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DISCUSSION OF THE BASE LINE SURVEY FOR THE EVALUATION OF THE FOOT AND
MOUTH DISEASE CONTROL PROGRAMME IN NAROK
AND KAJIADO DISTRICTS.

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ABSTRACT

This paper gives the salient information contained in the fuller base line survey by the same author. It presents data on education, employment, cattle holdings, household budgets, environmental perception, agricultural activities, veterinary practices and local problems. It concludes by highlighting the major problems that confront planners in the development of pastoral areas.



DISCUSSION OF THE BASE LINE SURVEY FOR THE EVALUATION OF THE FOOT AND
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The compulsory Foot and Mouth Disease (F.M.D.) Control Programme is a sub-project to be undertaken by the Veterinary Services Department of the Ministry of Agriculture within Phase 2 of the Livestock Development Programme. The sub-project has two components:

- (1) Continuation of biannual compulsory F.M.D. vaccination in the present disease free zones (Laikipia, Nakuru, Trans Nzoia, Uasin Gishu, Kirinyaga, Mitiburi and Kikuyu divisions of Kiambu, the Nairobi area, Kakamega and Bungoma Settlements, parts of Machakos and Ngong Division of Kajiado districts).
- (2) Extension of biannual compulsory F.M.D. vaccination in new areas (Isiolo, Baringo, Samburu, West Pokot, Elgeyo-Marakwet, Narok, Kajiado, Machakos and Mukogodo Reserve).

During the 5 years of the vaccination programme in Narok and Kajiado Districts a socio-economic evaluation will be undertaken, comprising a base-line study, a mid-term and a final evaluation. There will also be a continuous survey.

In the base-line study particular emphasis was placed on the economic conditions existing in the two Districts, the perceptions of the environment held by the Maasai people, and their role in the development of the area.

Information was collected concerning family data, education, employment, herd structure, income, family expenditure, perception of the environment, agricultural and pastoral activity, veterinary practices and local problems.

The proposed development plans for Narok and Kajiado cannot be evaluated as a series of independent projects, each contributing to the improvement in the living standards of the Maasai people. It is the overall impact, resulting from the interaction of the plans which must be considered.

Other veterinary activities undertaken include compulsory Rinderpest control, Contagious Bovine Pleuropneumonia eradication, and general improvement of the Veterinary services in the pastoral areas. Livestock purchasing centres are to be established entailing permanent purchasing stations on holding grounds, permitting sales of cattle on a regular schedule and on a live weight basis. Transport facilities are also to be improved with the provision of lorry transport to move cattle to markets and for further conditioning, or for direct slaughter.

Survey Procedure

Maps were constructed for each District denoting; the boundaries of the registered ranches, the approximate boundaries of the proposed ranches many of which are still undergoing demarcation and the unadjudicated areas. The unadjudicated areas were arbitrarily subdivided into average ranch-size blocks and a random sample of five was drawn from each of the three classes of land in the two Districts. Twelve heads of families were interviewed in each area selected, except for the unadjudicated areas of Narok, where some difficulties were encountered. In all 311 interviews were completed. All the interviews were conducted during December 1973 by four Maasai student teachers and 4 young Maasai men recommended by the Districts' Veterinary staff.

The statistics were calculated, first for each class in the District, then for the District and then for the two Districts combined. For this to be meaningful, it was assumed that the 3 subsamples for each District can be aggregated and considered as a simple sample for the District. No attempt was made to weight the subsample results according to the relative importance of each class in the District, since sufficient a priori information concerning the population densities of each area was not available. Finally, on the assumption that the 3 subsamples can be aggregated to give a sample for the two Districts combined, the statistics were calculated for Maasailand.

For detailed information concerning the survey procedure questionnaire used and results obtained see the report on the Base Line Study¹. In compiling the questionnaire, extensive use was made of the questionnaire compiled by G.O. Lang² for use in the pastoral areas of Tanzania.

Most family herds have 6 - 10 dependents (including the livestock owner). It was noted that the larger the herd a Maasai possessed, the larger the number of dependents he would have to support. The 18% of respondents with three or more wives invariably had the largest herds.

