare
Labour	58 176	101
Equipment	76 277	135
Inputs	142 440	247
TOTAL COSTS	276 893	480

Table 22 summarizes the estimated total costs of maize production in all co-operatives as well as the total average per hectare costs. The total estimated costs amounted to about $276 900, which comes to an average of about $500 per ha. This figure shall be used in arriving at the estimated gross margins for this crop.

As can be observed from the Table, inputs account for the highest proportion of the total costs, about 50%, whilst 30% is accounted for by equipment and the rest by labour. These figures suggest an equipment/labour ratio of about 75%, suggesting that it is relatively cheaper to use more labour than equipment in factor proportions.

We now turn to a discussion of the incomes from the crop enterprises before we finally arrive at our analysis of the gross margins.

Value of Output

In this section we present the approximate gross values of the crop enterprises. This, together with the costs discussed above, will help us to arrive at some indication of the gross margins. Table 23 below is a summary of the estimated gross values of the crop outputs:

Table 23

VALUE OF OUTPUT

Crop	Total Gross Value	Average/Ha
Maize	267 840	465
Other	65 000	409
Total Average	332 840	445

From the Table we can see that maize has relatively higher average values per hectare compared with the other crops combined. The maize figure can be broken down further by co-operatives (see Table on gross margins below). The main feature of the maize output gross values is that, like the gross outputs discussed earlier, the output values of individual co-operatives vary widely from the average of $465 per ha. In fact, the majority of the co-operatives registered output values well below this average, as low as $176 per ha in one instance. The reasons for this have already been discussed under the section on crop output, from which these values were derived.

Maize Gross Margins

In the preceding discussion, we dealt with the costs of production as well as the estimated value of the outputs. It is now necessary to analyze the gross margins associated with production. In Table 24 below, we present a summary of the various costs and output values as well as the gross margins for each co-operative.

On average, the estimated total average costs per hectare are $483. This figure is broken down into labour costs ($101 per ha), equipment costs ($135 per ha) and output costs ($247 per ha).

Table 24

MAIZE GROSS MARGINS PER COOP

	Labour Costs	Equipment Costs	Input Costs	Total Costs	Gross Output Value	Gross Margin
Bethel	37	133	364	359	723	+184
Magura Batanai	185	175	397	757	527	-230
Mukute	232	43	192	467	270	-197
Nyahambe	180	107	32	319	1080	+761
Rujeko	111	134	214	459	662	+203
Tanhi	94	148	252	494	273	-221
Wiriranayi	105	-	198	303	266	-37
Zingondi	74	132	181	387	285	-102
Kuedza Masimba	105	162	206	473	362	-111
Nyamukamani	109	210	128	447	176	-271
Ruponeso	122	-	-	122	225	+103
Kubatana	119	-	97	216	325	+99
Averages	101	135	247	483	465	-16

From the Table, the following observations can be made :

- The gross output values are significantly greater than the sales value because some of the yields were retained for consumption during the year. Such retentions were on average at least a 91 kg bag of maize per member.
- The average gross output value per hectare is approximately $465. Subtracting the costs from the output values, we came up with a negative gross margin of $18 per ha.
- The input costs account for 51% of the total costs per hectare whilst equipment and labour costs account for 28% and 21% respectively. The reasons for this have been discussed in earlier sections and they include over-application of inputs and low mechanization levels as well as the labour-related problems.

Although the average gross margin is around $18 per ha, further disaggregation brings out a very interesting pattern. We note that seven of the 12 co-operatives registered negative gross margins whilst the rest were in the positive. In both groups there are wide variations. For instance, the lowest negative figure is $37 per ha for Wiriranayi whilst the largest figure is for Nyamukamani with $271 per ha. Similarly, the lowest positive gross margin is for Kubatana with $99 per ha whilst the highest is for Nyahambe which registered $761 per ha.

It should be noted, however, that for Ruponeso and Kubatana which both had positive margins, the equipment costs particularly could not be ascertained. For instance, Kubatana hired tractors, but the costs incurred could not be confirmed. If they had been, perhaps the gross margin would have been negative.

Broadly speaking, therefore, the study found that, contrary to the claim made by most co-operatives that said they had positive returns from maize production, the maize crop did not provide reasonable economic returns for most of the co-operatives. This is a critical finding because it has serious implications for the co-operatives that have tended to put primacy on this crop without a clear understanding of the returns.

Further, an inter-crop analysis at the national level shows us that maize has relatively less returns per tonne compared with other crops, going by the producer prices. But when the per hectare returns are considered, it is noted that the picture changes in favour of maize. Whilst it was relatively easy to produce 6t of maize per ha and bringing in a total of $1 080 going by its current producer price, it was quite difficult for the co-operatives to achieve a yield of 1t per ha for groundnuts, for instance, which has a producer price of $900 per tonne. All this points to the fact that we need to look into the co-operatives' individual circumstances before we can condone the choice of crop production. It is not sufficient to work on the basis of the producer prices. We need to look at what the co-operatives are capable of achieving given their individual circumstances, namely the capital base, the quality and level of the resources, and so on, before recommending certain cropping patterns.

CHAPTER SEVEN

WELFARE OF CO-OPERATORS

Non-Agricultural Projects

Apart from the main crop enterprises discussed in earlier sections, the MDU co-operatives are also engaged in a number of other supplementary activities. Such activities are commonly referred to as "income-generating projects" and are supposed to supplement the main crop enterprises.

As can be observed in Table 25 below, such projects include market gardening, poultry, welding, carpentry and so on. These projects vary widely both in nature and in the scale of their operations.

