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THE CONTEXT FOR VILLAGE-LEVEL DEVELOPMENT
IN HANANG DISTRICT, TANZANIA

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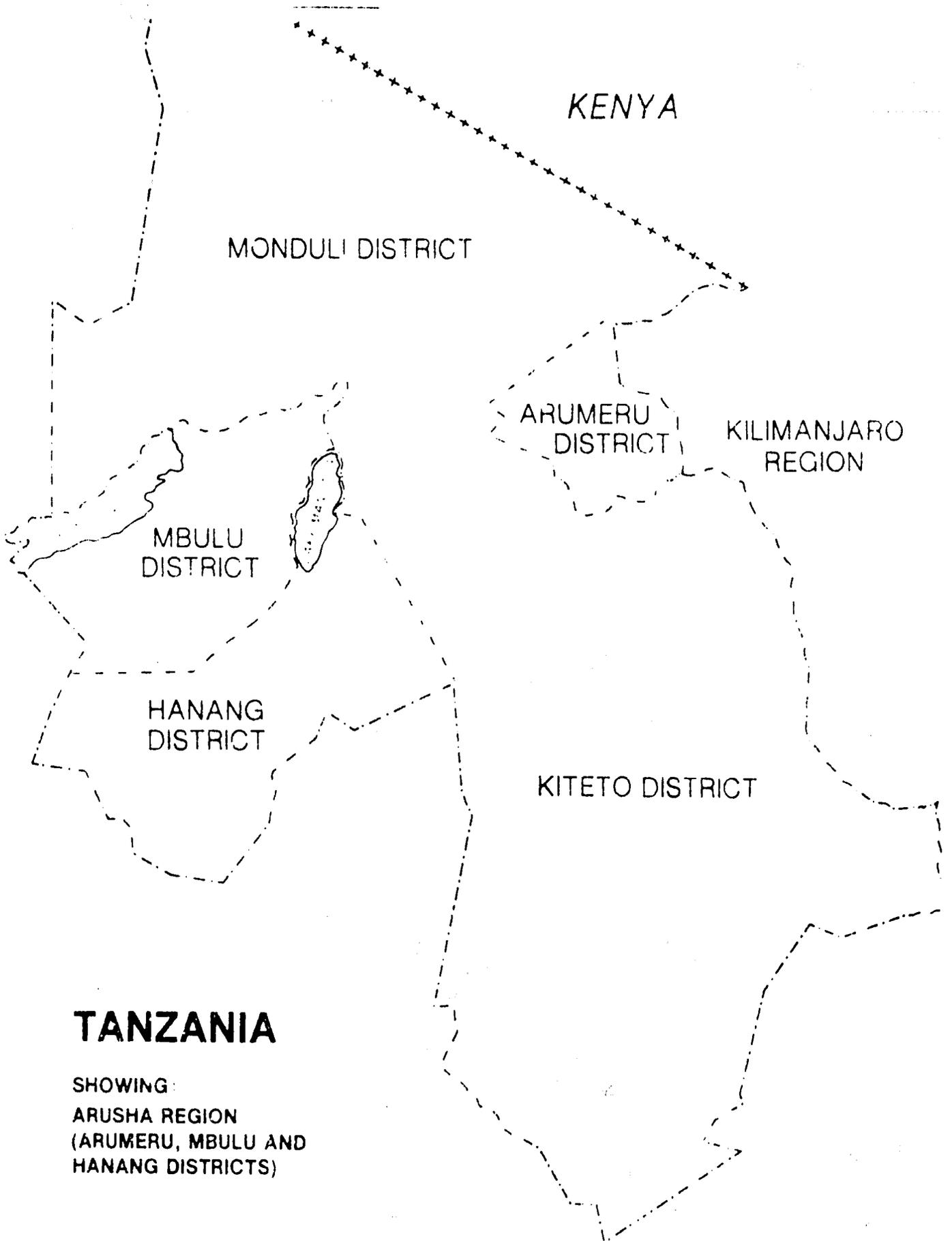
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ABBREVIATIONS

CCM	Chama cha Mapinduzi (political party)
DADO	District Agricultural Development Officer
DLDO	District Livestock Development Officer
HANADECO	Hanang District Development Corporation
NAFCO	National Agricultural and Food Corporation
NMC	National Milling Corporation
NMP	National Maize Project
TANU	Tanganyika African National Union
TPRI	Tropical Pesticides Research Institute
VIC	Veterinary Investigation Center