1. A Base Line Survey for the Evaluation of the Foot and Mouth Disease Control Programme in Narok and Kajiado Districts by J.E. Matson, August 1974. Institute for Development Studies, University of Nairobi.

2. Socio-Psychological Factors and Strategies in the Introduction of Modern Ranching in Sukumaland. A Preliminary Report of the Receptivity Study No. 1 of the UNDP/SF Livestock Development Project No. 279. Sukumaland, Tanzania by G. O. Lang, July 1971. Institute of Behavioral Science, University of Colorado, Boulder, Colorado, U.S.A.

There was a preponderance of young children under 5 years of age. It has been suggested that in recent years there has been a 'baby boom' in Maasailand. It was beyond the scope of the survey to ascertain the truth of this suggestion or to identify the causes. If a rapid population increase can be positively correlated/with economic advancement, this will have significant repercussions on the development plans which have been proposed for Maasailand. Commercial ranching in the range land areas could not provide growth/ⁱⁿ employment commensurate with a high rate of growth in population. Therefore it is recommended that further investigation be undertaken regarding changes in the Maasai population.

Education

Less than 26% of the Narok respondents and 15% of the Kajiado respondents had received formal education. Of the additional training undertaken, farmer and other agricultural training were the most common, especially in Kajiado District.

When the desired level of education for sons and daughters is considered, assuming that education is readily available, approximately 93% of the respondents expressed the wish for the maximum possible education for their sons and 66% the maximum possible for their daughters.

However in Narok only 10% of respondents had daughters at primary school, 35% had sons at primary school and 7% had sons at secondary school. In Kajiado 9% had daughters at primary school, 24% had sons at primary school, and 3% had sons at secondary school. No daughters were recorded at secondary school in either District, this may be due to the fact that Maasai girls marry at the age when they would be eligible to enter secondary school.

Employment

84% of the respondents, in Narok gave livestock owner as their principal occupation and the corresponding figure for Kajiado was 97%.

Since alternative off-ranch employment opportunities are limited, aspiring young Maasai, with educational qualifications, who are vital to the development of the area, migrate in search of employment. It is important that modern ranching is promoted to the young as a worthwhile occupation.

Structure of Family Herd.

The Maasai enumerators expressed doubt concerning the accuracy of the livestock figures given by the respondents in both Districts. They were confident that the other information collected was reliable, but felt that many ^{underestimated} their herd size. This is also reflected in the percentage of respondents who refused outright to answer the questions concerning herd composition.

Short of a complete livestock census of the area, it is difficult to assess if there has been consistent ^{underestimation} or if some respondents gave more accurate information than others. Severe drought conditions prevailed when the survey was undertaken and no estimates of subsequent livestock losses are as yet available. Data was obtained on 0-1 year old calves, immatures from 1 to 3 years of age, mature cattle, sheep, goats and donkeys.

Tables 16 and 20 from the Base line report, showing the percentage distribution of mature cattle and average losses due to disease in the two Districts, are included at the end of this paper to illustrate the type of livestock information collected.

Income and Family Expenditure

The respondents were asked for information concerning the size and source of their income during the previous year. The sale of livestock provided the major source of income in both Districts, despite the quarantine restrictions imposed in Narok District, because of Foot and Mouth Disease. Whilst 33% of the respondents in Narok had no income from livestock sales, 10% received between Kshs 1-500, 8% received Kshs 501-1,000, 24% received Kshs 1,001-2,000, 10% received Kshs 2,001-4,000 and then progressively smaller percentages for higher income.

In Kajiado 8% received no income from livestock sales, 7% received Kshs 1 - 500, 15% received Kshs 501-1,000, 16% received Kshs 1,001-2,000, 17% received Kshs 2,001-4,000 and then progressively smaller percentages for higher incomes, except for the 6% in the highest income bracket of over Kshs 10,000, compared to 1.4% of the Narok respondents in this income bracket.

In Narok District 86.3% of the respondents and in Kajiado 95.9% received no income from the sale of milk. Stock trading and the sale of hides and skins provided the remainder of the pastoral income. Only 11% of the Narok respondents and 3% of the respondents in Kajiado received off-ranch income.