The Table shows that gardening was the most common project, with all but one co-operative having engaged in this activity. The second most common project was dressmaking, with five co-operatives being engaged in this activity. Four co-operatives kept poultry, while three co-operatives were engaged in each of the following five different projects, namely tuckshop, grinding mill, workshop, carpentry and leasing of grazing land. Co-operatives in the other projects were distributed as follows: Welding (2), beerhall (1), firewood (1) and construction (1).

It can also be observed that the distribution of such projects amongst the co-operatives is skewed, with co-operatives such as Tanhi, Bethel and Mukute and Kuedza Masimba having eight, six and five projects each respectively, whilst others such as Nyamukamani and Ruponeso have one project each.

The nature and scale of operations of these projects present interesting observations. For instance, as regards the gardening project, it was noted that, with the exception of Bethel, Mukute and Tanhi, the projects were in individual hands. It was also interesting to observe that individually owned gardens tended to be small and catered for household consumption, whilst the collectively owned gardens actually made significant cash contributions to the co-operatives. Collectively owned gardens tended to be quite big and well cared for. There was a case of a co-operative, Shingirayi, which had both individual gardening plots and and a communal one, and both types were thriving.

In fact, the potential of market gardening has never been fully tapped. Some of the farm plans clearly recommend this enterprise. The market is there, particularly if we consider the fact that most of the co-operatives are surrounded by Model A resettlement farmers. Moreover, it appears that the co-operatives have sufficient knowledge to run successful gardening enterprises. But this needs careful planning in the use of labour.

Of course, the gardening projects are severely constrained by transport, the unavailability or malfunctioning of boreholes and the lack of irrigation equipment. Here it should be noted that those co-operatives with some kind of irrigation equipment or boreholes have thriving communal gardening projects.

The three co-operatives which had grinding mill projects were the only ones with electricity, until recently when they were joined by Kuedza Masimba. They mainly serve the resettlement farmers around their area and it appears they are always kept busy.

Table 25

INCOME GENERATING PROJECTS

	Garden	Grinding Mill	Poultry	Tuck-Shop	Beer-Hall	Dress-Making	Carpentry	Welding	Workshop	Firewood	Leasing	Other
Bethel	x	x				x	x	x				x
Kubatana	x			x						x		
Kuedza Masimba	x		x						x		x	
Magura Botanai	x					x					x	
Mukute	x	x	x	x		x			x			
Nyahambe	x						x					
Nyamukamuni	x											
Rujeko	x		x			x						
Ruponeso	x											
Shingirayi	x											
Tanhi	x	x	x	x		x	x	x	x			
Wiriranayi	x											
Zingondi	x				x						x	

Source: Field Survey, 1986

Zingondi had its ZESA facility disconnected when they failed to settle their bills. Ironically, a very big electric grinding mill which was donated to them was the cause of this disconnection. Because of its size, it was simply not suitable for small operations as it draws a lot of electricity.

Although the dressmaking project was also relatively common, it was noted that, in the absence of adequate sewing machines and finance for materials, the scale of operation was generally low. In fact, no such projects operated commercially. Most of the work was in the form of minor repairs. It would appear, however, that some co-operatives have skills in basic dressmaking.

As for the tuckshop project, again the nature and scale of its operation also differs significantly between co-operatives. For instance, Mukute's project is collectively owned and its operations are more or less of the scale of an ordinary retail outlet. Kubatana's tuckshop, on the other hand, is owned by an individual member and is poorly stocked. Kubatana also has a firewood project which previously had a contract to supply an army unit with specified quantities of firewood per month. Of course, this project, apparently lucrative, has depleted the tree population and, in the absence of a vigorous reafforestation programme, this project will come to a halt very soon with far-reaching vegetational consequences.

The carpentry, welding, workshop and construction projects focused mainly on the production and social aspects of the co-operatives themselves. For instance, the carpentry project was mainly confined to the making of small tables and benches and effecting minor repairs, whilst the welding projects, although they sometimes offered services to outside customers, focused mainly on repairs to farm machinery and equipment on the co-operatives. The construction project focused mainly on repairs to buildings and on the construction of very small buildings. Of course, most of these projects are hampered by lack of equipment and working capital, among other factors.

At the time of the survey, Zingondi had a beerhall project situated on the co-operative which operated from Thursdays to Sundays. It was quite apparent that this enterprise was thriving although we were not able to quantify this. One would assume that this project provides the co-operative with some kind of recreational facility, albeit at a social cost.

At least three co-operatives leased their grazing land to outsiders for a fee as a means of utilizing their excess capacity and also as a means of earning additional income. Again, the exact income generated from these activities could not be ascertained.

At Zingondi, this project has been interrupted after the local communal farmers cut the boundary fence and the fence separating the paddocks.

Lastly, we also observed that Kuedza Masimba had a communal rabbitry project whilst Wiriranayi had individual basket-weaving projects. This was to be expected since members of the Apostolic faith, who constitute Wiriranayi co-operative, have an aptitude for basket-weaving. But at this co-operative individual members have been absconding from co-operative activities in the interests of furthering their personal activities.

The cost structures of these activities could not be derived from the scanty information available, in the absence of a proper bookkeeping system. It was thus not possible to determine the levels of viability. What was clear, however, was that some of the projects bring in substantial income. Projects involving communal gardening, tuckshops,

grinding mills, poultry, beerhalls and leasing are responsible for the bulk of the income. These have more or less been consistent both in terms of their operations and in terms of generating income. Contributions from the rest of the projects appeared to have been relatively small and were characterised by fluctuations. Some of the projects did not benefit all of the co-operators despite the energies expended on these activities. Nevertheless, some of these projects partly fulfil an important social welfare function.

