

Evaluation of the
Botswana Range Management and Development
USAID Project No. 690-11-130-015

Part II
Livestock Ownership and Marketing in Botswana

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This is the second of a two-part evaluation of the Botswana Range Management and Development Project. It examines (a) the cattle marketing system and how it affects the achievement of equity for the small cattle holder, and (b) the relationship between the Botswana Range and Livestock Management Project and other development such as World Bank Livestock II and the Tribal Grazing Act Policy. It also discusses the origins of skewed cattle ownership and the background and factors affecting the skewed marketing of cattle. The chapter entitled "Marketing System and Its Relation to Ranching Development" points out that if small holders are to benefit from ranching development they must have an equitable position in the marketing system and that the communal ranches now being developed are providing a useful service in uncovering problems that will be faced on a broader scale when ranching development is accelerated. Some of the matters that should receive attention are: (1) problems of group formation involving those who occupy marginal economic status; (2) the question of mafisa'd cattle which will continue to present management problems and economic losses for the small holders; (3) relevant safeguards in ranching development to assure participation and security for small holders; and (4) the concept of allowing for partial rather than total participation.

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Rural development and the increase in rural income in Botswana is closely tied to the wise use of tribal lands and the marketing of livestock. The present distribution of cattle is inequitable and works to the detriment of the majority of the population who are small holders or who possess no cattle. Increasingly the larger cattle holder with grazing rights in the traditional lands has taken up large tracts of tribal land and, with the resources to drill boreholes, he has successfully exploited his advantages to expand his herd and increase his marketing capabilities. The rural poor, those with few or no cattle are at a decided disadvantage in that they have traditional tribal grazing rights within an area yet are receiving little or not benefit from these rights.

The purpose of this report is twofold:

1. To identify the factors which account for the skewed ownership of cattle in Botswana.
2. To analyze the present marketing system in relation to the inequitable distribution of cattle.

A. Origins of Skewed Ownership of Livestock

1. Traditional Ownership of Livestock

The present skewed ownership of livestock in Botswana is affected by many factors, one of the most important being traditional ownership and control which has evolved over several hundred years. In its earliest stages all livestock within the different tribal areas was owned and controlled by the chiefs. This system of ownership changed gradually over time until individuals gained the right to own and dispose of livestock.

The next step in this transition involved wards within a village holding livestock on behalf of the chief with delegated authority vested in the ward headman. Livestock in this situation were valued for their

prestige, use as draft animals, a source of milk and, under special circumstances, their meat. Individual ownership followed, but it was confined to certain honored individuals who were allowed only to hold livestock. The chief could determine their use, disposition and possibly repossess them. As this system expanded the chief could redistribute and direct the ownership of the livestock. Parallel to developments with individual ownership on a "conditional" basis was the creation of a system known as mafisa. The mafisa system is one where persons holding livestock in excess of their traditional draft and nutritional requirements loan cattle to persons in need of them. All management decisions respecting the animals remains with the owner except for day to day care which was granted to the borrower. The borrower benefits from the arrangement as animals could be used for his personal draft requirements and if the owner was pleased with the care given his cattle, an animal would be given to the borrower as a reward. The mafisa system generally benefited the relatives of the well to do and developed into a complex social institution which is still operating on a broad scale today.

As the mafisa system developed, individual ownership rights were also strengthened. Along with the development of the ownership system the chiefs modified the legal system to use livestock as its basis. Fines in the kgotla (community meeting) were often expressed in terms of livestock and these fines were the property of the chief. Matimela, setswana for lost cattle, were rounded up on a regular basis and became the property of the chief, who held them on behalf of the tribe.

Rights to arable or grazing land were determined by the chief and his subordinates who retained the chiefs traditional control over livestock holdings and their use. Kgafelo, setswana for "Thanksgiving",

is a tradition whereby the chief was blessed with the "thanksgiving" presents of livestock, produce and grain in appreciation and provision for his role as provider of the people.

The introduction of modern, foreign institutions in the colonial and post-independence days eroded the chiefs' control over livestock. Fines and Matimela were later channelled through governing bodies, land allocated through landlords, and the custom of Kgafelo gradually disappeared.

The skewed ownership of cattle was well established by the time these institutions were replaced. Cattle wealth will continue to be inherited and for some time will contribute to the skewed ownership of livestock.

Bartering and the Acquisition of Cattle

Another facet of the traditional period was the barter system whereby individuals traded scarce commodities for livestock. From a purely Western economic point of view the "traditional speculator" or middleman maintained a truly advantageous position which might be considered exploitative. The "traditional speculator" dealt with in this section concerns primarily exchanges between traditional members of the society.

The barter system varied greatly from one area of the country to another, but often involved the following types of transactions.

- a. Grain or produce for livestock
- b. Livestock in exchange for cattle (e.g., horses for cattle)
- c. Goods for livestock (e.g., game skins for livestock)
- d. Services for livestock

Many of the large cattle owners today derived their livestock wealth

from this traditional barter system. This barter system still exists today, but it has lost significance relative to the more modern speculative methods.

3. Shopkeepers and Speculators in the Acquisition of Cattle

A well developed and long established chain of rural shops and speculation is present in Botswana. In the past the main benefactor of this channel for accruing livestock wealth has been aliens. In recent times more citizens, including traditional farmers, have become benefactors of this channel.

Shopkeepers made new goods and services available to farmers either through exchanging livestock for cash or through credit arrangements. Farmers could negotiate the purchase of goods through the exchange of livestock or be given credit up to a certain limit when the store owner would require the farmer to settle his account by surrendering livestock. These types of credit arrangements are now illegal and farmers must be paid cash for livestock.

Alongside the development of the rural supply channels were speculators who travelled to outlying areas to purchase cattle for cash. Many of the speculators operated from their own chain of rural shops or farms. The system of speculation is highly developed in its present state with good, yet not ideal, competition.

4. Wage Earners and the Acquisition of Cattle

Wage earners throughout private industry and public service often have the opportunity to invest their earnings in livestock, since they have traditional grazing rights in the rural areas even if in reality they are permanent residents in the urban areas. This situation may change over time but has become an increasingly important means to

acquiring livestock holdings.

Discussions with people in the livestock industry and analysis of livestock acquisitions indicate that high wage earners use part of their earnings in the establishment or expansion of herds. These people by virtue of their high income are members of the upper socio-economic group and have the potential to expand existing holdings or acquire considerable cattle and further aggravate the skewed ownership of cattle.

Finance Schemes

The two major channels for obtaining financing for large scale cattle operations which reinforce skewed ownership of livestock are:

- a. Commercial banks
- b. The Botswana Meat Commission (BMC) Grazier Scheme (which is administered by the BMC but financed by a commercial bank).

Financing arrangements through such institutions tend to be utilized by farmers who are already large cattle owners in relation to the average rural stock holder. Reasonable level of management is a pre-requisite to obtaining financing and small stock holders on communally utilized grazing and water can rarely meet this criterion as they have little control over their resources.

Recipients of finance often possess many cattle, own a freehold farm, or have their own borehole over which they hold control of the stocking rate. At the end of December 1975, there were 11,989 head of Grazier Scheme cattle on placement with 187 graziers, the average value per head being R115.48. Comparative figures for 1974 were 10,635 head in the hands of 156 graziers at an average value of \$92.43 each. A total of 126 applications were received during the year of which 87 were approved, resulting in mobs in the placement of a total of

6,478 head, mostly in mobs varying from 20 to 150. During 1974 and 1975 respectively, the average grazier holdings were 68 and 64 head. The average placement during 1975 was 74 head. Cattle returned during the year showed reasonably good margins of profit of up to and over \$6.00 per head per month.¹ The BMC Grazier Scheme allows farmers to purchase immature steers for fattening and the farmers' profit is the slaughter price less the administration fee, expenses, loan and interest.

Finance of this nature tends to increase the skewed distribution of cattle as profits are invested in livestock. It is important to note that this is not at the expense of small stock holders and benefits have accrued to the smaller man as the price for immature stock has risen. Similar financial arrangements through commercial banks often provide for further skewing of livestock ownership.

B. Background to Factors Affecting Skewed Marketing of Livestock

Sound statistical information is necessary for analysis of the overall position of marketing of cattle by traditional and commercial farmers. Such information is available from analysis of BMC slaughter returns for the year 1974. In the following sections background information on distribution of livestock ownership will be outlined along with different marketing patterns.

1. Present Distribution of Livestock

Questions dealing with livestock ownership in Botswana are particularly sensitive. Commercial ranches as opposed to traditional farmers-herders, express wealth in terms of their net assets which would include land, savings, investments and cattle holdings. Traditional farmers operate from a different reference point and conceive of wealth as actual

¹BMC Report and Accounts, Year Ended 31st December, 1975.

numbers of livestock held thereby making the question of a person's cattle holdings tantamount to asking a person to state his total net assets. This situation is compounded by the fact that both livestock holdings and income from livestock sales are taxed.

In the past, surveys often dealt with cattle held as opposed to owned. As noted in the section on traditional ownership of livestock, the mafisa system of loaning cattle provides for people to hold cattle without owning them. Recent surveys have dealt more succinctly with the question of livestock ownersh

The 1974-75 Agricultural Survey showed 77,000 agricultural holders with 56,000 or 73 percent holding small-stock and 48,500 or 63 percent holding cattle. Out of the total holders 2,300 or 3 percent of the holders held over 100 head of cattle which represented ownership of 31 percent of the total traditional herd.

The 1974-75 Rural Incomes Survey tried to establish the actual ownership of livestock (cattle). Respondents were not requested to make ownership figures available until the end of the twelve months survey by which time the maximum possible rapport was established. Total ownership figures appear to be on the low side which may be accounted for by several factors. Livestock holders may not have included cattle mafisa'd out to various people who managed cattle for them. Large livestock holders may have intentionally understated livestock holdings.

The survey sample excluded cattle owned by the following groups:

- a. Cattle owned by urban residents.
- b. Cattle owned by non-citizens, especially non-citizen farmers.
- c. Cattle owned by farming companies and trusts.
- d. Cattle owned by freehold farm employees.

The following partial listing of cattle ownership is based on the preliminary findings of the rural income survey. The sample involved 1800 households throughout Botswana which is a far greater sample than has been used in other survey work. Surveys of this nature often tend to accurately account for small holders ownership as these persons have little to lose in stating actual stock numbers and additionally comprise in numerical terms the largest group of cattle owners (Table 1).

The 1974-75 Agricultural Survey results lend support to the results of other surveys which show a more equitable distribution of smallstock with some of the smallstock owners owning no cattle. Livestock population figures show a dramatic increase in smallstock numbers following the three year drought in 1964-66. Farmers whose herds were depleted or wiped out during the three year drought have been able to maintain or establish flocks of smallstock.