The respondents were asked to list the items which they purchased on a weekly basis. The Maasai were traditionally self supporting, subsisting on a diet of milk, blood and meat (mainly from small stock). They had few material possessions to encumber them as they moved from one grazing area to another.

The two items most frequently mentioned were posho (ground maize meal) and sugar. 89% of the Narok respondents and 96% of the Kajiado respondents purchased posho weekly and 89% of the Narok respondents and 94% of the respondents in Kajiado purchased sugar. Tea was the next most popular buy followed by cooking fats, potatoes and rice.

The high percentage of respondents purchasing posho, sugar and tea in both District indicates the extent to which the Maasai have already introduced these new foods into their daily diets.

Enquiries made concerning estimated annual family expenditure and school fees, food and clothing were the major items listed.

Household and Agricultural Implements

The possession of household and agricultural implements was taken as an indicator of the adoption of a more settled existence and the degree of affluence attained. The traditional nomadic way of life discouraged the accumulation of utensils which were difficult to transport as the family followed their herd from one grazing area to another.

The most common items documented were crockery and cutlery which were owned by 94% of the Narok respondents and 93% of the respondents in Kajiado District. Paraffin lamps were owned by 51% in Narok and 20% in Kajiado and wrist watches were owned by 23% and 25% respectively in Narok and Kajiado. Ownership of portable radios, clothes irons, manufactured furniture, bicycles and motor trucks was also noted. More Kajiado respondents, 40%, owned sprayers, compared to 6% in Narok and this reflects the greater distance to cattle dips. The greater emphasis on cultivation in Narok District is reflected in the 10% ownership of ploughs, compared to 4% in Kajiado District.

Perception of the Environment

In considering the perceptions of the Maasai concerning their environment it is meaningless to classify the responses according to registered ranches, proposed ranches and unadjudicated areas, since the variability in the ecology of Narok and Kajiado Districts is so great.

Narok has a much higher potential for crop growing, especially in North Narok and fewer drought problems, although areas such as Suswa and Enamatishoeki were experiencing water and grazing shortages at the time of the survey. Kajiado District has a much more serious drought problem. In 1961-62 it was estimated that 66% of the Maasai herds were lost and in January 1974 an emergency slaughter campaign was introduced by the Kenya Meat Commission because of the drought conditions being experienced in the District.

Lack of grazing in the dry season in Narok District resulted in 28% of respondents taking no action, 51% driving their cattle 5 - 10 miles and 18% driving their cattle 11 - 20 miles. In Kajiado District 9% took no action, 18% drove their cattle 5 - 10 miles, 44% drove their cattle 11 - 20 miles and 27% took their cattle over 20 miles in search of grazing and water.

Bore holes can alleviate the problem of water shortage but unless there is improved range management incorporating de-stocking these extensive cattle movements make the concept of independent group ranches, which are viable throughout both the wet and dry seasons, impracticable. It has been argued that even with controlled stock numbers, an exceptional year such as 1973-74, will always require extensive cattle movements.

The lack of water in the dry season also leads to cattle movements especially in Kajiado District, where 27% of the respondents drove their cattle more than 20 miles in search of water. The selling of stock because of water shortages is not a common practice.

Agricultural Activities

Here the differences between the two Districts is most marked. 49% of the Narok respondents grow food crops compared to 9% in Kajiado. The most common crop grown in Narok was maize, it was grown by 49% of respondent in Narok, potatoes were grown by 39%, beans by 30% and wheat by 20% respectively. In Kajiado District 9% of respondents grew maize, 5% grew potatoes and 7% grew beans.

In some parts of Narok e.g. Oloiborsoit and Olosakwana, shambas have been abandoned because of the destruction caused by wild animals. In Oloropil in Narok, a proposed ranch with few livestock, there are large areas under crops, especially wheat

Of the 49% of respondents in Narok growing crops, 33% sold at least part of their produce, 26% sold maize, 25% sold potatoes, 10% sold beans and 18% sold wheat. In Kajiado, of the 9% growing crops, 3.5% sold some of their produce.

Attitudes to Various Agricultural and Pastoral Activities.