It was observed that the potential of some of these projects had not been fully realized and this could be attributed to a number of factors. Among these factors are lack of machinery/equipment, shortage of working capital and lack of sufficient skills. These factors are equally important. For instance, the unavailability of transport has placed capacity constraints on garden operations at Bethel co-operative. The same project has also been affected by the lack of boreholes and irrigation equipment as have the carpentry, workshop, construction and welding projects. In fact, a welding kit at Nyamukamani is lying idle because there is no electricity. Dressmaking projects are also hampered by shortages of sewing machines and working capital for materials.

The skills available to run some of these projects are not sufficient to keep them going smoothly. Members are only trained in elementary skills. For instance, the dressmaking, building, carpentry and welding courses only enable the graduates to do elementary work, which is very often unprofessional. This obviously has a bearing on the quality of the output of that project.

Another fundamental finding is that there does seem to be a major problem in planning these additional activities so that they fit into the overall co-operative schedule. To start with, most of these projects were not planned for but rather they came into being after training agents requested that co-operative members be sent for training to their courses. Thus the requests for training propelled the establishment of these enterprises. After graduating, and sometimes having been provided with tools, co-operators would then launch these projects. Incidentally, some of the tools provided were not quite appropriate to the co-operative circumstances. For instance, an electric welding kit was given to Nyamukamani by the Zimbabwe Project while they have no electricity facility. As indicated in previous sections, in fact, the effect of such income-generating activities when critically assessed has sometimes been to take away labour from the productive sphere, particularly the crop enterprises.

Further, the management has not fully incorporated their projects and other programmes in the overall co-operative plans. This has meant that some projects have been neglected, causing some conflicts. For instance, although Rujeko had sewing machines, the sewing project was neglected to some extent. The women concerned in this project had taken this to reflect the male dominance over their project as the Management Committee and some of the members preferred that people only engage in these activities after attending to the main co-operative chores.

Overall, therefore, in the absence of a proper costing system and planning schedule for these activities, it is difficult to give a very objective assessment of the projects, save for the main highlights above. It is our view that before any serious attempts are made in such directions, the cost structures of these activities need to be established in order to make a systematic appraisal of their viability. This is quite critical, as the co-operators may be pursuing unprofitable projects when they could be devoting their time to more profitable activities.

Social Services

The study tried to incorporate social services into its analysis. Ideally, such social services, when quantified, would be included in a social cost-benefit analysis of the collectives and thus should also be considered in assessing the economic viability of the co-operatives. Once again we encountered great difficulties here as the co-operatives could not provide us with much data. However, in this section we present such information as we managed to salvage in the course of this exercise.

Some of the social services provided in some of the co-operatives involved food, housing, health and sanitation, recreation and individual incomes. These aspects are briefly discussed below:

Food

The provision of food differed considerably within the union. Whilst some co-operatives provide food handouts, mainly in the form of mealie-meal, to their members, others had a communal kitchen where common meals were provided. It was noted that in the former case, the distribution generally did not take into consideration the size of each household. This meant that food deficits and surpluses were recorded in different households depending on their family sizes.

As for communal kitchens, only two co-operatives has such a scheme and one other co-operative supplied lunches when there was a great deal of work to be done in the fields. Mealie-meal, vegetables and meat were provided communally and children were generally catered for with both the handouts and the communal kitchens. Food, particularly mealie-meal, was retained from the previous season. The vegetables normally came from the gardening projects. An important observation from our analysis was that the quality of food provided was generally poor and did not provide an adequate balanced diet. Indeed, cases of malnutrition were detected in children, particularly at Wiriranayi co-operative.

Housing, Health and Sanitation

The housing situation was generally poor, with some co-operatives providing pole and dagga huts. However, the housing situation at Mukute was mostly good whilst Tanhi had embarked on a relatively beautiful housing project for its members. In the other co-operatives, members crowded in the old farmhouses which were poorly maintained, or found what was often inadequate shelter in huts, houses and other makeshift structures. The homes were usually poorly lit without enough ventilation. Ironically, Zingondi had reasonable shelter but the co-operators resorted to all kinds of poor shelter.

Regarding the health and sanitation situation, this again can be described as generally poor, with no adequate toilet facilities. The grounds were poorly maintained, if at all, with tall grasses, leaving the place prone to mosquito hazards and so on. Worse still, not more than three co-operatives, including Mukute, had first aid kits, whilst the nearest medical facilities were miles away.

Given that there were no adequate boreholes in the area, the source of water for domestic use was poor, leaving the co-operatives prone to attacks from water-borne diseases. All these inadequacies have obvious implications for the general health and well-being of the members both in the short and long terms. There definitely is a need for a health awareness campaign to arrest this dangerous situation.

Recreation

There was not much evidence of recreational facilities in the area. Only one co-operative had one TV set whilst another had a beerhall. Besides, recreational events tended to be few and far between, except on national occasions like the independence celebrations. Leisure life within the co-operatives is, therefore, dull and unexciting. Most members, particularly the young, have to go beyond the co-operatives' boundaries to the townships and so on to look for entertainment.

Individual Incomes

Although these could not generally be quantified, it was, however, noted that both the nature and level of such incomes varied widely within the union. At the few co-operatives which distributed living allowances/shares to their members, the amounts were barely adequate to meet their household needs. For instance, Tanhi distributed shares which barely amounted to $150 per year.

Bethel co-operative was the only one which could at least afford to pay its members about $40 per month constantly for about half a year as well as giving food handouts. This was possible because of the arrangements they made with Delta Corporation in the barley production contract.