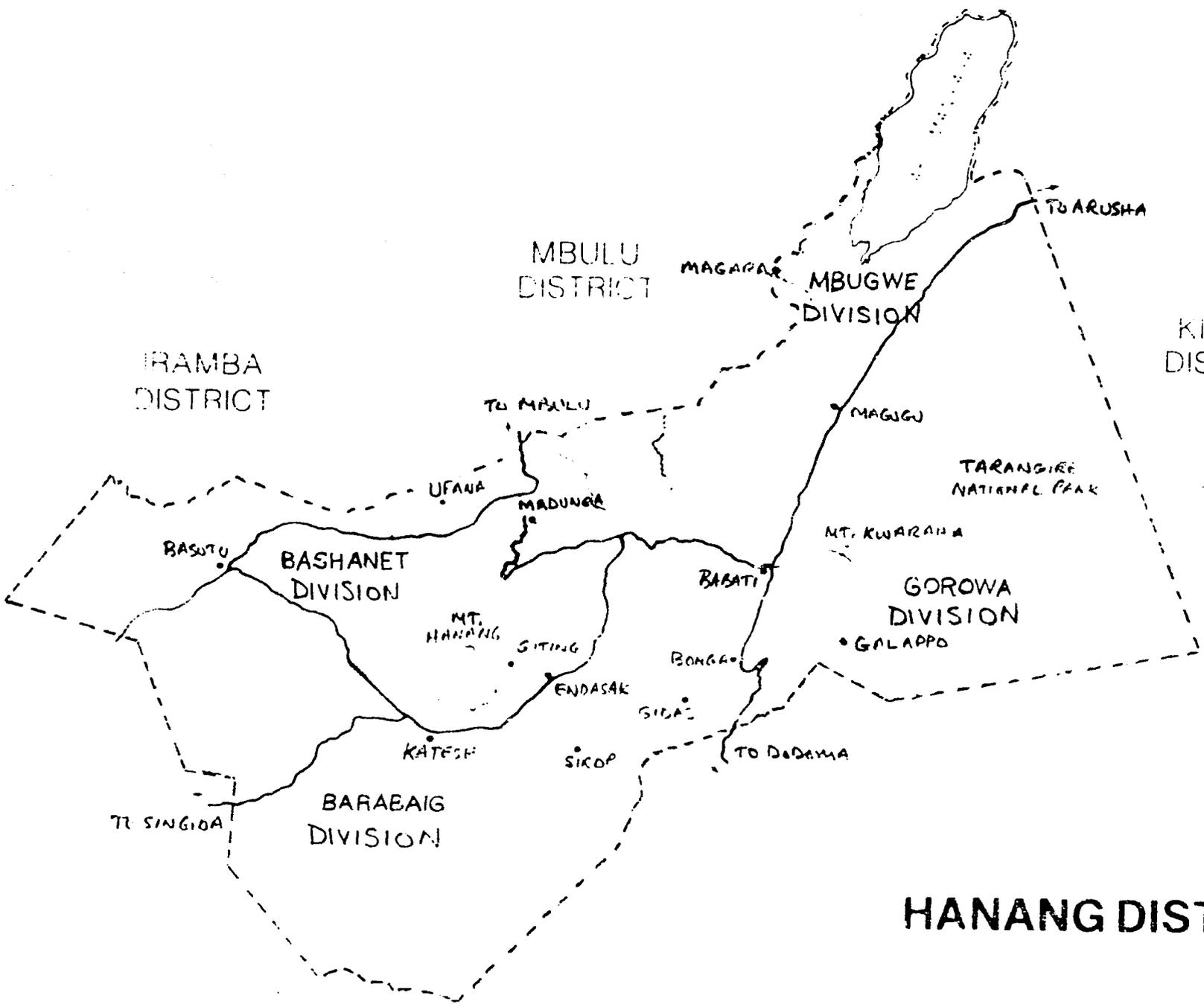
One American dollar = eight Tanzanian shillings (Shs.)