In light of the Rural Income Distribution Survey (RIDS) preliminary results showing 45 percent of the rural households owning no cattle, the more equitable (less skewed) ownership of smallstock becomes an important factor. Smallstock owners have the opportunity to become a part of ranching developments and share in the benefits with their limited holdings and investment. Smallstock management is extremely poor in the traditional areas and participation in communal ranches would produce rapid tangible results and increase income allowing these farmers to invest profits in cattle or outside the ranch. The same applies to persons presently owning no livestock since no major investment is required in purchasing one or two ewes or nanny goats. The logistics of this will have to be worked out in relation to the type of ranching development chosen and the desired mix of cattle to smallstock. The

Table 1. Distribution of Cattle Owned by Rural Households^a

No. of Cattle Owned per Household	Estimated No. or Rural HHS Owning This No. of Cattle	Accumulated % of all Rural Households	Accumulated % of Cattle Owning Rural HHS	Thousands of cattle owned by all the HHS in the group x 1,000	Accumulated % of all Cattle Owned by These Households
0	40,454	45.0	-	0	0
1	1,209	46.4	2.5	1	0.1
2	2,217	48.9	7.1	4.5	0.4
3-4	5,120	54.6	17.5	18.5	1.5
5-7	4,874	60.0	27.3	29	3.4
8-10	4,921	65.5	37.3	44	6.2
11-15	5,541	71.6	48.4	73	10.9
16-20	7,458	79.9	63.5	132.5	19.4
21-25	3,480	83.8	70.5	80	24.5
26-30	3,082	87.2	76.7	85	30.0
31-35	1,990	89.5	80.9	65.5	34.2
36-40	873	90.4	82.5	33.5	36.4
41-45	1,446	92.0	85.5	61	40.3
46-50	448	92.5	86.4	22	41.7
51-60	2,080	94.8	90.5	115.5	49.1
61-70	724	95.7	92.2	47.5	52.1
71-80	702	96.4	93.5	53	55.5
81-100	758	97.2	94.9	68.5	59.9
101-125	696	98.1	96.5	77	64.9
126-150	414	98.5	97.3	55.5	68.4
151-175	113	98.6	97.5	19	69.7
176-200	188	98.9	98.0	36	72.0
201-250	372	99.3	98.7	84	77.3
251-300	116	99.4	98.9	31.5	79.4
301-400	181	99.6	99.3	58	83.1
401-500	136	99.7	99.5	61	87.0

Source: Rural Income Distribution Survey, Preliminary

^aExcluding freehold farm employees.

smallest stock holders who have a stake in the development will most likely be an asset to the ranch rather than a retarding factor if left out or excluded from participating through either the type of ranch organization chosen or limitations on the minimum numbers of stock to be held by an individual member.

Preliminary Survey Results

Out of a total of 89,818 rural households included in the RID Survey, only 49,364 owned livestock. It is important to note that 45 percent of the households owned no cattle. Estimates from prior surveys provide generally consistent figures on households that do not own cattle, subject to sampling fluctuations.

By combining the findings from several surveys the following generalized statement can be made; between 10 and 16 percent of the cattle owners own between 40 to 50 percent of all cattle. In terms of all households, roughly between 5 and 10 percent of all rural households own up to 50 percent of all cattle in the rural areas.

Cattle Population Figures

The total cattle herd in Botswana is presently estimated at between 2.2 and 3 million head. The figures in Table 2 were provided by the Ministry of Agriculture. Data for past years are shown in Appendix A Tables I and II.

Sale of Cattle to Botswana Meat Commission (Appendix Tables III and IV)

During 1974, 186,041 head of cattle were slaughtered at BMC. A sample of 155,097 was used (24,080 head from Cooperatives and 131,017 from Agents) to show market supply by different classes of farmers: commercial and traditional. This sample represents 83 percent of the total throughput. The 17 percent not analyzed were returns from

Table 2. Cattle Production in Botswana by Region and Type of Farm Ownership, 1975

Region	Traditional*	Freehold*	Total*
Ngamiland/Chobe	310,000	-	310,000
Ghanzi	59,000	118,000 (Ghanzi/Xanagas)	
Kgalagadi	48,000	97,000 (Molopo Farms)	145,000
Ngwaketse	182,000	-	182,000
Barolong	25,000	18,000 (Lobatse)	43,000
Kgatleng & Bamalete	210,000	6,000 (Gaborone)	216,000
Kweneng	203,000	-	203,000
Mahalapye	182,000	-	182,000
Palapye	308,000	58,000	366,000
Serowe	290,000	-	290,000
Francistown	271,000	45,000 (Tati)	316,000
TOTAL	2,088,000	342,000	2,430,000

*These figures are based on the 1975 census carried out by the Animal Health Division. The original figure gave a total population of 1.9 million. Based on the agricultural survey, the Statistics division (Mr. Sastry) has calculated adjusted figures (shown below) and the finally revised figures will be published in June 1976.

While the reliability of the absolute figures is in doubt, the relative size of the populations for each region (and livestock category) is probably reasonably accurate.

producers who marketed their cattle directly to BMC without the help of cooperatives and agents and therefore tended to be producers with considerable resources and holdings.

The sample used showed that 80,563 of the 155,097 or 52 percent of the total were marketed by commercial farmers. If analysis of the remaining 17 percent sent to BMC were completed it appears that the percent marketed by commercial farmers would remain relatively unchanged or increase. With commercial farmers owning roughly 12 to 15 percent of the national herd it is not possible that they could produce 52 percent of the total throughput from increased production and improved management alone.

Speculation in cattle exists at a broad scale in Botswana today and contributes to the existing marketing pattern of cattle at BMC. The role of speculation in relation to market accessibility of all classes of producers, regardless of scale of operation needs to be examined.

Analysis of Producers Returns

Data supplied by agents and coops were examined to show the numbers of producers who utilize the BMC and to assess the number of small producers, their use of market channels and participation in the system. Cross referencing of producers sales through different channels (i.e., agents, coops) was not possible but should not significantly effect use of the figures in Table 3 as the bulk of the suppliers sent fewer than five head and would have had little need to utilize more than one channel.

A total of 21,841 suppliers sent cattle through coops and agents. An approximation of 2,500 producers marketing direct to BMC is used as

Table 3. Numbers of Cattle Marketed by Agents and Source from Which Obtained in Botswana

Agents	Total No. Clients	Clients Sending 5 or Less Number	Clients Sending 5 or Less Percent	Cattle from Commercial Farms Percent
A	3,054	2,652	87	54
B	6,242	5,385	86	58
C	2,321	2,088	90	79
D	20	0	-	100
E	1,452	1,359	94	2
F	875	811	93	1
G	3	0	-	100
H	8	0	-	56
I	45	35	78	-
Coops	<u>7,821</u>	<u>7,430</u> (appx.)	<u>95</u>	<u>-</u>
Total/ Average	21,841	19,750	90	53
Total Average Excluding Coops	14,020	12,330	88	63

a maximum figure to obtain the total numbers of producers who utilized BMC for the disposal of cattle. This brings the total figure to 24,341. Of the total figure of 24,341 suppliers it is estimated that 1,000 of the suppliers were either commercial farmers or their dependents who marketed cattle to the BMC. Additionally it is estimated that another 1,000 of the BMC suppliers were producers not included in the RIDS such as cattle owners resident in the urban areas. Taking these two groups of suppliers into account in order to place the statistics on a parallel basis with the RIDS, one obtains a figure of 22,341 rural producers utilizing the BMC as a channel for the disposal of cattle.

Accessibility and Regional Requirement for BMC as a Market Channel

The raw figures of 22,341 producers who used BMC for disposal of cattle during 1974 as compared with 49,364 cattle owners in 1975 must be related to the farmers requirement to market his cattle to BMC. Not all of the cattle owners possess enough stock to make sales annually. Persons owning less than eight head would not be able to sell even one beast per annum without depleting his herd under given management and production systems. To arrive at a rough figure for slaughter requirement the following criteria were used for different level of stock ownership.

- a. Persons owning 1 animal have no slaughter requirement.
- b. Persons owning 2 animals have no slaughter requirement.
- c. Persons owning 3-4 animals have a slaughter requirement of once every 4 years.
- d. Persons owning 5-7 animals once every 3 years.
- e. Persons owning 8-10 animals once in every 3 years.
- f. Persons owning 11-15 animals once in every 2 years.

g. Persons owning 16-20 animals and above have an annual slaughter requirement.

These criteria were then applied to the figures shown in Table 1 of 23,882 producers owning 15 head or less, only 7,312 will have an annual slaughter requirement. This figure combined with the slaughter figure for all producers holding 16 animals or more produces a slaughter requirement for 32,794 producers. (23,882 producers with 15 head or less with 7,312 having an annual slaughter requirement leaves 16,570 not in need. 49,364 total producers less 16,570 producers not requiring slaughter capacity leaves 32,794.)

Slaughter requirements of producers do not necessarily go hand in hand with accessibility or demand. Utilizing a figure of 32,794 persons having slaughter requirements and 22,341 having utilized the BMC as a channel of disposal, 68 percent of all cattle owners benefited from direct market accessibility.

This rough figure of 68 percent may be used by some to defend the present system and by others to criticize it. A note of caution is offered here: the total throughput of all traditional farmers was only 50 percent of the total thereby indicating that either there is an extremely low offtake or, more likely, that only part of their offtake went directly to BMC. If one assumes that the total offtake (excluding home consumption) on the traditional herd is 8 percent with a population of 2 million in 1974 then 160,000 cattle would have been available for disposal through various farmers to BMC. With 44 percent of the offtake (70,000 divided by 160,000) from the traditional herd being disposed of through channels other than the BMC it is assumed that many of the rural producers utilize more than one market channel and that

efforts should be made to assure farmers fair returns in the alternative channels being utilized.

Factors Affecting the Skewed Marketing of Cattle

1. Physical Restraints

Cattle are spread throughout the whole of the country with certain cattle requiring 10 week treks before arrival at BMC. The Botswana Livestock Development Corporation (BLDC) ranch at Makalamabedi serves the Ngamiland area where roughly 240,000 cattle are held. Other remote areas include Gantsi and Kgalagadi Districts and the Radops area. Owners whose cattle are trekked long distances prior to arrival or shipment to BMC must be able to plan slaughter requirements long in advance.

Trek route development has been concentrated on three major routes which primarily serve commercial farmers and speculators. The trek routes used by the ordinary cattle holder often have insufficient facilities and the handling facilities along the line of rail do not meet farmers' requirements. Improvements to crushes, water, facilities and sorting pens are essential to assure proper handling and will facilitate the supply of cattle to the BMC.

Phase II of the World Bank Project (Appendix B) proposes to deal with these two problem areas and in addition deals with the construction of handling and holding facilities for smallstock in the production areas (Figure 1). The proposed trek route developments can be further improved by establishing feeder routes from various production areas into the main routes. If such feeder routes are to be established in the near or distant future it will be necessary to demarcate them now to avoid access problems and assure sufficient forage along the route.