53% of the Narok respondents considered that growing food crops for home use was very important and in Kajiado only 4% of the respondents considered growing food crops for home use very important.

Most anthropological work on the Maasai stresses the key position of livestock in the life of the pastoralist. When questioned concerning the importance of raising cattle and other livestock, without any reference to commercial practices; 89% of the Narok respondents said it was very important and in Kajiado 30% of the respondents considered it a very important activity.

The raising of cattle for sale or exchange was considered very important by 72% of the respondents in Narok and in Kajiado, with a longer history of commercial ranching, 87% considered the raising of cattle for sale or exchange, very important.

The respondents were asked if there were other activities which they considered important. Shopkeeping was the only activity mentioned by more than a few, with 27% of the Narok respondents citing it. Only 1 respondent in Kajiado considered shopkeeping important.

The adoption of modern husbandry methods such as dipping cattle, upgrading stock, vaccinations, pasture management, destocking when required etc, was considered necessary if the Maasai are to improve their livestock by 78% of the Narok respondents and 88% of the Kajiado respondents. In Narok 6% and in Kajiado 9%, said it was perhaps necessary and 14% in Narok and 2% in Kajiado said it was unnecessary.

Veterinary Practices

If the livestock owners are to combat tick borne diseases the veterinary services recommend that they dip their cattle once a week. To be able to do so, they must have access to either spraying or dipping facilities which are not too distant from the grazing areas.

When asked how often the cattle were dipped, 51% of the respondents in Narok said they dipped their cattle regularly, 21% said they dipped their cattle sometimes (often accompanied by the comment, "When ever I see a lot of ticks on the cattle"), and 28% said that they never dipped their cattle. In Kajiado 59% dipped their cattle regularly, 7% used the dipping facilities sometimes and 33% never dipped their cattle.

Major Local Problems

The respondents were asked to list the major problems in their area and three main topics emerged. These were animal and human health, shortage of schools and lack of water.

In Narok District 48% of the respondents said there was a shortage of schools and in Kajiado District 72% of respondents made the same complaint. This was reflected in the lower percentage of children attending primary school in Kajiado. Since many of the primary schools in the two Districts have many vacant places, it would appear to be more a problem of the distribution of schools, rather than the total number of school places available.

Animal health was viewed as a major problem by 76% of the respondents in Narok District and 45% in Kajiado. The distance to dips was prohibitive and many experienced difficulty in obtaining veterinary assistance when animals became ill, again due to remoteness. This concern for the health of their livestock would indicate that, provided it is fully explained that there are no serious reactions to the FMD vaccine, the vaccination campaign ought to have the support of the Maasai.

Human illness, especially in children, presented difficulties and was listed as a problem by 59% of the Narok and 88% of the Kajiado respondents. Once again remoteness from hospitals and dispensaries was quoted as the major problem.

Illness due to low standards of hygiene is associated with the other major difficulty, namely lack of water. 48% of the Narok respondents and 88% of the respondents in Kajiado considered the lack of water, both for human and animal consumption, a serious problem.

Problems of Wild Animals

The existence of large herds of game in both Narok and Kajiado Districts ^{presents} opportunities for hunting and tourism which contribute substantially to Kenya's foreign exchange earnings. However the respondents expressed concern because these wild animals are competing with the domestic livestock for grazing.

Formerly the wild and domestic herds moved freely in search of grazing, but as the Maasai are settled they became aware of the competition for grazing ^{which} arises when the wild herds move on to their ranches' limited grazing areas. Extensive research is being undertaken in the UNDP/FAO Wild Life Management Project into the ~~co-existence~~ of wild and domestic livestock in Maasailand.

One of the main problems attributed to the wild animals was the killing of domestic stock, which was reported by 37% of the respondents in Narok and 36% in Kajiado. Damage to crop was considered to be a problem in the cultivated areas of Narok and was reported by 43% of the Narok respondents, while 1.7% considered it a problem in Kajiado. The spreading of livestock diseases, in particular malignant catarrh, was cited as a problem by 8% of the Narok respondents and 51% of the Kajiado respondents. Wild animals were considered to be dangerous to humans by 25% of the Narok respondents and 17% of the Kajiado respondents.