The fact that they receive no regular incomes from the co-operatives has meant that members have no choice but to resort to individual enterprises such as basket-weaving at Wiriranayi, tuckshops at Kubatana, market gardening projects at various co-operatives and private plots on some co-operatives, notably Rujeko. As stated earlier, both the income and cost structures could not be determined. In addition, some members have relatives who are formally employed in towns and who send them cash and goods occasionally. This is how they manage to pay school fees for their dependants and for the few luxuries they enjoy. Some members have had to sell off their individually owned property such as livestock to meet school fees and other expenses.

Some co-operatives have made attempts to incorporate labour costs or living allowances in their request for AFC funding. To date, Magura Batanai and Rujeko have been successful though the amounts involved can barely be considered sufficient to meet their varied needs. Generally, with the current financial position of the co-operatives, it is difficult to see how share payments can be regularized without seriously threatening the already shaky economic base of the co-operative enterprises.

Education

As discussed earlier on, this is a thorny issue in the majority of the co-operatives. The problem is that neither the co-operative nor the individual members has ready money to pay the children's school fees. Some co-operatives are willing to sacrifice the co-operative's meagre financial resources for the children's sake, but their efforts are thwarted by those who do not have school-going dependants as they feel they are being deprived and that only *bona fide* members should benefit from co-operative finances.

Mukute is the only co-operative which meets all school fees, and which can apparently afford to do so. In some of the co-operatives, the education debate has become extremely heated.

CHAPTER EIGHT

CO-OPERATIVE MANAGEMENT

Introduction

The previous discussions have centred mainly on socio-demography, resource structure and utilization by the co-operatives, the land use patterns and structure of crop, livestock and other production activities. This chapter discusses how these enterprises were organized and managed in the various co-operatives.

Co-operative Management Structures

Regarding the organization and management of individual co-operatives, two distinct forms of management structures were found to be in use in the District. These structures are presented in Charts 1 and 2 below. It must be noted that, with the exception of one or two co-operatives, none of these enterprises had a clearly laid out organogram. As a result, the research team had to derive most of these structures through interviews and personal observations.

All but one of the co-operatives assume the structure set out in Chart 1, while Rujeko co-operative is the odd one out with a structure as set out in Chart 2. It will be observed that it is basically in the area of production organization that the two structures differ fundamentally.

General Meeting/Council

As illustrated in the two charts, the general council is the apex body, representing the general membership. It elects members into the Management Committee (MC) or Executive Committee (EC) as one of its responsibilities. It should also monitor the performance of the elected members. The bye-laws cover the functions, operations and procedures pertaining to the General Meeting (GM). The following are some of the provisions in the bye-laws regarding the GM:

- The supreme authority of the co-operative shall, subject to the provisions of these bye-laws, be vested in the General Meeting.
- The Annual Meeting shall be held as soon as possible after the date of the financial year-end and in no case later than six months after such date.
- A General Meeting shall be held at other times when summoned by the Registrar, the Chairman of the co-operative, the Committee of its own motion or at the written request of 20 members or one-fourth of the members of the co-operative, whichever is the less, but shall be held not less than once every three months.

The business of the GM normally includes the following: the election, removal and suspension of the MC, the inspection of annual statements of accounts and balance sheets; the amendment of bye-laws; and the expulsion of members from the co-operative and the approval of new members.

CHART I:

Cooperative Management and Organisational Structure

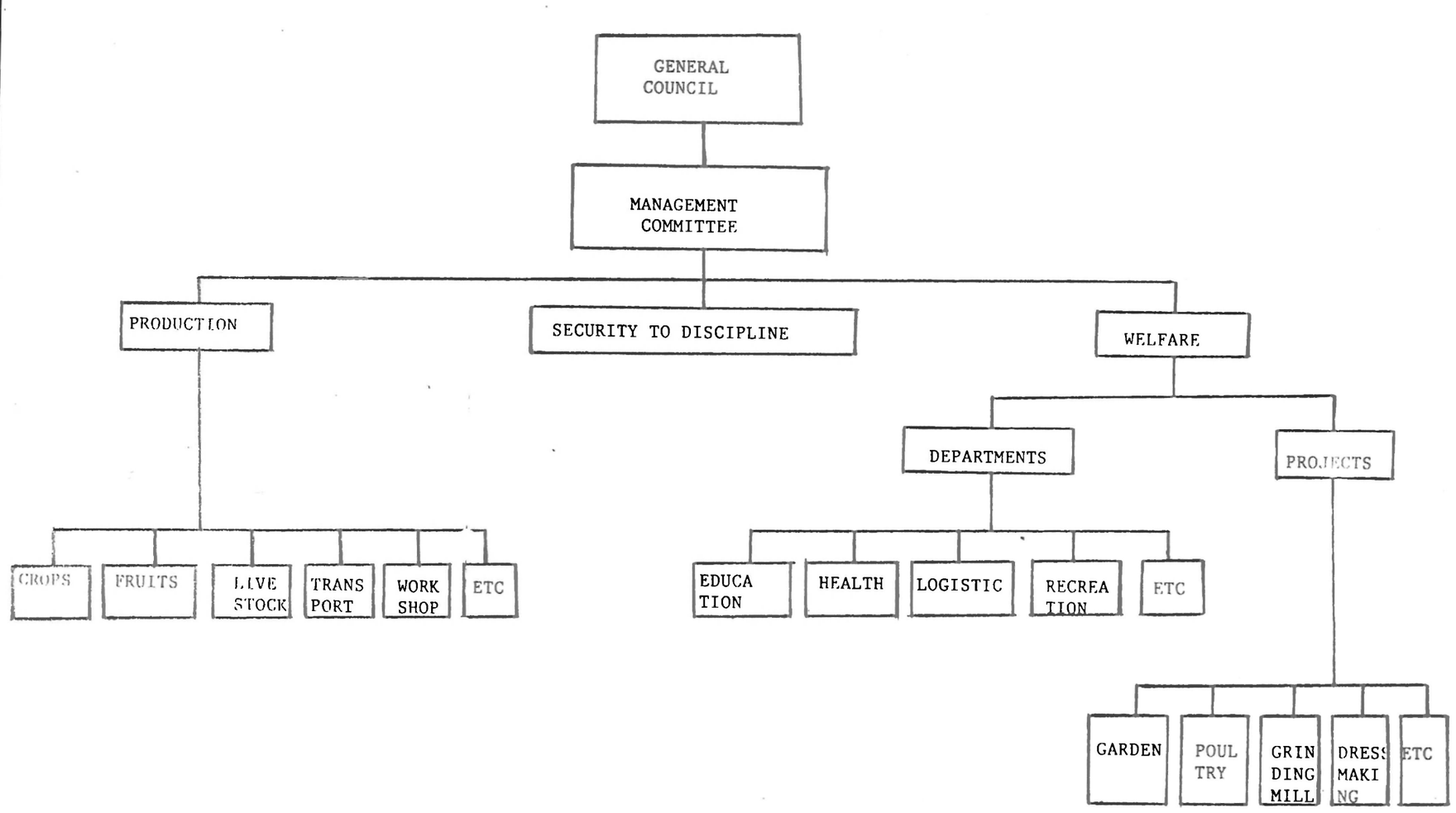
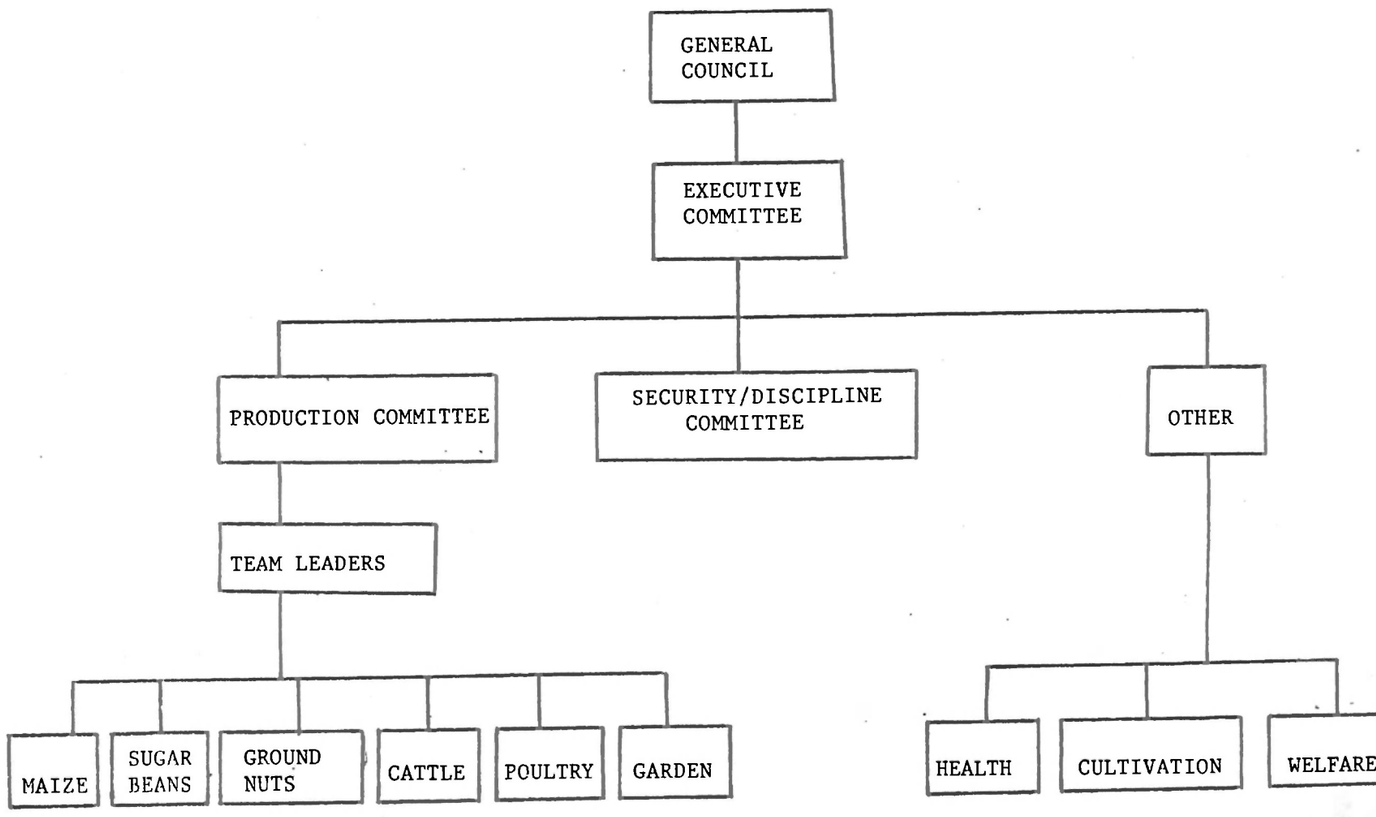


CHART 2



All the business discussed and decided at a GM shall be recorded in a minute book and the record shall be signed by the Chairman of the GM as confirmation.