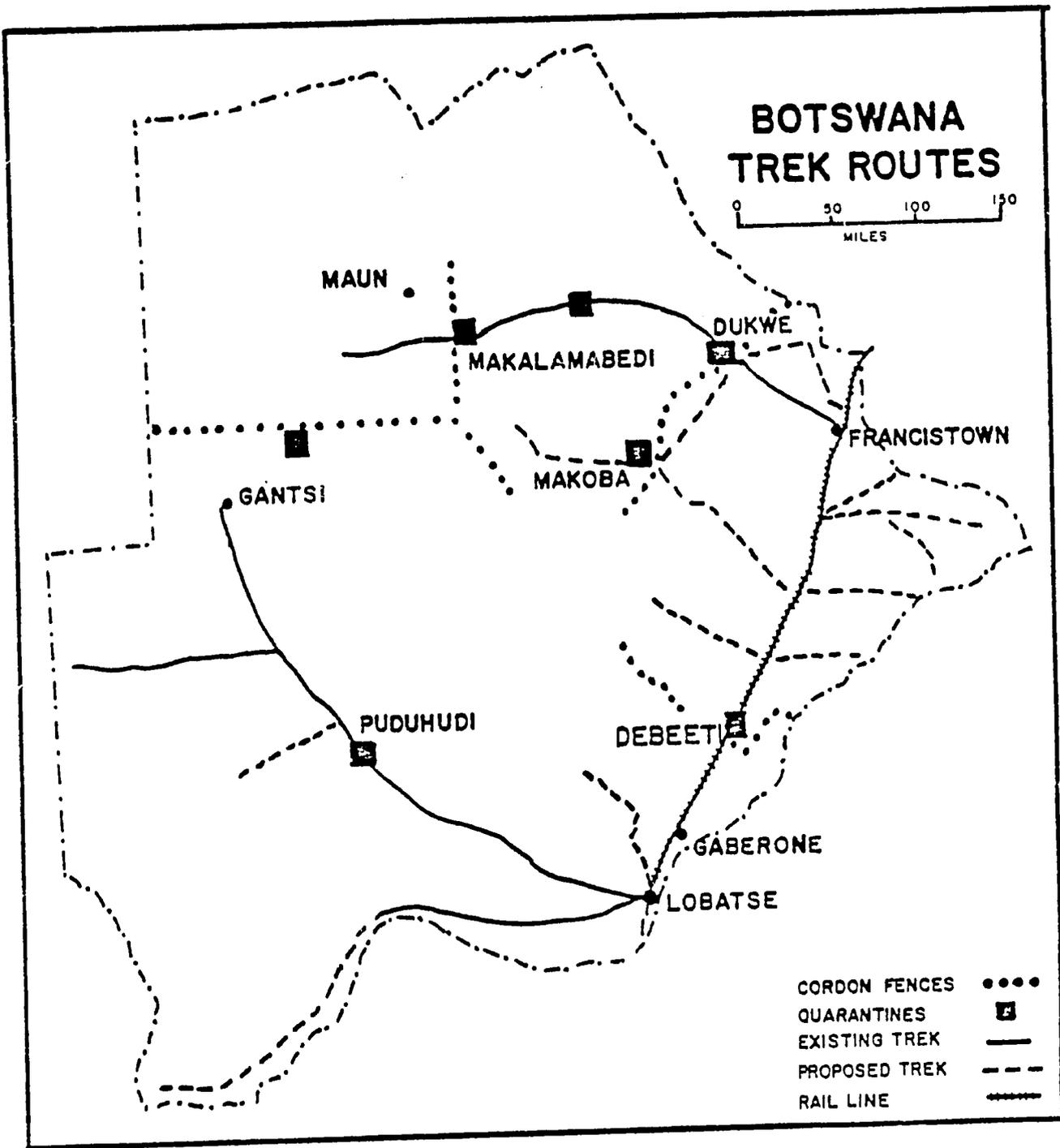


Figure 1: Existing and Proposed Trek Routes in Botswana

2. Scale of Operation

Referring to Table 1, there are 31,340 households in Botswana owning 20 or fewer cattle. This represents 64 percent of all cattle owners. The vast majority of these cattle owners rarely market more than three or four cattle at a given time. The logistics and economics of marketing such small numbers of cattle on an individual basis place smallholders at a distinct disadvantage. The BMC does not purchase slaughter cattle in the rural areas but pays for cattle on a cold dressed weight basis at the abattoir.

Marketing cooperatives operate in Botswana and act as a means by which farmers can overcome certain logistical problems including diseconomies of scale. Due to the land area of Botswana and population distribution cooperatives cannot effectively serve all producers. Considerable progress in trading has been made by cooperatives over the past four years as figures listed below show.

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
BMC Slaughter, No.	167,000	156,000	210,000	186,000	188,000
Cooperative Slaughter, No.	10,000	11,500	21,000	24,000	28,000
As Percent of Total Slaughter	6	7.5	10	13	15
As Percent of Animals Marketed by Traditional Farmers	12	15	20	26	30

3. Quota System

The BMC quota system facilitates the orderly supply of cattle to the abattoir and generates efficient use of slaughter facilities thereby increasing returns to producers as a group. Quota applications must be

received at the abattoir six weeks prior to the month in which cattle are to be delivered. Allowing time for the applications to be mailed, the farmer must be able to plan his slaughter requirements at least seven weeks in advance.

Seventy percent of all cattle delivered to the abattoir in 1974 arrived by rail. Minimum quota applications of 12 head are made for cattle arriving by rail as this represents one-half a rail wagon. Any allocation smaller than this is difficult to make and uneconomical for producers to accept. The only alternative for the smaller producer is to market through a coop or send cattle through an agent although no legal nor satisfactory arrangements are available in the latter case

The quota system and its major supply channel place significant restrictions on the participation of small holders. Modifications to the existing quota system and legal arrangements surrounding it could greatly increase the small holders participation and security within the given system.

Laws and Regulations Covering Supply of Cattle to BMC

Laws and regulations covering the supply of livestock to BMC are either insufficient or their enforcement would seriously disrupt the system. Small holders sending less than five head of cattle rarely have their cattle slaughtered under their name; quotas are applied for in sub-agents names.

Agents returns show that 12,330 individuals marketed five or less cattle yet no provision in the regulations allows for this to occur. These 12,330 producers rarely receive a receipt for their livestock when they are loaded by most agents and must depend on his honesty for

accurate payment for livestock. Insufficient records and procedures are used which leaves the small holder with little recourse in the event of disputes.

The BMC quota system at present does not allow sub-agents to apply for quotas for cattle of other owners cattle and upon delivery of these animals supply sufficient documentation on ownership. Since 12,330 producers now participate in the supply of cattle through sub-agents it seems appropriate that they be given the same protection and security as large stock holders. Changes in legislation and regulations will need to be implemented to accomplish this.

5. Lack of Information

Information is not readily available to cattle owners on the intricate marketing system in which they participate. The process of becoming a registered supplier and applying for quotas is understood by few, but attempts are now being made to instruct agricultural extension staff in these procedures.

Information is not readily obtainable in the rural areas for price lists are often not at local governing offices. The radio is used on a limited scale and efforts to expand marketing programs could prove most beneficial.

6. Rural Savings

The government presently operates 39 postal offices which have postal savings accounts with 33 of these offices in rural areas. Farmers can take advantage of these facilities by depositing cash income from sale of livestock.

Cooperative thrift and loan societies have had minimal impact on rural savings whereas the marketing societies have started to increase members interest in savings.

A concerted program of encouraging rural savings could well benefit all producers and in particular the small holders. With market restrictions outlined above the small holder who has pressing commitments looks to his cattle for immediate sale rather than obtaining better returns through improved marketing and banking the proceeds for use as required.

Price Structure

In recent years the price structure remained static throughout the whole year and offered no incentive for producers to supply cattle during the dry season (Appendix A, Tables V and VI). This led to a situation where all producers desired to market cattle during the period January to August when cattle are in the best condition and brought their highest return. Sophisticated commercial suppliers with better market knowledge and access to market channels competed at a considerable advantage over traditional farmers for quotas during the rainy season. This relation between the two groups of farmers is mutually disadvantageous.

During 1975 the BMC raised prices for the third quarter and adjusted the price-grade differential to encourage increased supply. Farmers with access to sufficient forage or feed will be economically rewarded for supplying cattle when costs of production are higher and lessen the competition for quotas during the flush season providing the traditional farmers better access to the market when cattle are in peak condition. These conditions should improve overall market accessibility to all producers and allow for increase of throughput by leveling out the supply curve.

Rail Supply

The importance of the rail line must be fully understood to gain appreciation of livestock supply. Seventy percent of all cattle supplied

to the abattoir during 1974 arrived by rail. The reliability of rail supply seems to have degenerated over the past two years and is presently a severe obstacle to producers which could discourage market confidence.

In spite of the BMC being able to allocate quotas to all producers who have applied to send cattle during 1976, railway wagons thus far have not been sufficient to move livestock that have been forthcoming. Not only does this contribute to under-utilization of slaughter capacity, but producers are severely affected. Discussions with BMC officials, producers' representatives, and producers reveal mutual concern over the problem since owners faced with no rail wagons must hold cattle at loading stations with limited holding facilities until rail wagons are available or return cattle to their place of origin until new marketing arrangements are finalized. Economic considerations, although important, may be outweighed by physical restraints as cattle trekked long distances cannot be easily returned and producers make decisions for the disposal of livestock under considerable duress.

Producers in the south who trek or truck cattle directly to BMC are fortunately not affected. In reality producers in the south gain a slight advantage, as shortfalls in delivery from the north allow for the drawing in of southern stock on short notice.

The future supply of rail wagons is far from certain as internal problems in Rhodesia may limit any supply commitments made by the railways. Rhodesian Railways has indicated that they will try to allocate enough wagons to move 1,100 cattle 5 days per week. Although these allocations are close to supply requirements, daily, weekly and sporadic wagon availability will most likely cause continued problems in the orderly flow of cattle and inconvenience to producers.

BMC Slaughter Capacity

The question of BMC slaughter capacity in relation to slaughter demand requirements has always been complex and open to debate. Despite marketing quotas, there are wide disparities among months and years in cattle slaughter at BMC indicating a surplus of slaughter capacity throughout much of the year (Figure 2). As the national herd expands rapidly due to favorable climatic conditions, slaughter demand becomes an increasingly complex question which defies simple analysis and explanation (Appendix A, Table VII). Slaughter capacity cannot be based on drought requirements but rather on long term slaughter demand which will in turn minimize losses during drought periods by stabilizing herd growth and encouraging a reasonable offtake in times of plenty.

Insufficient slaughter capacity will lead to a build up of the national herd above desirable levels and maximize competition for access to the market. Commercial ranchers and traditional farmers with large holdings have sufficient resources, market information and representation to assure them a competitive advantage for access to a limited market. Along with this they often possess sufficient facilities and finances to buffer against insufficient entry to a limited market or natural disasters and can lessen the effect of short term market problems. The smallholder, on the other hand, operates at a disadvantage when compared to these farmers.