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TANZANIA

SHOWING:
ARUSHA REGION
(ARUMERU, MBULU AND
HANANG DISTRICTS)



HANANG DISTRICT

- 1 4

The Context for Village-Level Development
in Hanang District, Tanzania

Garry L. Thomas

Introduction. Hanang District is one of the newest districts in northern Tanzania's Arusha Region, having come into existence in 1969 when Mbulu District, to its west, was divided roughly in half. Most of its more than 3300 square miles lie in the Rift Valley on either side of two major trunk roads which connect the regional headquarters of Arusha with Dodoma and Singida Regions to the south and southwest. The new district took its name from Mount Hanang (11,212 feet), a mountain rising out of the Rift Valley, which dominates the southern half of the district. Babati (pop. 9411), located 105 miles south of Arusha at a major intersection on the Arusha-Dodoma road, is the district's headquarters. The town, which is the only town in Hanang of any size, lies on the western slopes of the district's only other mountain, Kwaraha (7923 feet), and faces the Rift Valley Wall, which forms much of the district's western border.

Hanang is also probably the most diverse of the five rural districts which make up Arusha Region, both from the perspective of its ethnic mix and its radically different ecological zones. Two of the four large administrative units in the district, Barabaig and Mbugwe Divisions, to the south and north of Babati respectively, are located in the low rainfall zone and contain populations as different as any that exist in the district. Most of the land area of Barabaig Division is grazed by the large cattle herds of the pastoral Barabaig people, a Nilotic-speaking, very homogeneous population, which for the most part has remained tradition-oriented. Mbugwe Division, on the other hand, is as ethnically heterogeneous as any non-urban area in northern Tanzania: the villages here are made up of a variety of Bantu-speaking, farming peoples, many of whom are not indigenous to Hanang District, let alone Mbugwe Division, the majority of them people who were attracted to the area by either the availability of decent agricultural land or the wage-earning possibilities on European-owned farms; and the farming technologies are as varied in this division as paddy rice and slash-and-burn agriculture. The two other large administrative units, Gorowa and Bashanet Divisions, are located in the district's highland areas which generally receive better rainfall. Gorowa Division, located on Kwaraha mountain and including Babati, is a densely-populated, maize-growing area, inhabited by more Bantu-speaking Rangl from neighboring Kondoa District than Gorowa, the Cushitic speakers who are indigenous to the area. Bashanet Division, to the west of Babati, includes a large area above the Rift Valley escarpment at altitudes of between 5500 and 7000 feet. The rainfall at this altitude is not as high as one would expect, however, and the growing season is shorter due to the cold and frequent cloud cover. Bashanet Division is the almost exclusive preserve of the Iraqw, the Cushitic, mixed-agricultural population from Mbulu which has expanded rapidly in the last two

generations into all of Hanang District. Two other populations contribute to the high level of diversity in the district: approximately 13% of the acreage in agricultural production is leasehold land once owned by Europeans, now increasingly owned by either Tanzanian Asians or by the state or local development corporations; and the ethnic mix in Babati town and in some of the villages in Mbugwe and Gorowa Division is so heterogeneous that their social organization might be best described as being "urban" or "Swahili." Finally, a high district birth rate, the district's being situated at a heavily travelled junction of roads going north, south and west, and the proclivity of the Iraqw and so many other ethnic groups in the neighboring districts to migrate and "colonize" new lands in Hanang have all given much of the district a kind of vitality which stands in stark contrast to the tradition-boundness of the pastoral and most homogeneous areas. The rapidly-growing crossroads town of Babati, with the almost classic features of a "new frontier" political headquarters and commercial center, dominates the district's mood far out of proportion to its size and very possibly represents in microcosm a preview of Hanang's future.

Scope and Method. The purpose of this paper is to offer a profile of Hanang District in May and June 1978, a year prior to the implementation of the Village Development Project, a large-scale, integrated rural development funded by the governments of Tanzania and the United States. It is not a baseline paper in the sense that it could be used as the "bench mark" against which future changes, planned or otherwise, can be accurately measured, because of the limited kinds of data that were available at the time of the study. For such a purpose, far more extensive surveys would need to be done. Nor is it a profile of the whole district. Rather, it was decided that data collection and other research should be concentrated in the four "pilot wards," where the Village Development Project will begin, one ward in each of the district's four divisions. The researcher visited each of the 25 villages which fall in the pilot project area (nearly one-quarter of the villages in the whole district) and talked extensively with the village leadership and selected other farmers, always accompanied by either district-, divisional- or ward-level civil servants and/or politicians. All of the villages were visited at least once, some as often as four or five times. Although the researcher was a stranger to Hanang, he had lived in two of the neighboring districts (Singida and Mbulu) for a total of nearly four years, and had spent a week based in Babati the year before, travelling throughout the area with district leaders, while involved in designing the Village Development Project for three districts in Arusha Region. This familiarity with the general area, as well as with the project itself, made research easier, as did a knowledge of Swahili. Still, the time was too short and the circumstances difficult enough for anything more than interview-derived data to be collected at the village level, and in several villages, this information came from as few as three or four people. Despite these shortcomings, it is felt that the village and ward profiles, which do emerge, do depict fairly accurately the reality that these informants perceive -- or at least the reality they could recall of situations and needs they might have better demonstrated over a calendar year.