Management Commitee

The Management Committee plans and executes the co-operative's programmes as approved by the General Meeting. The following are some of the important provisions in the bye-laws in respect of the duties, responsibilities and procedures of the MC:

- The Committee shall consist of seven members of the co-operative over the age of 21 years, there being a Chairman, who shall be Chairman of the co-operative and the General Meeting, a Vice-Chairman, a Secretary and Vice-Secretary, a Treasurer, and two Committee Members.
- Meetings of the Committee shall be held at least once every month, and may be summoned also at such additional times as the Chairman or Committee may decide.

The committee's duties include:

- To observe in all its transactions the Co-operative Societies Act (Chapter 193), the Regulations made thereunder and these bye-laws;
- To maintain or cause to be maintained true and accurate accounts of all monies received and expended, of all goods bought and sold, of all the goods and assets of the co-operative and of all business transacted by the co-operative;
- To examine the accounts and sanction expenditure subject to any general direction of a General Meeting;
- To keep a correct and up-to-date register of members, to supervise the maintenance of the prescribed records, to consider the inspection notes of the Registrar and his officers, to take necessary action thereon and report to the Registrar details of such action;
- To prepare and lay before the Annual General Meeting an income and expenditure account and an audited balance sheet;
- To elect new members to the co-operative;
- To call annual and other General Meetings in terms of Bye-Law 12 above;
- To arrange the terms on which the business transactions of the co-operative shall be conducted and to ensure the safe custody of the co-operative's goods and property;
- Subject to any special conditions or reservations imposed by a General Meeting, or by these bye-laws, to appoint, suspend and dismiss employees, to fix scales of salaries and remuneration in accordance with the law, to obtain security from employees and to ensure the faithful discharge of employees' duties;
- To handle all contracts and legal matters on behalf of the co-operative. All contracts shall bear on behalf of the co-operative three signatures; being the signature of the Chairman or Vice-Chairman, the Secretary or Vice-Secretary and

the Treasurer; provided that any contract so signed and/or executed and any document signed under the terms of Bye-Law 13 above shall, notwithstanding it is afterwards discovered that there was some defect in the appointment of any signatory or that any of them were disqualified, be valid and binding on the co-operative as if every such signatory were duly qualified and appointed;

- To acquire on behalf of the co-operative shares in other registered co-operative societies of limited liability and to appoint delegates to such co-operative societies to represent the co-operative;
- To open and maintain in proper order one or more bank accounts on behalf of the co-operative in terms of Bye-Law 13 above;
- To negotiate loans from members or non-members;
- To suspend members and recommend expulsion under these bye-laws;
- To pay from the funds of the co-operative to members of the Committee reasonable expenses, on such scales as the General Meeting shall approve, incurred solely in the execution of their duties on behalf of the co-operative;
- To decide pay, remuneration, bonuses and contributions in terms of the relevant sub-sectors. These are analyzed below.

In terms of Charts 1 and 2 above, normally three sub-committees come under management. These are the production, security/discipline and welfare sub-committees. These committees are comprised not necessarily of people from the Management Committee although they may be headed by a member of the EC.

The production sub-committee is supposed to oversee all major production enterprises, particularly those involving crops and livestock, as well as to supervise services such as transport.

The welfare sub-committee is in charge of the general well-being of the co-operative membership. This includes their educational, health and other social needs. It is interesting to note that the funds required to run this department supposedly come from the "income-generating projects" such as poultry, dressmaking, gardening and other related enterprises.

Inadequacies of Management Structures

It is interesting to note that the management structures presented above give little emphasis to authority-control mechanisms in the production sphere. Instead, the approach is a top-heavy administrative one assuming a more or less socio-political leadership role. A number of problems have arisen because of this and other factors. In fact, some of the problems have seriously crippled the majority of the co-operatives. Some of the major problems are now presented below:

- The majority of members do not seem to be familiar with the basic principles of collectivization. This has obviously created difficulties for the Management Committee when they have tried to organize operations.
- There also seems to be a lack of planning capacity due to a number of factors

including illiteracy, low educational levels and lack of relevant experience. This also extends to the areas of labour supervision, work organization, cropping, administrative procedures and so on.

- Because of a lack of planning capacity, decisions are often taken without any data/information base, or careful analysis and selection of possible options.
- The structure does not facilitate the flow of information between the Management Committee and the general membership. As a result communication between the two and within each of the two is very poor.
- Generally, both executive and general meetings are not held regularly in the majority of the co-operatives. There also seems to be little significance attached to the meetings themselves.
- There is a high turnover of Management Committee members because of the annual elections. Seldom are members re-elected into office after serving for a term, and more often than not the entire committee is voted out of office after serving a one-year term. This has critical implications as it means that often a committee is unable to plan and see its programmes through to the end or that a committee cannot use its experience in one year to design an improved plan for the next year.
- Further, although many Management Committee members receive training on subjects to do with the administration of co-operatives like bookkeeping, record-keeping, and basic farm management, much of the training is not put to efficient use because of the high turnover of members. This is of critical concern as the production manager post is an election post except in one or two co-operatives. This is an important post indeed and, for the person who has taken the post to acquire enough experience and thereby increase his capacity, the tenure of office must be reasonably long. But the current situation is that the electoral procedure does not make an objective assessment of how suitable the nominees are for the various management posts, and the posts of production manager and so on have tended to be almost rotated among the membership on an annual basis. This has obvious implications for productivity. In fact, there is duplication of resources and waste.
- There have been instances where members of the MC itself have failed to observe the provisions of the bye-laws, deliberately or not, thereby setting a bad example to the rest of the collective community. And in the absence of a strong disciplinary committee to see that certain rules, regulations and procedures of the co-operatives are observed, there has tended to be rampant indiscipline at various levels in the majority of the co-operatives.
- In many of the co-operatives there has been a noticeable absence of group cohesion in the management. Some members of the MC would unofficially divulge confidential information to the general membership before the committee had made a decision to disclose that information and often the MC failed to speak with one voice. This obviously means that the general membership then fails to respect the decisions of the MC. In fact, co-operators tended to regard decisions made by the MC as inferior to those made by persons from outside the co-operative. This creates an element of mistrust.
- An insignificant proportion of women serve on the MC. In fact, in only two

co-operatives do women serve in critical posts. However, it was observed that, although there were views to the contrary, women actually shunned the responsibilities attached to the various posts in the committee, maybe because of historical circumstances and traditional prejudices. Women tended to be placed in the welfare sub-committee. Although this was the case, women often voiced concern that they had no representation in the governing body.