The implications of poor accessibility of the small holder to the market in times of insufficient slaughter capacity should be self evident. Alternative markets will be sought which may be less profitable. If markets are not available or able to absorb all stock offered for sale, as in time of drought, the small holder may suffer greater

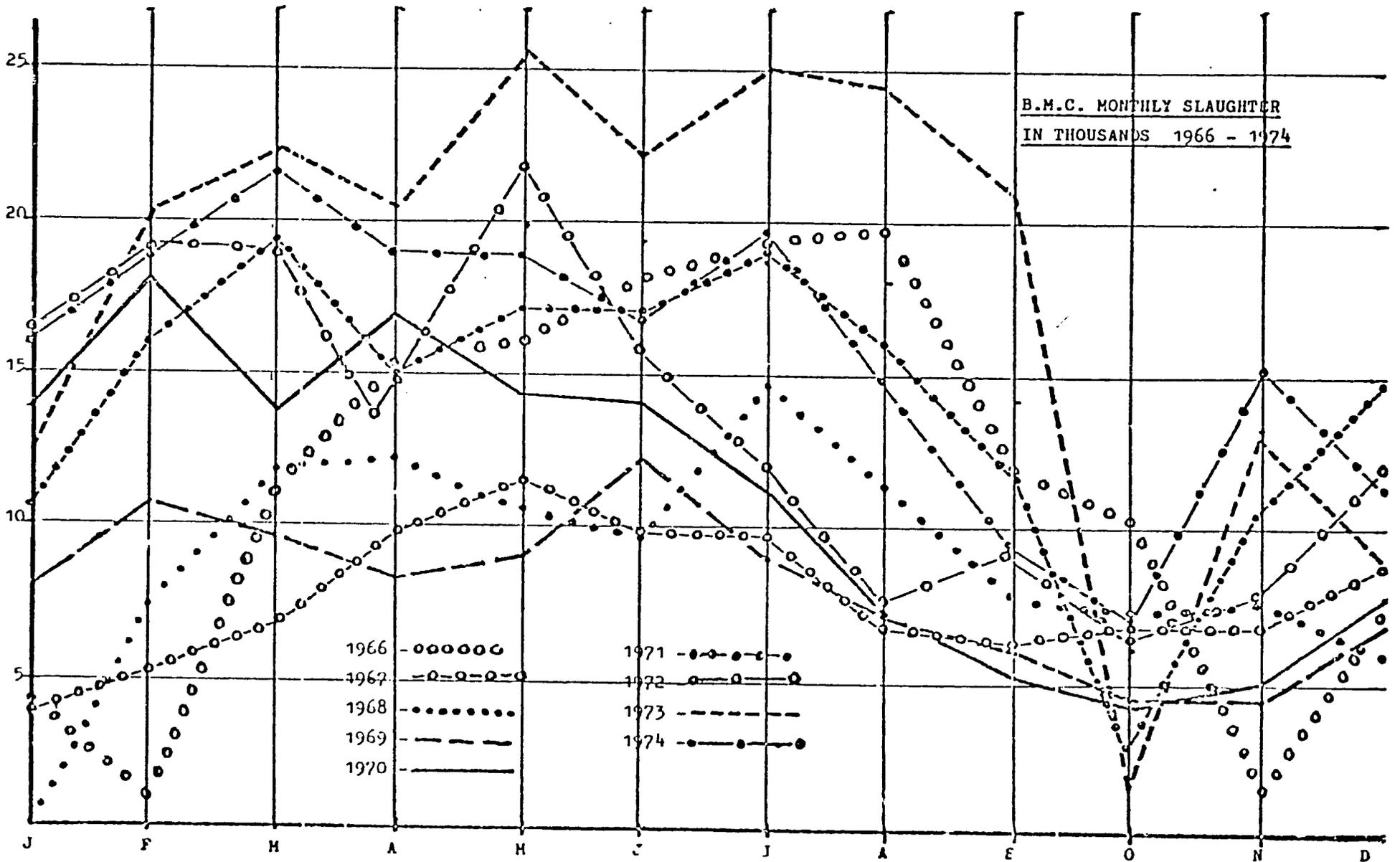


FIGURE 2

economic loss relative to other stock holders. This situation would further aggravate the skewed ownership of livestock.

This situation should further substantiate the need to improve the supply channel to BMC for small holders by improving legislation and regulations as outlined in previous sections. Once small holders demand and participation can be measured, his interest in the system can be safeguarded in times of severe slaughter demand.

10. Alternate Markets

Farmers in Botswana, as a group, have the opportunity to market cattle 365 days of the year. The main marketing channels being auctions BMC, local cattle buyers, BLDC and Grazier Scheme. Even in the most remote parts of Botswana, most farmers can find a buyer for his beasts and receive cash to meet immediate financial needs. This single factor has contributed greatly to achieving an overall national offtake of roughly 10 percent per annum. The middleman has an important role to play but the small holders must be assured of certain safeguards and security within this framework (Figure 3).

BMC throughput figures for 1974 show commercial farmers marketing 52 percent of all cattle. This disproportionate supply of cattle is made possible by the present speculative system. Livestock speculation often provides for the better use of existing ranching areas and resultantly provides a higher overall return to the economy, but the possible exploitation of sellers should not be disregarded. Cattle auctions and BMC Grazier Scheme purchases together accounted for 22,000 and 19,000 head during 1974 and 1975 respectively.

Simple modifications to the present system which would afford the seller security in the market place would include:

CATTLE MARKETING IN BOTSWANA

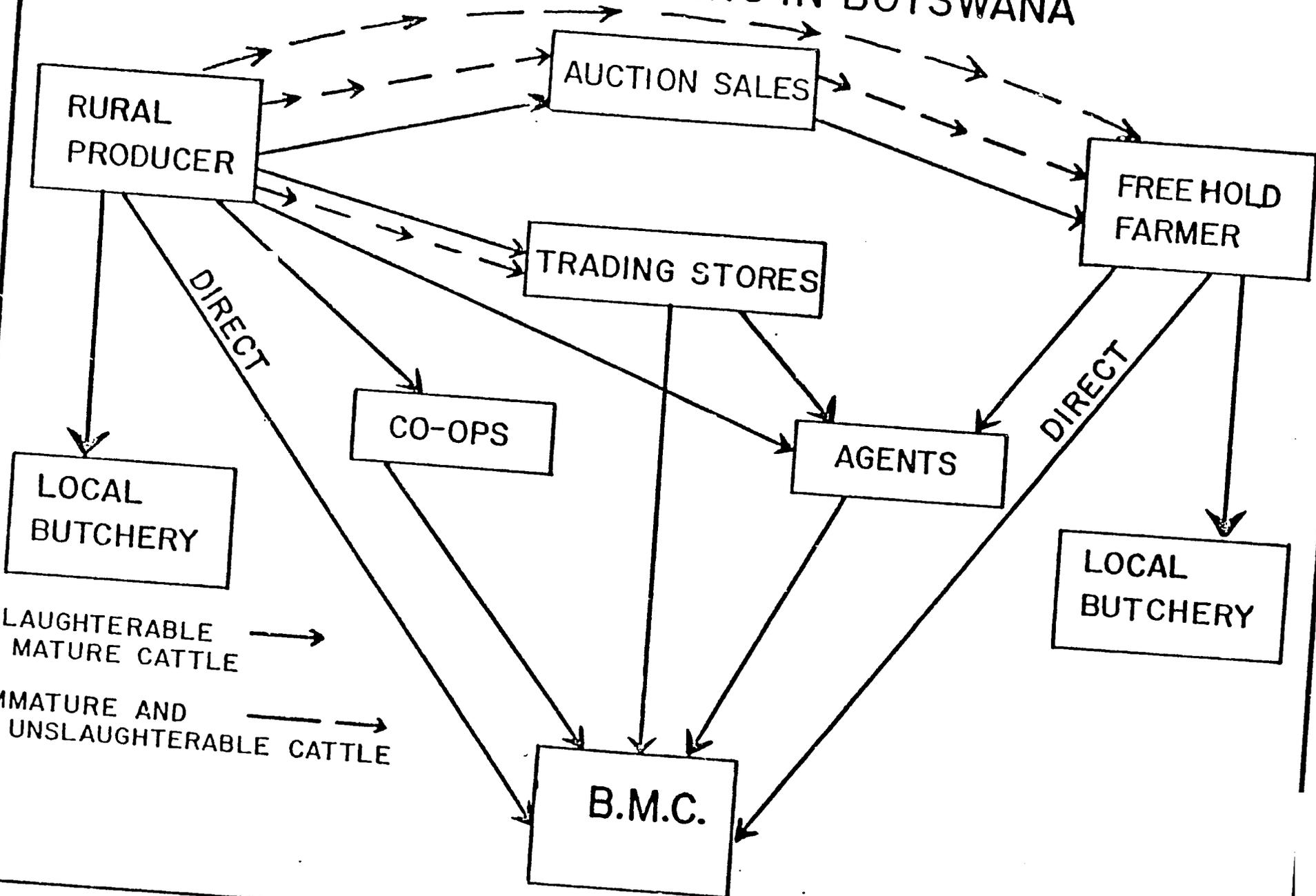


Figure 3: Cattle Marketing Opportunities in Botswana

- a. Sellers have the right to demand that animals be weighed and they be informed of the price per hundred kilograms, the liveweight of the animals and the purchase price.
- b. The seller be issued a receipt for such a sale.
- c. Appropriate regulations be set up requiring cattle buyers to possess scales.
- d. More marketing information be made available to farmers in order to increase the sellers bargaining power.

With livestock speculation playing such an important role in the industry and the lack of accessibility of all producers to the BMC' (by conscious choice or circumstance) this market channel must be strengthened to provide an alternative to producers which allows for a fair economic return for livestock sold. Records from livestock speculation are a pre-requisite to determining offtake figures for the traditional herd and analyzing marketing patterns.

Contrary to the opinion of certain officials within the livestock industry, auctions will not be the panacea for livestock speculation. During 1974, 17,000 animals were sold through auctions with roughly 50 percent (8,500) sold by traditional farmers. As noted in section B 6. roughly 70,000 animals from traditional farmers were disposed of through channels other than the BMC. The 8,500 cattle from traditional farmers sold through auctions represents only 12 percent of the traditional farmers "speculative cattle." A far greater percentage will have to go through auctions before they help set a fair floor price even assuming that the competition at the auctions is sufficient.

Present efforts to improve the auction system are commendable and will hopefully help create a "floor price" for immature and unfinished

cattle. It is necessary to examine past attempts at improving the price of such animals in order to be successful in future endeavors. Past attempts have been only marginally successful; the BMC Grazier Scheme absorbs about 10 percent of all cattle that do not go directly to BMC for slaughter but instead of buying from the producers themselves, they have chosen to buy most of their cattle from middlemen. The BLDC also experienced difficulties in buying cattle directly from producers in Ngamiland but over time may be able to alter the buying pattern. An auction system with 15 to 20 auction yards over 225,000 square miles with each yard holding auctions either weekly, monthly, or quarterly can only go so far in absorbing the supply of cattle. Most of the yards will not be able to operate sales more than once a month due to the availability of stock and the remoteness of the area. The auction system assists producers in outlying areas as follows: eliminating the need for quota application, decreased trekking problems, and eliminating the need for quota application, decreased trekking problems, and eliminating long delays before payments. Time restraints will still be present and speculators operating from shops and farms will continue to absorb a significant proportion of "speculative cattle."

D. Assessment of the Present Marketing Structure

1. The Effect of Abattoir Location on the Small Holder Producer

Cooperative slaughter returns (1974) for producers along with computed transport figures provide an insight into the differentials of net returns existing among the different regions of the country. The cooperative figures are based on sales by traditional farmers and indicate price differentials based on present management capability and availability of marketing services. Cooperatives at present do not

possess sufficient capital and management to invest in good road transport nor have they been able to hire sufficient private transport to maximize returns for their members. Table 4 is a listing of average slaughter values for different districts.

Table Average Slaughter Value of Cooperative Cattle in Botswana by District, 1974

District	Average value including bonus R	Average value as % of national average
Kgatleng	171	+16
Central (excluding Boteti)	149	+ 1
Kweneng	147	- 1
Bokalake	147	- 1
Bamalete	147	- 1
Ngwaketse	144	- 3
Ngamiland	139	- 6
Boteti	132	-11
Rolong	130	-12
Kgalagadi (including W. Kweneng and W. Ngwaketse)	<u>129</u>	<u>-13</u>
Coop Average	146	- 1

The gross average return ranges from +16 percent to -13 percent with the districts closer to BMC having received the higher returns, and those farther away the lowest. This analysis cannot weigh in the management factor.