Finally, because the focus of this paper is on the ward and village level, and because only those areas which have direct relevance to the first year of the Village Development Project were researched, much of the historical and macro-level information has been left out of this study. Readers interested in a more thorough account of the changing rural development strategies of the Tanzanian government in Arusha Region, its political and economic philosophy, and its political and administrative

systems are referred to the background paper prepared for USAID/Tanzania on neighboring Mbulu District.¹

DISTRICT-LEVEL INFORMATION

Demographic Factors. The most ambitious population census Tanzania has ever attempted was carried out in August 1978, the first one held since 1967 when present-day Hanang was still a sub-division of Mbulu District. The data from the August census is not available at this writing. Hanang District, like all districts in Tanzania, has, however, a political-administrative system whereby, theoretically, each "cell" of ten households has a leader or representative, who, amongst other administrative duties, keeps track of how many people live in his cell. Villages in the pilot waras for the Village Development Project, however, had cells ranging in size from as few as five or six households to as many as 77, and present village-level population records are very suspect. The Arusha Regional Headquarters reported that as of 1977, Hanang District's four divisions and 28 wards had 124 villages and an estimated population of 182,000 people. Hanang District's Planning Office estimated that in 1978, the district had 111 villages, with a total of 32,216 households and a population of 163,225. (See "Appendix A: Hanang District Population Figures by Division, Ward and Village, 1978.") Being dependent at present upon village-level reporting of demographic data, the regional and district figures are just as suspect.

In addition to the 1978 Population Census data, a second source of highly accurate information, which will be available to the district office in 1979, is the data being collected by the USAID-funded Hanang Village Health Project in Babati, administered by the Medical Missionaries of Mary religious order. This project has already collected the following kinds of data on 32 villages (seven of them villages in the Village Development Project's pilot wards): number of households, total population, number of male and female children under five years of age, the number of adults caring for young children, the number of sanitary facilities, and the number of households that keep livestock.

Ecological Factors. The rainfall records that exist at the regional- and district-level are very inadequate and it would appear that what planning goes in the agriculture and livestock development departments is done with the complete absence of data. What is known is that Mbugwe and Barabaig Divisions almost always receive less rainfall than Gorowa and Bashanet, and the district lists these as areas for the introduction of drought-tolerant crops and beef cattle, rather than for the extension of maize and dairy programs. Table I shows the recorded rainfall for three stations over a seven-year period, including years when the district was hit by a severe drought. In 1977, 753.8 millimeters of rain fell in 59 days of rain in Babati town, all of them in January through May and in November and December.

There are no known soil surveys of the district, much of the vegetation cover has been cleared in non-protected areas, and water and wind erosion is in evidence in much of the district. There have been some attempts at afforestation.