It is clear from the above that more work needs to be done to improve the management capacity and efficiency as well as to improve the overall environment in which the MC operates. A step towards this has been the proposed changes in the bye-laws and the new management/organizational structure. This is dealt with in the following discussion.

CHAPTER NINE
MAIN FINDINGS OF STUDY AND CONCLUSIONS

The following is a summary of the main findings of the study.

Membership and Demography

- The membership levels of the MDU co-operatives generally fall below those recommended in the project plans. Overall, the membership level is below 50% of the targeted level even after allowing for a gradual membership build-up. This has implications on the supply of labour.
- The nature of the current membership is a critical factor in the social development of the co-operatives and consequently in the achievement of the co-operative effort. Clearly, the age differences and marital status of the membership have tended to create conflicts particularly in the distribution and provision of social services where the children of members are concerned.
- The generally high dependency ratios in the co-operatives place a burden on the provision of food, education, and so on, at the expense of investment.

Resource Utilization

- The physical infrastructures of the MDU co-operatives differ markedly. Whilst Bethel and Tanhi have relatively sound infrastructures, Nyamukamani, Ruponeso, Nyahambe and others do not.
- There was no evidence of systematic and regular crop rotations nor of land conservation programmes in the majority of these enterprises.
- There was great divergence between the recommended cropping programmes and the actual practices. This is a manifestation of poor agronomic practices, due to lack of the necessary skills and resources.
- Most co-operatives do not have a wide crop diversity. Maize dominated the cropping programmes, accounting for more than 70% of the area put to crops. This lack of crop diversity relates to lack of capital, machinery, technical know-how and experience with crops other than maize.
- Yields were gradually becoming far less than 50% of the potential of the region.
- The grazing capacity is grossly under-utilized. The co-operatives do not seem keen to pursue commercial livestock enterprises. In any case, they lack the necessary skills and experience in livestock management to operate on a commercial scale.
- There is gross under-utilization of available land. Roughly 15% of potentially arable land in the union was actually put to crops. This is partly related to the level of mechanization and lack of planning skills.

- Where crops other than maize are grown, these crops are grown as "sideline experiments" although these experiments are not carried out systematically.
- The problem of inadequate mechanization and/or delayed contract ploughing explains to some extent the low level of land utilization.

Labour Utilization

- As a result of the low membership levels, there is a shortage of labour to carry out farm operations on the scale envisaged in the Agritex plans.
- There is gross under-utilization of the available labour resources, less than 30% of the fixed labour time available on the co-operatives. This implies that the co-operatives have higher labour costs than they actually utilize. This is somehow related to motivation management and so on.
- Since maize is the dominant crop, most of the co-operative labour (70%) is occupied in maize production.
- The per hectare utilization of labour varied extremely among co-operatives. For instance, labour rates varied from 1 025 hours per ha to 645 hours per ha in maize production.
- These variations were as a result of different methods of labour application and labour management, as well as different levels of mechanization and utilization of labour-saving chemicals such as herbicides.
- Weeding was generally the single longest operation, accounting for about 40% of total labour time used. Overall, weeding, harvesting and planting activities absorbed most of the labour of the co-operatives.
- Very few co-operatives effectively used their "children's" labour due to labour management problems, and the fact that working hours conflicted with school hours. There was also the problem of the ideology of formal education that manual labour was denigrating.
- None of the co-operatives had planned labour programmes, while labour delinquency and its supervision was a major problem, due to the absence of techniques to manage labour.
- Labour record-keeping was basically non-existent except for a few co-operatives which had received training on this aspect. This affected labour management and was evident in the tedious methodology of labour data collection that had to be used during the study.
- There is a serious lack of motivation and this has affected the fulfilment of work programmes. In the absence of motivation, the willingness and efficiency of labour as well as its supervision are greatly impaired.

Equipment Utilization

- There is a serious shortage of basic farm machinery and implements for various activities on the co-operatives. Although the MDU tractors were used, they did not cope with the demand by the co-operatives, while other contractual arrangements could not be relied upon as sometimes the work could not be done when the co-operative needed it done and sometimes the co-operative was suffering from financial constraints. This partly explains the low level of land utilization.
- Equipment is poorly managed and looked after, resulting in on-the-job breakdowns and delays in completing operations.
- Although some co-operatives have basic irrigation facilities, this has not been exploited because of lack of finance capital to buy the necessary overhead equipment and water pumps. In fact, only one co-operative practised active irrigation of crops.
- Tractor ploughing, discing and planting were the main mechanized activities.
- Some co-operatives utilized combinations of tractors and ox-drawn implements in some of their operations. For example, cultivation was done by a tractor pulling three cultivators designed for oxen.
- There were wide variations in the rates of tractor utilization per hectare, explained in some cases by the work routines on various co-operatives as well as the efficiency of the available tractors.
- It was noted that there was a serious shortage of transport in the co-operatives. Only two co-operatives had a small light truck each.