Assuming that transport were available and utilized by all region

of the country and that animals of identical weight and grade were marketed, a theoretical price differential could be calculated. For the purpose of this exercise, R150 is used for the average slaughter value and transport costs are based on present figures. The cattle population figures in Table 2 are used in the analysis. Fixed costs such as export levy are accounted for.

Table 5. Cattle Marketing Costs in Botswana by District

Area	Cattle population number	Rail costs R	Rail Costs R	Rail Costs R	Net returns as percent of gross proceeds
Kgatleng and Bamalete	210,000	1.75	1.00	6.00	94
Mahalapye	182,000	4.50	4.00	6.00	90
Balapye	308,000	6.00	4.00	6.00	89
Serowe	290,000	6.00	4.00	6.00	89
Kweneng	203,000	-	7.00	6.00	91
Francistown	271,000	9.00	3.00	6.00	88
Ngwaketse	182,000	-	7.00	6.00	91
Ngamiland/Chobe	310,000	9.00	15.00	6.00	80
Barolong	25,000	-	2.00	6.00	95
Kgalagadi	48,000	-	16.00	6.00	85
Ghanzi	59,000	-	26.00	6.00	79
<u>Freehold Areas</u>					
Lobatse	18,000	-	.75	4.00	99
Gaborone	6,000	-	1.50	4.00	96
Tati	45,000	9.00	.75	4.00	91
Tuli	58,000	5.00	5.00	4.00	91
Molopo	97,000	-	18.00	4.00	85
Ghanzi	118,000	-	26.00	4.00	80

Mapping the return figures and cattle populations shows the relative economic position of the different farming areas and highlights the benefits that could accrue through better accessibility of markets

through additional slaughter facilities. The effect cannot be measured alone in terms of more equitable net returns on livestock slaughtered. Under present management systems and given climatic conditions, internal wastage within the system is present and is severe in time of drought. The availability of two slaughter facilities in the country as opposed to the present one would help alleviate but not overcome this problem. Plans for construction of a second abattoir at Dukwe in the north have been suspended due to controversy over its acceptability as an export abattoir to the European Economic Community. This development would have improved abattoir accessibility and dealt with the question of slaughter requirements.

Internal wastage within the system stems from great supply distances over vast areas as compounded by management and climatic conditions. Stress from long trekking limits the market accessibility even in good years. In drought years potential slaughter stock of grade 3 and 4 cannot be moved great distances with poor availability of forage and water. While trek route development is the only present alternative in certain areas of the country, possible slaughter expansion of existing facilities or construction of a new abattoir could change the economics of supply. Improvements in trek routes are being contemplated under Phase II of the World Bank Loan (Appendix B).

At present, due to uncertainty of international markets, the acceptability of different areas of the country for export abattoir sites, and expansion of the slaughter capacity at Lobatse to kill 1,200 cattle per day, 6 days per week, it is not anticipated that any plans for construction or further expansion of slaughter facilities will be finalized in the near future. When this critical issue is

re-examined the economics may have changed considerably due to new restraints and preclude constructing slaughter facilities in areas of the country which would increase market accessibility to producers and help reduce present and future internal wastage within the system.

Development of major access routes with sufficient feeder roads may be a viable alternative to any attempt at major decentralization of the present slaughter market. Benefits from both strategies and limitations must be analyzed to maximize the economic return for livestock and the economy as a whole. It is worthwhile pointing out that two or even three slaughter facilities in the country can only go so far in alleviating problems of distance and trekking as compared with a good supply system on sufficient roads which reach far into production areas.

Criteria for Analyzing the Market System

Although more than adequate statistics on production, sale, ownership and processing of livestock and meat products are available, no orderly rational system has been developed for proper utilization of this information for planning within the livestock industry. Ample data are available on traditional herd composition; however, little of it has been used to support assertions on these factors. Additionally little agreement exists between various groups within the livestock industry despite the availability of raw data.

The criteria used for analyzing the traditional herd has not been fully developed and models for herd composition and availability of slaughter stock have not been developed. Work has been done on building a herd growth model which is an important tool but must be tied in with the other two models to allow accurate forecasting.

The traditional herd is composed of a standing cow and calf herd, a slaughter herd and a standing draft herd. At present, offtake is expressed by taking slaughter as a percentage of total cattle population. The draft herd in terms of livestock production in economic analysis cannot be considered a part of the productive "cattle factory". Present cultural attitudes, the arable production system, and lack of alternate transport will assure the continuance of a draft herd. As the composition of the herd changes through relative growth of large stock holders, increase in middle size holders or changes in small holder ownings, availability of animals for disposal to the abattoir will change.

The Rural Income Distribution Survey has available on tape the raw data on herd composition and ownership as shown in Table 1, page 9. Programs can easily be written to extract sufficient data to build an empirical herd model. Once developed this model could be utilized to determine the availability for slaughter.

The cycle of development that occurs with the traditional herd between droughts may be as follows:

- a. Depletion at a time of drought of the whole herd with marketing of the draft herd to avoid loss by death and protection of the cow herd.
- b. Good foraging conditions after a drought produce high calving percentages; however, farmers are forced to market stock since they have cash requirements resulting in a higher throughput than might be expected. (This can be supported by the fact that following the last three droughts no significant decline in numbers of animals marketed occurred).

- c. The farmer restocks his draft herd and continues to market excess stock.
- d. With his cow and draft herds replenished, the farmer is in a position to increase the number of animals available for slaughter.
- e. At this point, the supply curve for slaughter stock will start to rise rapidly, if insufficient slaughter facilities are available, and lead to a massive build-up of stock. Analysis of the "massive" levels of live stock numbers and herd population for the purpose of establishing future slaughter facilities could result in unrealistic predictions (Figure 4).

If the herd follows the growth pattern and composition shown above it should be evident that reliable monitoring of the national herd is essential in order to predict the economic establishment of increased slaughter capacity and that timing will be a crucial factor.

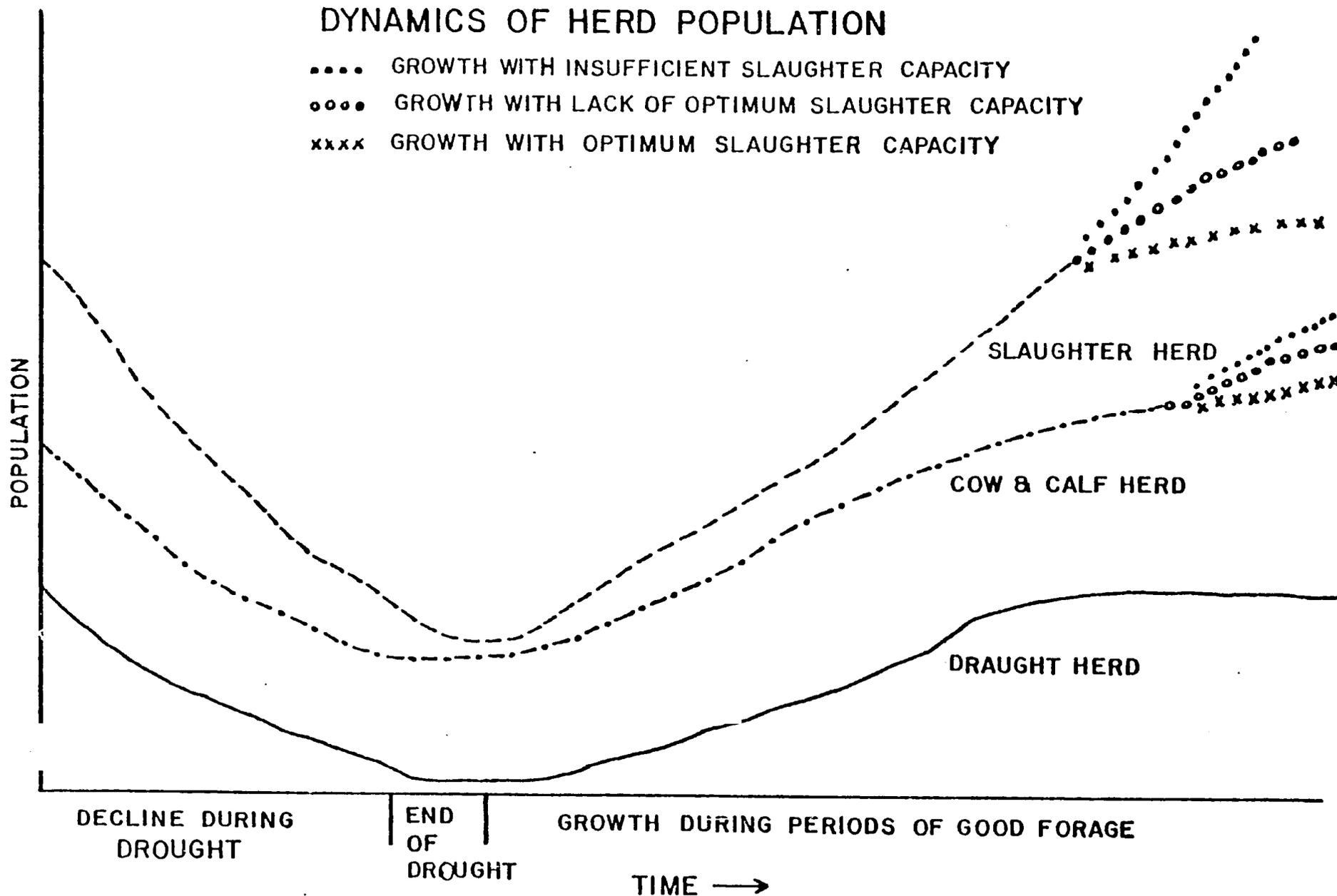
The utility of any model will be dependent upon its development and updating. Certain key criteria if prudently chosen and based on statistically valid samples can provide for the updating and development of the model at relatively low cost. Criteria that would need to be fed in are:

- a. Animal calving percentages which are based on pregnancy diagnosis. (The Veterinary Department has already done this on a very limited basis).
- b. Net number of animals introduced into the draft herd.
- c. Net change in the cow herd.
- d. A growth factor for different regions of the country.

The 1971-72 season was an extremely good one in terms of forage production followed by the 1972-73 drought which was limited in severity

DYNAMICS OF HERD POPULATION

- GROWTH WITH INSUFFICIENT SLAUGHTER CAPACITY
- oooo GROWTH WITH LACK OF OPTIMUM SLAUGHTER CAPACITY
- xxxxx GROWTH WITH OPTIMUM SLAUGHTER CAPACITY



due to the early rains at the end of the dry season when major losses would have occurred. The 1973-74, 1974-75, and 1975-76 seasons were marked by above average rainfall and forage production. This five year period is highly atypical in Botswana and produced higher calving percentages and better weight gains, leading to a massive buildup of stock numbers. During the same period the total offtake in numbers increased while as a percentage of the total herd it actually decreased. Utilizing the dynamics of herd population listed above and the graph, the slaughter herd has and is continuing to expand rapidly which has serious ramifications if offtake is not significantly increased.