¹Garry L. Thomas, "Baseline Information and Situational Overview Requisite to the Design of Integrated Rural Development Projects in Mbulu District, Tanzania," May 1977.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<u>Babati</u>													
1971	59.8	62.8	87.5	397.8	600.5	-	-	-	-	-	-	666.8	1875.2
1972	111.7	212.2	223.1	109.2	61.5	5.6	-	-	-	-	184.3	207.6	1014.9
1973	165.9	150.5	59.3	167.6	15.1	-	-	-	-	-	142.0	71.2	771.6
1974	36.4	20.7	88.2	291.6	19.1	-	-	-	-	-	38.2	32.4	535.4
1975	8.6	16.2	145.2	125.4	21.7	-	6.1	1.2	-	-	-	94.4	418.8
1976	82.1	180.0	97.9	45.9	11.0	-	-	9.9	-	120.2	-	-	547.0
1977	107.8	144.3	59.8	75.1	82.3	-	-	-	-	-	104.1	180.4	753.8
<u>Magugu</u>													
1971	36.3	71.4	107.6	265.9	41.4	-	-	-	-	-	?	122.4	?
1972	73.3	64.8	15.3	62.5	94.4	30.0	-	-	-	-	168.0	69.9	678.2
1973	197.8	204.7	26.9	95.4	21.1	-	-	-	-	-	160.1	119.8	825.8
1974	?	26.0	125.7	215.9	31.6	8.5	-	-	-	-	48.2	38.2	?
1975	51.5	60.0	87.3	136.3	56.2	-	-	-	-	7.7	13.4	521.7	935.1
1976	36.5	17.7	129.0	87.8	21.3	9.5	-	1.3	-	-	-	-	187.0
<u>Katesh</u>													
1971	-	?	55.0	108.8	74.0	-	-	-	-	-	?	?	?
1972	?	125.0	?	130.0	91.6	71.2	-	-	-	-	66.0	144.0	?
1973	146.0	104.1	-	82.0	22.5	-	-	-	-	-	?	48.8	?
1974	50.0	20.0	73.8	53.0	125.0	-	-	-	-	-	12.5	20.0	554.3
1975	110.2	-	-	47.5	26.7	-	-	-	-	-	-	-	184.4
1976	?	?	55.7	?	?	-	-	-	-	?	?	?	?

TABLE I: ANNUAL RAINFALL (MM.) FOR HANANG DISTRICT

Source: Regional Agricultural Development Office, Arusha.

Agricultural Production Trends. Partial records of agricultural production are available at the village, district and regional level, but most of the records available to the agricultural staff at these levels are left uncompiled or are so inadequate that it is impossible for analysis or planning to be undertaken. Sometimes the records exist only in monthly reports scattered throughout agricultural officers' files, and in other cases, such as at the regional purchasing offices of the National Milling Corporation (NMC), the compiled records are sent annually to the central headquarters in Dar-es-Salaam and no copies are kept locally. A further complication is the fact that accounts for some years are kept in the number of bags purchased (for some crops, 90 kg. bags, for others 100 kg.) and in kilograms in other years. Sometimes, annual crop production figures follow the calendar year and at other times the fiscal year. And at the 61 ward-level buying posts for NMC, one often finds totals for periods longer or shorter than twelve months. A final problem, in the case of food crops, is most of the food is consumed locally and the District Agricultural Development Officer (DADO) is left with the task of coming up with a formula to estimate crop production figures based upon the amount sold through NMC. Table II is the only information on crop sales available for Hanang District from the regional offices of NMC.

TABLE II: CROPS BOUGHT (IN KILOGRAMS) BY NATIONAL MILLING CORPORATION (NMC)
BUYING POSTS IN HANANG DISTRICT, ARUSHA REGION

<u>Crop</u>	<u>1975/1976</u>	<u>1976/1977</u>	<u>1977/1978</u>
Maize	165,870	8,230,971	19,037,123
Wheat	1,943,910	3,934,526	11,547,251
Beans I			53,381
Beans II			1,886,667
Beans (mix)	117,450	499,236	117,474
Rice			104,248
Sorghum			1,224,820
Bullrush Millet			70,011
Kunde Peas			29,931
Pigeon Peas			2,370,989
Ngwara Peas			34,144
Ufuta			7,149
Lentils			6,818
Grams			13,176
Castor Seed			40,497
Sunflower Seed			123,725
Njegere Peas			18,664
Finger Millet			285,973
Groundnuts			54
Bees Wax			118
Cotton			2,734
Coffee			25,392
Red Beans			10,441
		Total Produce Purchased	37,314,480

Source: NMC, Arusha

The 37,314,480 kilograms of produce bought by NMC at its buying posts in Hanang District in 1977/1978 were worth Shs. 46,061,240 to Hanang farmers.

The District Agricultural Development Officer (DADO) reported that 112,413 hectares were in production in 1976/1977, of which 96,041 hectares were on small, individual farms of less than two hectares each, 1,664 hectares were communally worked on the villages' ujamaa farms, and the remaining 14,708 hectares are farmed on estates, leased by non-Africans, wealthy African farmers, and state- or district-owned corporations. The DADO estimates that approximately 540,000 hectares of arable land remain undeveloped in the district. His estimates for total crop production in the district for 1976/1977 appear in Table III.