The discussion of the principal problems facing the Maasai illustrates the inadequate infrastructure existing in the pastoral areas of Maasailand. A comprehensive approach to the transformation of the pastoral areas into commercial ranches is required, since it will entail fundamental changes in the life style of the people involved.

The effects of quarantines imposed due to outbreaks of F.M.D. present the major impediment to commercial ranching. However, in addition to the other developments envisaged in Phase 2 of the Livestock Development Programme, social facilities such as schools, dispensaries, retailing centres and water schemes will have to be improved, if the settled ranching life is to be made more attractive to the Maasai.

With improved animal health the livestock holdings of the Maasai can be expected to increase and de-stocking will be necessary to prevent over-grazing. This may entail restricting off-ranch movement of cattle but a system of checking ranch stock will have to be developed whereby

movements during extreme drought conditions as experienced in 1973/74 are permitted.

A number of the proposed ranches are much larger in area and will have greater membership than those already in existence. It is possible that management difficulties may arise in these larger units. Many proposed ranches are being considered because their potential members want security of tenure as quickly as possible - and this desire overrides considerations of the ecological viability of the area as a ranching unit and the feasibility of combining the diverse interests of the members in a single management strategy.

With the Maasai restricted by ranch boundaries, the problem of the competitive grazing of wild life is more acute than previously, when domestic stock were free to roam the plains in search of fodder. Consideration should be given to the possibility of paying compensation out of the revenue accruing from hunting, game viewing etc., to the ranches where the wild life is grazing.

TABLE 16.
 PERCENTAGE DISTRIBUTION OF TOTAL NUMBER OF MATURE
 CATTLE IN FAMILY HEAD

	NIL OR REFUSED ANSWER	1-10	11-20	21-30	31-40	41-50	51-100	101-200	201-300	301-400	OVER 400
<u>NAHOK</u>											
RR	3.57(2)	14.29(8)	12.50(7)	25.00(14)	10.71(6)	10.71(6)	16.07(9)	7.14(4)	-	-	-
PR	13.33(8)	23.33(14)	11.67(7)	11.67(7)	6.67(4)	8.33(5)	11.67(7)	13.33(8)	-	-	-
UN	4.35(1)	26.09(6)	8.70(2)	21.74(5)	13.04(3)	13.04(3)	4.35(1)	8.70(2)	-	-	-
DIST	11.91(11)	20.14(28)	11.51(16)	18.71(26)	9.35(13)	10.07(14)	12.23(17)	10.07(14)	-	-	-
<u>KAJIADO</u>											
RR	-	14.04(8)	19.30(11)	12.28(7)	7.02(4)	8.77(5)	22.81(13)	10.53(6)	3.51(2)	1.75(1)	-
PR	-	18.33(11)	15.00(9)	15.00(9)	5.00(3)	5.00(3)	23.33(14)	16.67(10)	1.67(1)	-	-
UN	-	7.27(4)	21.82(12)	9.09(5)	9.09(5)	3.64(2)	27.27(15)	10.91(6)	3.64(2)	-	7.27(4)
DIST	-	13.37(23)	18.60(32)	12.21(21)	6.98(12)	5.81(10)	24.42(42)	12.79(22)	2.91(5)	0.58(1)	2.33(4)
M.L.	3.54(11)	16.40(51)	15.43(48)	15.11(47)	8.04(25)	7.72(24)	18.97(59)	11.58(36)	1.61(5)	0.32(1)	1.29(4)

TABLE 20.

AVERAGE LOSSES OF LIVESTOCK DUE TO DISEASE DURINGPREVIOUS YEAR

	Calves	Steers	Female cattle
<u>NAROK</u>			
RR	7.84	3.01	4.34
PR	8.17	3.92	5.48
UN	10.17	7.17	10.65
DIST	8.37	4.10	6.02
<u>KAJIADO</u>			
RR	13.93	6.96	8.75
PR	11.88	9.13	10.0
UN	30.56	44.69	26.69
DIST	18.55	19.84	14.91
ML.	14.00	12.37	10.94