The economic expansion or construction of slaughter facilities will limit losses to the industry in time of drought but will not allow for the slaughter of all animals available during such periods. In the past the BMC used the export of cattle on the hoof to buffer against aggravated losses during drought years. Figures for export of cattle on the hoof for the period 1960-1967 are as follows: 8,377; 12,624; 18,228; 27,348; 15,054; 19,568; 16,422; and 7,367 with the total figure being 124,000 and the total offtake from the industry, including live export, being 955,000. The export of cattle on the hoof represented 13 percent of the total offtake and provided a good buffer in time of drought. At present no arrangements for export of large numbers of cattle on the hoof are in existence. Efforts should be made to secure such markets. The present situation requires greater planning and control as no buffer is present to provide a hedge against slaughter requirements and drought losses. It is worthwhile pointing out that if the increased cattle population is approaching 3 million head the following would occur if a drought similar to that of 1964-66 were to occur:

Farmers would market at least 12 percent of their stock which would mean that 360,000 animals would be available for slaughter.¹

If 13 percent of this total figure were to be exported on the hoof there would have to be a market capable of absorbing 46,800 cattle leaving the BMC to slaughter roughly 313,000.

The livestock industry with its central role in the economy must be well monitored and allow for sufficient planning. The amount of resources involved in such monitoring and planning assume insignificant proportions when compared with the present government resources devoted to development of the industry and the total investment held by farmers. Deployment of limited resources in this area can provide tremendous dividends in the long run. No amount of resource allocation can provide maximum economic returns if sufficient, economic slaughter capacity is not available and open to all producers. The development of models and monitoring would require an initial design by a livestock economist familiar with such production and marketing systems and such expertise may not be available within GOB at present. It is recommended that the MOA deal with this problem and if necessary bring someone in on a short term consultancy basis to meet this objective.

¹Material from the Division of Planning and Statistics, Ministry of Agriculture shows that in 1966 the total herd was 1,237,000 and an export offtake of 148,700 or 12 percent occurred. This by no means enabled the industry to avoid drought losses in the production areas. If projections for future slaughter requirements are to be of use, it is essential that past problems and losses be taken into account and fully understood. Great efforts are made to move animals to market when a drought occurs but the question of increasing offtake falls by the wayside in good years. Encouragement and advice on marketing of stock is necessary in good years to avoid the kind of buildup which aggravates losses during a drought. Needless to say, the analysis of slaughter requirements is a constant given, but preventative medicine will go further than the costly cure the industry has tried to administer in the past.

The Marketing System and Its Relation to Ranching Development

Improvements to the marketing structures are necessary if small holders are to benefit from ranching development. The process of group formation has proven to be a difficult one, however, groups offer the small holder a chance to participate positively in the development of the industry. Regardless of the legal form communal ranching organizations take, one of the primary goals will have to be the attainment of an equitable position in the marketing system which allows the small holder a voice in the development of the industry.

Despite the clearly stated aim of the Government of Botswana as set forth in the Tribal Grazing Policy, one has to hold reservations with regard to the ability of government officials to achieve their objectives of safeguarding the interests of those who own only a few cattle or none at all. Experience elsewhere is not such as to instill optimism on this score. As Fosbrooke¹ observed there is a risk that the government program for developing the livestock industry would "in fact, increase the gulf between the rich and the poor." In support of this cautious, if not pessimistic, outlook, he presented examples of what had taken and was taking place in Mexico, India, Pakistan and Turkey where improved seeds and fertilizers had been introduced. The more affluent persons were better able to take advantage of the new technology; the poorer sectors could not afford to adopt them. Whether this concern is real in the case of livestock development in Botswana remains to be seen, but the possibility of widening rather than closing the gap between rich and poor must be recognized and reckoned with.

¹H.A. Fosbrooke, "Social Implications of Sustained Livestock Production in the Kalahari," Proc. Conf. on Sustained Production from Semi-Arid Areas, Botswana Notes and Records, Spec. Edition No. 1, Gaborone, 1971.

While livestock is an important facet of rural life in Botswana it should be kept in mind that a large segment of the population do not own any cattle at all and roughly 64 percent of all livestock owners own 20 head or less. Consequently, though livestock is an important source of cash income, every small holder is dependent upon arable farming for his subsistence. Small holders perceive arable farming and livestock as mutually dependent and place emphasis on the development of both farming and livestock activities. A note of caution is required here. The development of ranching in the communal areas is difficult and in many cases marginally economic and can not support the subsidization of arable farming activities. Ranching development may provide an economic channel without subsidization for supplying inputs to farmers for increasing returns from arable farming.

Examination so far has dealt with cattle owners. The other danger in addition to those outlined above is one of exclusion of those who own no cattle. The marketing system must allow for entry of persons who acquire stock at a later date. If the goal is not met a large segment of the population will in effect be prevented from fully participating in the development of the livestock industry and sharing of the benefits.

The communal ranches now being developed are providing a useful service in uncovering problems that will be faced on a broader scale when ranching development is accelerated. Problems of group formation involving those who occupy a marginal economic status must be dealt with immediately. If subsidy is considered it must be well justified and not create uneconomic development or blackmarkets. One area that can provide the greatest benefits and spinoff from subsidization is management. Communal ranches formed under the Livestock and Range Management Project may be tied together with ranches developed in the Phase II of the World Bank program under the "service company" concept.

The complex question of Mafisa (loaned cattle) must be adequately dealt with. The well being of many small holders the Project is directed towards have more mafisa's than owned livestock. The mafisa system has many benefits in the traditional society but is not well suited to a high cost, high income system. With the owner and not the borrower retaining the rights over sale and management, members of a group ranch holding mafisa'd cattle may contribute to management problems. The project at Selebalo left arrangements between borrowers and lenders to the members themselves in spite of roughly one-third of the total stock being borrowed animals. Not only does this present management problems, but the farmers with limited educational background and familiarity with ranching may be involved in an uneconomic agreement. The Selebalo Ranch requires that the members, not the owners, pay the grazing and management fees for the cattle. There is a danger that the costs incurred in borrowing these cattle will be higher than the benefits which accrue from having use of them. Economic losses and management problems incurred by members could cause the downfall of the ranching scheme or decrease its effectiveness and additionally allow more wealthy "cattle lenders" to benefit at the expense of the small holder.

Group members interviewed at Selebalo indicated that due to anticipated problems with mafisa'd cattle and lacking adequate solution they are considering abandoning the mafisa system. The question of mafisa'd cattle begs an answer and must not be ignored as it will crop up in all of the projects among other groups.

Considerable insight into problems of group formation and small holder marketing problems could be gained through discussions with the Cooperative Department. Materials on registration of Coops, education and training should be available. The following materials have been prepared

and published by the Cooperative Department:

- a. Handbooks for the managers of marketing and consumer societies.
- b. Handbooks for Cooperative Officers.
- c. Reports on the activities of the Cooperative Union.

The Extension workers could use these as a basis for obtaining material and learning the mechanics of group formation by accompanying Cooperative Officers during the registration process.

One last area that begs attention is the "risk-bearing" factor which the small holder takes in becoming a member of a community ranching project. The significance of the small holder investing his limited, meager resources totally to a new and unproven development scheme must be understood. Experience gained in cooperative marketing in Botswana showed that the smallest farmers in remote rural areas were often most reluctant to utilize the coop to market cattle to BMC as they feared their one and only sale animal might die or stray on the way. Though the probability of the animal dying or straying enroute was extremely small, the farmer was willing to accept 50 to 70 percent of the net return from marketing to BMC in order to protect himself. To alleviate this problem the Coops set up a limited insurance program to protect the smallest farmers in particular. Relevant safeguards will be necessary in ranching development to assure participation and security for small holders. Additionally, the concept of allowing for partial rather than total participation by the individual, may be applicable in specific areas of the country or within certain types of ranching development

Appendix A

Adjusted Herd Sizes 1966-72

Thousands

Tradi- tional	M A L E S				F E M A L E S			Total
	Bulls	Oxen	Pollocks	Calves	Cows	Heifers	Calves	
1966	35 3,3%	145 13,7%	100 9,4%	87 8,2%	406 38,3%	189 17,8%	97 9,2%	1 059
1967	40 3,1%	178 13,9%	99 7,8%	137 10,7%	199 39,1%	180 14,1%	142 11,1%	1 276
1968	41 2,8%	177 12,2%	126 8,7%	167 11,6%	576 39,9%	186 12,8%	172 11,9%	1 445
1969	44 2,6%	193 11,6%	172 10,3%	177 10,6%	653 39,2%	238 14,3%	189 11,4%	1 665
1970								
1971								1 891
1972	39	251	196	169	758	310	168	
<u>Commer- cial</u>								
1966	2	28	28	17	58	25	19	178
1967	2	34	34	20	70	31	23	214
1968	2	39	38	23	80	35	26	243
1969	3	45	44	26	92	40	30	280
1970								
1971	4	41	64	32	109	44	32	327
1972	3	34	65	26	91	40	26	286

Source: Division of Planning and Statistics

TABLE II

Unrevised Livestock Population Figures

<u>Year</u>	<u>Cattle ('000)</u>	<u>Sheep ('000)</u>	<u>Goats ('000)</u>
1945	920	-	556
1950	1 050	217	477
1955	1 152	153	305
1960	1 272	88	251
1961	1 319	96	274
1962	1 352	112	315
1963	1 350	128	360
1964	1 346	137	378
1965	1 097	125	335
1966	916	151	398
1967	1 105	212	647
1968	1 250	231	703
1969	1 441	279	847
1970/71	1 832	370	015
1971/72	2 050	380	965
1972/73	1 809	297	657

Source: Veterinary Department and Division of Planning
and Statistics, Ministry of Agriculture.

BMC Monthly Throughput 1966-1976^a

TABLE III

Year	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Month											
January	3,758	3,594	-	7,783	13,527	10,340	16,129	7,171	15,649	17,206	12,575
February	786	5,004	7,227	10,429	17,830	15,822	18,924	20,034	18,933	15,977	16,803
March	10,899	6,664	11,622	9,344	13,446	19,101	18,795	22,192	21,223	15,958	27,296
April	15,045	9,466	11,702	8,129	16,629	14,817	11,742	20,249	18,672	17,514	24,716
May	15,761	11,169	10,288	8,843	13,964	16,924	21,490	25,395	18,575	19,867	23,597
June	17,828	9,572	9,570	11,982	13,759	16,904	15,710	21,971	16,782	19,305	
July	19,044	9,356	14,424	8,713	10,731	18,678	11,792	24,772	19,411	19,132	
August	19,380	6,474	11,089	6,539	6,583	15,719	7,371	24,185	14,555	18,002	
September	11,701	5,998	7,648	5,905	4,961	11,656	8,793	20,734	9,094	14,180	
October	9,966	6,423	7,096	4,262	4,091	2,597	6,279	1,430	7,080	7,148	
November	1,122	6,439	7,431	4,255	4,441	10,157	7,494	12,873	15,057	13,088	
December	6,942	8,376	5,679	6,890	7,355	14,465	11,891	8,437	11,010	11,063	
TOTAL	132,232	88,535	103,776	93,074	127,317	167,180	156,510	209,443	186,041	188,440	

BMC Accumulated Monthly Throughput 1966-1976

To End Of	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
January	3,758	3,594	-	7,783	13,527	10,340	16,129	7,171	14,649	17,206	12,575
February	4,544	8,598	7,227	18,212	31,357	26,162	35,053	27,205	34,582	33,183	29,378
March	15,443	15,262	18,849	27,556	44,803	45,263	53,848	49,397	55,805	49,141	56,674
April	30,488	24,728	30,551	35,685	61,432	60,080	65,590	69,646	74,477	66,655	81,390
May	46,249	35,897	40,839	44,528	75,396	77,004	87,080	95,041	93,052	86,522	104,987
June	64,077	45,469	50,509	56,510	89,155	93,908	102,790	117,012	109,834	105,827	
July	83,121	54,825	64,833	65,223	99,886	112,586	114,682	141,784	129,245	124,959	
August	102,501	61,299	75,922	71,762	106,469	128,305	122,053	165,969	143,800	142,961	
September	114,202	67,297	83,570	77,667	111,430	139,961	130,846	186,703	152,894	157,151	
October	124,168	73,720	90,666	81,929	115,521	142,558	137,125	188,133	159,974	164,289	
November	125,290	80,159	98,097	86,184	119,962	152,715	144,619	201,006	175,031	177,377	
December	132,232	88,535	103,776	93,074	127,317	167,180	156,510	209,443	186,041	188,440	

^a Figures made available by BMC.