TABLE III: CROP PRODUCTION FIGURES FOR HANANG DISTRICT, 1976/1977

<u>Food Crops</u>	<u>Estimated Hectares Planted</u>	<u>Production Esti- mates (in kg.)</u>	<u>Quality of the Year</u>
Maize	31,251	42,188,850	Good
Beans II	6,682	3,006,900	Fair
Sorghum	15,825	11,077,500	Good
Rice (Paddy)	1,918	7,192,140	Good
Pigeon Peas	6,441	3,478,140	Good
Finger Millet	3,512	3,512,000	Fair
Bananas	449	5,051,250	Good
Sweet Potatoes	584	5,840,000	Good
Cassava	616	4,620,000	Good
Onions	188	940,000	Good
Groundnuts	971	543,760	Good
Bullrush Millet	---	---	--
Irish Potatoes	145	870,000	Fair
Other Food Crops	189	98,658	Fair
Food Crop Totals	68,791	88,419,558	
 <u>Cash Crops</u>			
Beans I (Seed)	18,040	11,365,200	Fair
Wheat	17,258	25,887,000	Good
Pyrethrum	198	59,400	Good
Cotton	140	42,000	Good
Sugar Cane	1,014	111,540,000	Good
Coffee	380	239,400	Good
Other Cash Crops (arato, flowers, etc.)	6,592	3,427,840	Fair
Cash Crop Totals	43,622	152,560,840	
Grand Totals	112,413	240,980,398	

Source: DADO, Hanang

All of the seed beans and sugar cane, most of the coffee and cotton, and approximately two-thirds of the wheat is grown on estates, either state- or district-owned, or by wealthy, private farmers.

Livestock Census. Much more accurate records are kept on the district's livestock situation, in part, at least, because the Livestock Development Office has many more field staff at the village level than does the Agricultural Development Office. Surveys are made annually, counting large and small livestock by political ward; in Barabaig Division, where the livestock population is highest, figures are available by village. Still, no effort is made to present this information in any systematic fashion, so that trends can be ascertained. As in the agricultural office, a great deal of "archival work" could be done to assist in planning. Some material for the district, extracted from monthly and annual reports, is presented in Table IV.

<u>Year</u>	<u>Cattle</u>	<u>Goats</u>	<u>Sheep</u>	<u>Donkeys</u>	<u>Pigs</u>
1969	202,303	65,061	45,352	8,465	331
1973	355,704	163,985	85,138	15,414	3,074
1977	409,609	200,864	115,500	15,662	2,424

TABLE IV: LIVESTOCK CENSUS FOR HANANG DISTRICT

Source: District Livestock Development Officer (DLDO), Hanang.

From the partial figures available, it is impossible to see the impact of the three years of drought in the early and mid-1970s. The Livestock Census for Katesh Ward shows a decline for part of the same period. (See Table VII.) The apparent increase in stock in the total district could easily have come about through improved record keeping. The national target for destocking is 10% per year, and the district has set a target of 20%. The DLDO reported that in 1977, between 3-4% of the district's livestock were sold, but the long-term birthrate for cattle, at least, in Hanang and Mbulu District is also approximately 4%. There are no figures available on livestock deaths. In 1977, with good rainfall, revived pastures, and no serious outbreaks of cattle diseases, the natural death rate was very low. (For further information, see "Appendix B: Livestock Census for Hanang District, 1977.")

Agricultural and Livestock Support System. The Hanang District Development Office has four senior staff, two Agricultural Field Officers (Grade III), both based at the district office, and two Agricultural Field Assistants (Grade I), one directing an estate recently taken over by the district office and the other having responsibility for directing work in Mbugwe Division. Three of these men have attended secondary school to Form IV and have had two- or three-year diploma programs in agriculture. There are, in addition, 15 junior staff, based in ten of Hanang's 28 wards, about half of whom have had some secondary school education plus two years training to "certificate level" in agriculture. The remainder have primary school educations and on-the-job training.