Input Utilization

- Inputs used per ha varied considerably in the co-operatives as did the costs per hectare.
- This variation reflected incidents of both gross over-application and under-application. There were different perceptions as to the input requirements per ha and no reference was made to the farm management handbooks. In short, input application did not follow the recommended rates.
- The use of herbicides as a labour-saving device was not a practice commonly adopted by the co-operatives, due to lack of know-how or financial allocations in the crop budgets.
- Most of the co-operatives did not have their soils tested in order to ascertain the exact soil chemical requirements. Overall, the study found that the viability of crop production enterprises was in serious doubt with the majority of the co-operatives achieving yields far below the potential of the area and registering negative gross margins.

Training and Advisory Services

- The existing levels of skills are not sufficient to fully exploit the potential of the farms as most are very basic and not really suited to agricultural production activities.
- Most of the available skills are biased not towards agricultural production but in support of sideline projects. This suggests that much of the training has been inappropriately directed.
- Training has been provided on an *ad hoc* basis by various agencies, without co-ordination and using different approaches. Thus this training has tended to be fragmented and, therefore, not very effective, particularly given the fact that some of the training has not been applied.
- The low literacy levels of the co-operative membership have hampered the effectiveness of training efforts. This raises questions on the ability of the members to grasp the training offered.
- Most of the training so far provided has been of short duration. This raises questions on the quality of the courses themselves as well as on the ability of the members to grasp the issues in such a short time.
- Most of the training has not been at the request of the members concerned, but rather it has been identified by the sponsors without consultation with the co-operatives. In addition, the rate at which such short courses have been off-loaded is rather fast.
- The training efforts have also been frustrated by a relatively high turnover of those who received training, particularly in carpentry and welding. Such resignations have partly been as a result of failure to put the skills so acquired to use in the co-operatives for various reasons.
- The current extension programmes are far from being adequate given that there is an acute shortage of crop production skills in the co-operatives.

Non-Agricultural Projects

- On the whole, the co-operatives seem to have a relatively diversified range of non-agricultural "income-generating" activities which include gardening, grinding mills, leasing, poultry, tuckshops and other projects.
- It was, however, very doubtful whether the scale of operation of most of these projects had any meaningful impact on the co-operatives' economic performance.
- There was insufficient record-keeping on their operations, so their cost structures, incomes and consequently their viability could not be assessed objectively.
- It was noted that some of these projects had the potential of influencing the incomes of the co-operatives significantly, and this was particularly the case with market gardening.
- A problem of planning such projects so that they would fit in with the overall co-operative programmes was also identified and this resulted in conflicting labour demands and other complications.

- Some of these projects have brought with them some labour conflicts. For instance, some of the general members did not approve of others being engaged in dressmaking or carpentry assignments whilst they worked in the fields.
- It is precisely in support of these non-agricultural projects that most training has tended to focus on.

Incomes and Services

- The low levels of income and the inadequacy of social services have seriously affected the morale and motivation of the membership. This may eventually trigger mass resignations if the situation is not checked.
- This has partly resulted in labour delinquency and the associated management problems.
- With the current economic position, it is difficult to see most of the co-operatives regularizing their meagre payments to their members without seriously threatening the continuance of their enterprises.
- Provision of education school fees for the children has become very critical in some co-operatives. So acute has been the education problem that it is seriously threatening to split the co-operatives.
- There is no evidence of organized recreational facilities in the co-operatives.

Management and Planning

- The management and organizational structures of the co-operatives bear close resemblance to other socio-political organizations with a top-heavy administration-cum-organizational emphasis resulting in the neglect of the productive sphere.
- There appears to be a critical shortage of management skills to organize and plan for the effective exploitation of the existing productive capacity. In fact, planning, financial know-how, record-keeping and organizational aspects left a lot to be desired. In addition, the Management Committees lacked the capabilities of establishing and supervising effective work distribution programmes.
- The authority or control mechanisms in the actual productive sphere were generally ineffective.
- Decision-making tended to be cumbersome with Management Committees unable to take critical decisions without recourse to the General Meeting. The decisions of the committee invariably did not make any headway on most critical issues. In fact, management resorted to external authority in managing crises.
- At the time of the study, there was a large membership turnover in the committee. Almost the entire committee would be replaced annually. Since our seminars, however, this has changed significantly. Most of the committee members are generally being retained. This will definitely help them to develop a core of management experience.

- Contrary to what was the case at the start of the study, there now appears to be a certain amount of realism on the fundamental role of the production manager in the success of the co-operative effort. It would appear that the calibre of production manager is now being considered when selecting candidates for this post. In fact, there now appears to be some objective basis on which members are now being elected into the committee.
- A certain degree of conflict within the Management Committee was evident with some members of this committee passing on classified information to the general membership. This has affected the efficiency of the committee in the execution of its duties.
- Women were generally not keen to participate in the committee. It would appear that some of the reasons were to do with the frustrations they encountered on taking office and the attitude of their husbands when the women assumed such positions.

Concluding Remarks

The foregoing presentation has been fairly broad and comprehensive, but by no means exhaustive. It is hoped that this case study has provided insights into the potential as well as major problems and constraints confronting the development of co-operatives in Zimbabwe and that the observations made are fairly representative of the general situation of co-operatives in the country. This will, hopefully, enable us to draw general conclusions and lessons for the entire co-operative sub-sector.

The second volume of this report deals with the management of the Makoni District Union and the overall recommendations of the study. It is hoped that these recommendations will be found to be useful to the many organisations involved in development policy planning and implementation. Indeed, this document will fill in present gaps in the understanding of the co-operative movement in Zimbabwe and clear up any lingering doubts and misconceptions.