TABLE IV

Monthly Breakdown of Cattle by Sex 1966-1974 (1)

	1966				1967				1968			
	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total
January	83	727	2,948	3,758	150	941	2,495	3,594	-	-	-	-
February	62	244	480	786	280	1,522	3,202	5,004	401	1,112	5,714	7,227
March	442	3,234	6,597	10,273	423	1,977	4,258	6,664	525	1,516	9,511	11,622
April	555	4,912	10,244	15,711	480	1,785	7,197	9,466	461	1,737	9,456	11,702
May	546	4,276	10,939	15,761	490	2,186	8,493	11,169	413	1,437	8,389	10,289
June	533	4,982	12,313	17,828	461	1,706	7,505	9,672	321	1,104	8,145	9,570
July	491	4,463	14,070	19,044	338	1,419	7,599	9,356	411	1,811	12,132	14,424
August	581	4,355	13,834	19,380	376	1,233	4,865	6,474	340	1,336	9,424	11,090
September	375	3,177	8,149	11,701	279	852	4,867	5,998	268	1,442	5,938	7,648
October	268	2,013	7,685	9,966	301	1,047	5,075	6,423	329	1,175	5,591	7,095
November	43	420	659	1,122	212	881	5,134	6,227	192	1,136	6,103	7,431
December	189	2,879	3,814	6,882	219	974	7,422	8,615	171	735	4,803	5,679
TOTAL	4,168	36,292	91,712	132,172	4,015	16,535	68,112	88,662	3,832	14,741	85,206	103,779
	1969				1970				1971			
	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total
January	265	6,456	1,062	7,783	402	1,256	11,869	13,527	220	1,523	8,197	10,340
February	352	1,828	8,249	10,429	473	2,023	15,334	17,830	499	3,266	11,988	15,853
March	450	1,406	7,488	9,344	495	2,600	10,351	13,446	412	4,104	14,183	19,099
April	369	1,270	6,490	8,129	521	3,239	12,868	16,628	269	3,295	11,252	14,816
May	589	1,453	7,601	8,843	421	2,903	10,640	13,964	338	4,184	11,913	16,835
June	377	1,608	10,017	11,992	294	3,446	10,019	13,759	360	5,611	10,932	16,903
July	320	1,275	7,118	8,713	314	2,530	7,889	10,733	383	4,351	14,044	18,678
August	249	1,023	5,177	6,449	233	1,408	4,942	6,583	465	4,355	11,081	15,901
September	250	4,866	909	6,005	173	991	3,797	4,961	422	2,800	8,387	11,609
October	151	3,289	812	4,252	119	680	3,292	4,091	37	997	1,762	2,596
November	145	3,507	603	4,255	155	790	3,364	4,309	234	2,020	7,903	10,157
December	183	5,522	1,185	6,890	221	1,329	5,205	6,755	361	3,116	10,769	14,446
TOTAL	3,460	33,503	56,111	93,074	3,821	23,195	99,570	126,586	4,000	40,322	122,411	167,233
	1972				1973				1974			
	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total	Bulls	Cows	Oxen	Total
January	288	3,189	12,653	16,130	220	1,638	5,313	7,171	385	3,769	10,729	14,883
February	724	3,901	14,296	18,921	466	3,220	16,426	20,112	321	5,575	13,037	18,333
March	717	4,653	13,472	18,797	614	3,870	17,709	22,193	328	5,417	15,378	21,123
April	411	3,054	9,277	12,742	645	4,506	15,095	20,246	354	4,910	13,508	18,772
May	671	4,504	15,313	20,488	730	5,246	18,917	25,393	357	5,043	13,175	18,575
June	568	3,591	11,612	15,711	787	4,627	16,557	21,971	234	4,416	12,956	17,606
July	503	2,578	9,643	11,924	807	4,692	19,273	24,772	201	3,272	15,939	19,412
August	220	1,852	5,318	7,370	631	6,166	17,388	24,185	132	3,224	11,199	14,555
September	187	1,992	6,606	8,785	437	4,602	15,688	20,727	69	1,000	8,025	9,094
October	136	1,540	4,569	6,239	21	379	1,030	1,430	25	501	6,554	7,080
November	137	1,322	6,060	7,519	250	3,166	9,457	12,873	125	1,802	13,129	15,056
December	202	2,166	9,355	11,893	256	2,168	5,943	8,367	79	379	10,080	10,538
TOTAL	4,498	34,262	117,759	156,519	5,864	44,780	158,796	209,440	2,610	39,308	143,709	185,627

(1) Figures made available by S.V.O.(Abattoir) - Veterinary Department
Total slaughter figures vary with B.M.C. statistics by less than 1%

TABLE V

B.M.C. Price Per 100 Kg. C.D.W. Paid to Producers1966 - 1974 Plus Bonus Payment and Average Prices Paid (i).

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973(ii)</u>	<u>1974</u>
Super	R43,56	44,24	46,00	49,10	47,90	52,09	64,30	80,77	37,20
Prime	R38,90	39,95	41,59	44,68	44,37	46,77	58,90	71,19	83,85
1A	-	-	-	40,68	40,70	43,76	54,27	64,92	79,68
1B	R34,25	35,68	37,25	38,19	38,61	40,85	50,81	59,72	76,62
2	R31,77	33,11	34,65	34,50	34,83	37,07	46,18	57,73	75,34
3	R28,03	29,04	30,56	30,84	30,93	33,18	41,22	52,21	69,72
4	R25,50	26,58	28,07	28,34	28,34	29,84	36,62	47,82	66,62
Detained	R24,02	26,42	27,96	28,38	28,07	29,81	37,86	45,97	59,94
Condemned	R17,40	19,54	19,14	19,40	18,33	17,48	19,91	24,06	38,51
Average	R28,73	31,77	33,77	34,47	34,49	36,32	46,34	55,97	73,14
Average C.D.W. in Kgs.	184	214	227	228	209	197	207	194	202
Avg. value incl. Bonus	R53,00	68,00	77,00	79,00	72,00	72,00	96,00	126,00	148,00
Bonus on S + D sales	7,5%	10,5%	16,5%	12,0%	12,0%	18,5%	32,0%	13,5%	9,0%

(i) Figures extracted from B.M.C. Annual Reports

(ii) During 1973 there were two interim bonus payments of 10% and 20% which are not taken into account in the

TABLE VI

Breakdown of Cattle by Grade 1966-1974 (i)

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Super	0,1%	0,1%	0,2%	0,4%	0,3%	0,3%	0,7%	1,1%	0,9%
Prime	1,0%	2,6%	2,8%	3,9%	4,4%	4,4%	6,8%	5,5%	7,2%
1A	1,9%	5,0%	5,9%	8,7%	10,6%	10,1%	10,1%	7,2%	8,3%
1B	8,2%	21,8%	26,0%	19,7%	14,7%	12,6%	16,7%	13,1%	17,3%
2	23,3%	24,1%	24,6%	26,6%	25,0%	23,8%	22,8%	22,6%	21,4%
3	40,8%	26,2%	24,2%	26,0%	29,6%	31,1%	29,0%	32,3%	29,2%
4	8,7%	3,7%	4,1%	4,1%	6,5%	9,5%	5,7%	9,7%	7,1%
Detained	13,2%	14,9%	10,7%	9,2%	8,0%	7,3%	7,4%	7,0%	7,0%
Condemned	2,8%	1,6%	1,5%	1,4%	0,9%	0,9%	0,8%	1,5%	1,6%
% of cattle grading 2 and above	34,4%	53,6%	59,5%	59,3%	55,0%	51,2%	57,1%	49,5%	55,1%

(i) Figures extracted from B.M.C. Annual Reports.

TABLE VII

Revised Estimates of National Herd and
Percentage Offtake : 1965 - 1973

<u>Year</u>	<u>National Herd</u>	<u>Export Offtake</u>	<u>Percentage Export Offtake</u>
1965	1 481	162,3	11,0
1966	1 237	148,7	12,0
1967	1 492	95,9	6,4
1968	1 688	103,8	6,1
1969	1 945	93,1	4,8
1970	2 017	128,2	6,4
1971	2 092	167,4	8,0
1972	2 177	156,5	7,2
1973	2 260	209,9	9,3

Source: Division of Planning and Statistics

Appendix B

APPENDIX B

IBRD Livestock Development Loan

The first phase of the World Bank Livestock project (Livestock I) dealt with two basic livestock problems: (1) the establishment of finishing ranches to enable farmers to increase returns from livestock, and (2) the establishment of cattle and Karakul sheep ranches involving both syndicates and individual farmers.

The first of these provided a place for individual farmers to bring immature cattle to be grazed to maturity and fattened for slaughter; a per head fee was charged covering the time animals were held on the ranch which was deducted when the animal went to market. Five such ranches were established; one of them, at Makmalamadi, served also as a quarantine camp for animals headed for market. The Botswana Livestock and Development Company (BLDC), a non-profit subsidiary of the Botswana Marketing Company (BMC), was formed to handle the financial transactions of the ranches.

The second aspect of Livestock I applied to both cattle and sheep. They have little relevance for the small holder programs, but information and experience was obtained which will be useful for Livestock II.

Livestock II

The program for the second phase of IBRD is just now being developed by a Preparation Team. It envisions a four-pronged program dealing with:

1. Ranch Management
2. Ranch Credit
3. Livestock Marketing
4. Project Monitoring

The ranch management programs will encompass a training school at which prospective ranch managers will be trained for twelve months in the skills needed for operating commercial ranches that are to be established. More advanced courses will be developed for experienced managers who will manage service companies for larger enterprises. These service companies are to be set up to provide managerial supervision, provide a source of needed ranch supplies, and perform heavy duty work and services which none could individually perform. They will also assist in obtaining credit.

Ranch credit is to be supplied through the National Development Bank (NDB) through an agricultural division. The supervisory force will consist of a manager, a loan supervisor and eight finance officers, seven of whom will be in the field. As the system progresses, branch offices may emerge.

Improved livestock marketing will be addressed by development trek routes and handling facilities for both cattle and small stock at fifteen points along the rail line to facilitate livestock movement to market.

Monitoring of range conditions is being contemplated presumably using systems already developed by the Animal Production Research Unit (APRU), and supported by data analyses facilities there. The data analyses capabilities

are now being quite fully utilized and with demands increasing, additional support may be required for it; finding trained range ecologists for collecting the data on the ground also may be a problem. More important, however, is the fact that though data from permanent inventory points are necessary in management programs, the findings from them can only be interpreted by people with range management knowledge and skills. Finding these in Botswana will be a big task, as will developing a sufficient number of managers with this capability.