The District Livestock Development Office has much more staff, although again most of them are at the most junior levels and have received only on-the-job training. There are eight senior staff members in the department, all of whom have Form IV

secondary educations plus two years of training in Veterinary Science to the certificate level. Two of these staff studied two additional years and received diplomas in animal health and tsetse control. In addition to eight staff members, there are 62 junior staff with no more than primary school educations: 45 of these are Dip Attendants, who operate the cattle dip tanks in the district, used to break the tick cycle and eradicate the tick-borne diseases; the other 17 are Field Assistants involved in tsetse fly control.

Morale is not high in either of these departments. Both the District Agriculture Development Officer (DADO) and the District Livestock Development Officer (DLDO) consider their staff to be overworked, and the budget each year for vehicles and petrol is so small that the vast majority of staff travels by bicycle or by foot in areas much too large for them to service. In addition, the Veterinary Investigation Centers (VIC), which are scattered throughout the district, are usually unequipped and have too few drugs, so the staff housed at such centers feel under-utilized. There is almost no chance for further training or more than the most minimal advancement, and if a person were selected for a one- or two-year course in a subject area such as range management or animal production, other districts are so short of personnel that it would be unlikely that the person would return to work in Hanang upon completion of training. The DLDO estimated that fewer than 100 diplomas are given a year in areas of livestock development in the whole country. No senior staff in either office have been added to the district in over three years. In fact, both the agricultural and livestock offices have lost positions in 1978 when five of their senior staff have been appointed to the post of Village Managers, thereby restricting their work to one village while enlarging their responsibilities to include planning, administration, and accounting. There is the view that "the system" is often capricious, with senior staff feeling that they have little control over where they will be working next. One of the most respected field staff workers in the district had lived and worked in the same community for over 20 years. Early this year, he was told that he was to be transferred to another district to work as a Village Manager. He was transferred again when it turned out that someone else was already in the post when he arrived in the village. He had opposed both transfers because he had to leave behind his family, his children were in school, his wife sickly, and his mother blind, not to mention his losing his fields and his status in his community. He argued,

The transfer did not make sense. I don't know anything about being a Village Manager. I don't know what they were thinking. But there were worse examples. Some lame people, who had to walk with a crutch, were made Village Managers, even though they would have to walk a lot. Even some office messengers were transferred to these posts. What do they know about the work?

The system was responsive in the end, returning him to his original post in the village he called home, but his being absent for three months meant that he was unable to plant the demonstration plot he was expected to plant.

The other side of the picture put forth here is that the government often does not feel that field or extension staff is very effective. One informant quoted President Nyerere as saying that if the government removed all agricultural field staff, production in villagers' fields would not be affected in the least. In the area of agriculture, there is some truth to this possible overstatement. In over a week of travelling with one agricultural employee, this researcher never saw him

look at any fields or engage any farmer in conversation, nor was he treated by villagers as someone who could help them. The only times he talked with anyone other than a local politician or another civil servant was when he asked some children if he could buy vegetables or a chicken, offering prices well below the market price in town. With the exception of the agricultural field worker who had lived in one community for over 20 years, none of the district's senior staff could be thought of as being serious or progressive farmers, at least in the eyes of the villagers.

Social class remains a powerful factor in Tanzania, despite efforts towards a more egalitarian social order. Almost never has this researcher seen a village-level worker with, say, at least some secondary school training, where anything other than dress shoes were worn while working, and this is but one symbol of the distance often felt between civil servants and peasants. Social class is certainly a factor as well in the lengths that Babati-based civil servants go to in order to avoid complying with the directive of Prime Minister Sokoine in 1977 that all senior staff involved in development work must live in the villages four nights a week. It is usually argued that the Prime Minister's directive is a good idea, but that realistically speaking, there is too much paper work, there are too many district-level meetings, and the allocation of petrol is insufficient for the offices' Landrovers to be out in the villages as much of the time as the Prime Minister would like.