Three different types of ranching development are being contemplated:

(1) Ranches within the communal grazing areas for growing out immature livestock. Sixteen paddocks will be built about a central watering point and a short-duration grazing system employed in the hope of avoiding destocking. This seems to be unrealistic, if the range is in good condition, likely no destocking is required. If it is in poor condition through overstocking, grazing systems are unlikely to improve them or if so but slowly.

(2) Minimally developed cattle post ranches are infenced except for weather or bull areas. Water will be increased and other facilities upgraded. This is viewed as a first stage development toward stage three of fully developed ranches when fence construction takes place.

Targets for Livestock II are:

<u>Year</u>	<u>Fully Developed</u>	<u>Minimally</u>
1977/78	2	5
1978/79	20	35
1979/80	8	40

Construction by 1983 one year/complete

13. No. of people with only 1 home location _____
 Village and lands location _____
 L. & C.P. location _____
 V.L. and C.P. location _____

14. Cattle nos. owned by grouping _____
 (Columns 13 & 14)

0 _____
 1 - 5 _____
 6 - 10 _____
 11 - 20 _____
 21 - 40 _____
 41 - 60 _____
 61 - 99 _____
 100+ _____
 D.K. _____

15. Oxen owned by grouping _____
 (Columns 15 & 16)

0 _____
 1 - 3 _____
 4 - 6 _____
 7 - 10 _____
 11 - 20 _____
 21 - 40 _____
 41+ _____
 D.K. _____

16. Small stock owned by grouping _____
 (Columns 17 & 18)

0 _____
 1 - 5 _____
 6 - 10 _____
 11 - 20 _____
 21 - 40 _____
 41 - 60 _____
 61+ _____
 D.K. _____

17. No. who own neither smallstock nor
 cattle (Those who report 0 in both
 columns 13, 15, 17, & 18) _____

18. Donkeys owned by grouping _____
 (Column 19)

0 _____
 1 - 3 _____
 4 - 6 _____
 7+ _____
 D.K. _____

19. Horses owned by grouping _____
 (Column 19)

0 _____
 1 - 3 _____
 4 - 6 _____
 7+ _____
 D.K. _____

20. Chickens owned by grouping _____

0 _____
 1 - 30 _____
 31 - 50 _____
 51+ _____
 D.K. _____

21. Pigs owned by grouping 0 _____
 1 - 5 _____
 6+ _____
 D.K. _____

22. Those who own no cattle,
 smallstock, donkeys, or
 horses (Column 13, 14, 17,
 18 & 19) _____

23. Completion of following table on mafisa

No. of cattle owned		No. of cattle mafisa'd in by type (No. of hhs by category)						
		0	1 - 5	6 - 10	11 - 20	21 - 30	31+	D. K.
0	Cows							
	Oxen							
1 - 5	Cows							
	Oxen							
6 - 10	Cows							
	Oxen							
11 - 20	Cows							
	Oxen							
21 - 40	Cows							
	Oxen							
41 - 60	Cows							
	Oxen							
61 - 99	Cows							
	Oxen							
100 +	Cows							
	Oxen							
D. K.	Cows							
	Oxen							

24. No. of people who report mafisaing out cattle
 (Column 27) _____

25. No. of people who mafisa in and mafisa out cattle
 (Columns 21, 22, & 27, i.e. a positive entry
 in both) _____

26. Distribution of nos. of smallstock mafisa'd in by category (Columns 25 & 26)
- 0 _____
 1 - 5 _____
 6 - 10 _____
 11 - 20 _____
 21 + _____
 D. K. _____
27. No. of people reporting that they mafisa out smallstock (Column 28) _____
28. No. of people reporting that they have a bull on hire, loan (Column 29) _____
29. No. of people reporting that they have oxen on hire or loan by category (Columns 30 & 31)
- 0 _____
 1 - 5 _____
 6 - 10 _____
 11 + _____
 D.K. _____
30. Reasons given for keeping cattle by frequency of reason (Column 32)
- 1) To sell _____
 2) Milk, food _____
 3) Draught power _____
 No reason _____
 Other _____
31. Source of cattle mafisa'd in by frequency of source (Column 33)
- 1) Brother _____
 2) Sister _____
 3) Uncle _____
 4) Other relat _____
 5) Other relat _____
 6) Non-relative _____
 7) Non-relative _____
 8) D.K. _____
32. Average time cattle kept under mafisa (Columns 34 & 35) _____
33. Longest time people have had mafisa cattle by the following categories No. in each category (Columns 36 & 37)
- 1 year _____
 2 years _____
 3 - 5 _____
 6 - 10 _____
 11 - 15 _____
 16 + _____
 D. K. _____
34. No. of cattle mafisa'd out by categories - no. in each category (Columns 38 & 39)
- 0 _____
 1 - 5 _____
 6 - 10 _____
 11 - 20 _____
 21 + _____
 D. K. _____

35. Reason for cattle being given out on mafisa - No. in each category (Column 40)

D. K. _____
 Plough _____
 Milk _____
 Herding _____
 Better grazing _____
 Other _____

36. Use of mafisa cattle (Column 41)

Ploughing _____
 Milking _____
 Other _____
 No Reason _____
 D.K. _____

37. Management of mafisa cattle (Columns 42 & 43)

	<u>Owners Responsibility</u>	<u>Managers Responsibility</u>	<u>D.K.</u>	<u>Don't use or practice</u>
Sale of cattle	_____	_____	_____	_____
Movement	_____	_____	_____	_____
Purchase of bonemeal	_____	_____	_____	_____
Payment for water	_____	_____	_____	_____
Branding Iron	_____	_____	_____	_____

38. Payment for management of mafisa cattle (Column 45)

Cash payment _____
 No cash payment _____
 D. K. _____
 Livestock gift _____
 No livestock gift _____
 D. K. _____

39. Payment for mafisa by average no. of years cattle have been held (Columns Nos. 34, 35, & 45)

Type of Payment	Nil	Cash	Livestock	D. K.
Average no. of years mafisa cattle held				
1				
2				
3 - 5				
6 - 10				
11 +				
D. K.				

40. Person herding cattle (column 46). Cumulative totals

Nobody _____	Hired _____
Owner _____	Owner and other relatives _____
Son _____	Owner and hired _____
Brother _____	Relations and hired _____
Other relation _____	D. K. _____

41. Age of herders by category (column 47)

1 - 5 _____	21 - 30 _____
6 - 10 _____	31 - 40 _____
11 - 15 _____	41 + _____
16 - 20 _____	D. K. _____

42. Payment of herders by category of herder. (Columns 46 and 48) No. by category

Payment of Herder --	Nil	Cash	In kind	D. K.
<u>CATEGORY</u>				
Son or Brother				
Other relative				
Non relative				

43. Kraaling of cattle (columns 49 & 50) No. in each category

Village never _____	Lands occasionally _____
Village during arable season _____	Lands always _____
Village occasionally _____	Lands D.K. _____
Village always _____	C.P. Never _____
D. K. _____	C.P. during arable season _____
Lands never _____	C.P. always _____
Lands during arable season _____	C.P. - D.K. _____
	C.P. occasionally _____

44. Frequency with which cattle drink. (Column 51) No. by category

Everyday _____
 Every other day _____
 Irregularly _____
 D.K. _____

45. Source of water. No. by source (Column 52)

D.K. _____
Borehole _____
River _____
Well _____
Dam/pan _____
Other _____

46. Percentage of cows in calf. No. by category (Column 53)

10% _____	41 - 50% _____
11 - 20% _____	51 - 60% _____
21 - 30% _____	61 - 70% _____
31 - 40% _____	71% + _____
	D.K. _____

47. Cows in calf milked (Column 54)

All milked _____	Less than half milked _____
Over half milked _____	None milked _____
	D.K. _____

48. No. of liters received everyday (Column 55)

No. who receive no milk _____

1 - 3 litres _____
4 - 6 litres _____
7 - 10 litres _____
11 - 15 litres _____
16+ liters _____
D.K. _____

49. Milk use (Column 56)

Drank by herdsmen _____
Drank by family _____
Sold _____
Creamed _____
Other _____
D.K. _____

50. Cattle movement reasons (Column 58)

Never move _____	Move to lands for ploughing _____
Sometimes move for water _____	Move away from lands after ploughing _____
Regularly move for water _____	D.K. _____

51. Increases in herd size: Total no. of people reporting an increase
(Column 59) _____

52. Reasons for increase in herd size by reason given (Column 59)

Calves born _____
 Cattle purchased _____
 Mafisa'd in _____
 Bogadi _____
 Bought _____
 Exchange _____
 Other _____
 D.K. _____
 None _____

53. Reasons for decrease in herd size (Column 60).

Total no. of people reporting a decrease _____

54. Reasons for decrease in herd size (Column 60)

Death - bad weather _____	Bogadi _____
Death - diseases _____	Payment _____
Death - accident _____	Fine _____
Sale _____	Exchange _____
Mafisa out _____	Other _____
Slaughter for birth _____	D.K. _____
Slaughter for marriage _____	None _____
Slaughter for death _____	
Slaughter for consumption _____	
Theft _____	

55. Method of sale of cattle (Column 62)

Sold none _____	Trader _____
Auction _____	Speculator _____
B.M.C. _____	Other _____
Coop. _____	D.K. _____

56. Consultation in sale of cattle (Column 63)

Does not consult anyone _____	Consults brother _____
Consults father _____	Consults other relation _____
Consults wife _____	Consults herdman _____
Consults husband _____	Consults non-relation _____
Consults mother _____	D.K. _____

57. No. of people who have heard of improved animal husbandry practices (Column 64)

Bonemeal and salt _____	Improved bull _____
Castration _____	A.I. _____
Deticking _____	Weaning _____
Dehorning _____	

58. No. of people practicing improved methods (Column 65)

Bonemeal and salt _____	Improved bull _____
Castration _____	A.I. _____
Deticking _____	Weaning _____
Dehorning _____	

59. Sources of information on agricultural practices (Column 66)

Never heard of any _____	Friends _____
Radio _____	Relations _____
A.D. _____	Kgotla _____
V.A. _____	Other _____
Others from agric. _____	D.K. _____

60. Knowledge of anyone who has fenced: (Column 67)

Total number who know anyone _____

61. Total number using fencing as a benefit _____
Number without any opinion on fencing _____
Total no. using it as a negative aspect _____
(Column 67)

62. Separations of cows from calves (Column 68)

Knowledge Yes _____
 No _____
 D.K. _____
Agree that it is a benefit _____
Disagree that it is a benefit _____
Don't know _____

63. Pupil Farmer Scheme membership (Column 69)

Total no. of members _____

64. Knowledge of A.D. (Column 70)

No. who know there is an A.D. _____
No. who know the name of the A.D. _____
No. who do not know _____

65. Receipt of advice on cattle (Column 72) By nos.

Never _____
In past month _____
In past year _____
Over a year ago _____
D.K. _____

66. Radio ownership: (Column 73)

No. who say they own a radio _____ No radio _____
D.K. _____

67. Listening to agric. radio programmes (Column 74)

Total no. who listen to any agric. radio program _____

68. Nos. of people listening to different agric. radio programs

None	_____
Pitso ya balemi	_____
Sethitho le boirumelo	_____
Thibang diphotlha	_____
Setshwantsho	_____
Molemi ithute	_____

69. Knowledge of meeting held to present R & L.M.P.

Nos. attending meeting	_____
Heard about project, but did not attend meeting	_____
Have not heard of project	_____
D.K.	_____