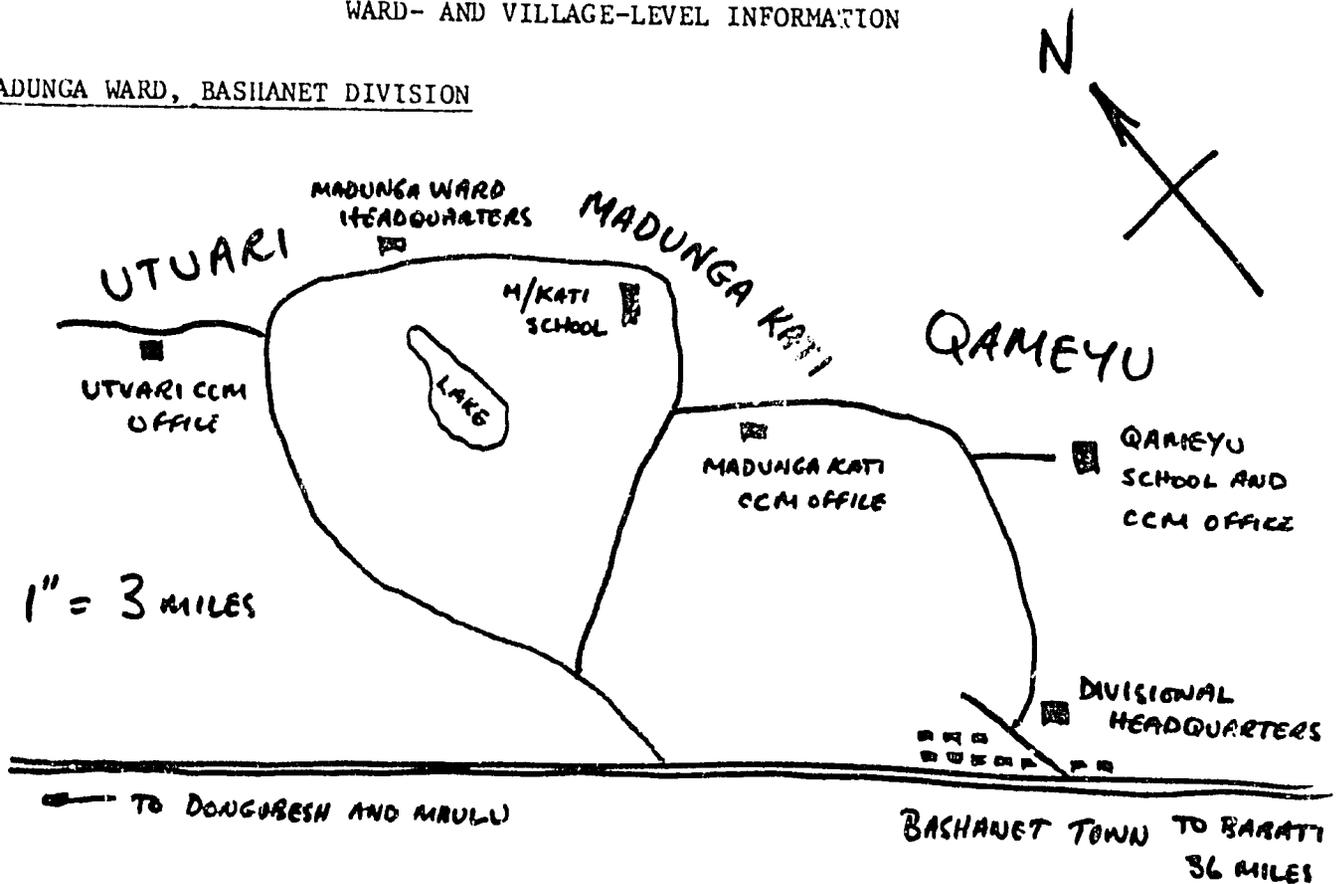
There are, on the Livestock Development staff, a number of exceptions to the general criticisms made of extension staff. One senior staff member, who had the unenviable job of persuading villagers to either chain their dogs or have them shot in order to combat an outbreak of rabies, obviously did interact easily and amicably with the villagers as he attempted to counteract their initial hostility, and an officer in charge of pyrethrum development, based in Bashanet Division, talked about his work with villagers with great enthusiasm, despite a lack of resources upon which to draw. The field staff category that seemed to be seen by the villagers as making a contribution to their development were the Dip Attendants who were responsible for running the cattle dips in the district. Their services were eagerly sought, they often kept very detailed records of which farmers had dipped how many head of livestock, and they were responsible for tasks as varied as updating the village's livestock census, giving injections, draining and refilling the cattle dip, and taking dip samples to their divisional headquarters each week for testing. There is no way that these most junior, least-trained staff could be late for work, neglect their duties, or not maintain good relations with cattle herders and remain on the job. Village-level agricultural staff, however, do not have their time structured by anything so tangible as a dipping station, and villagers have much lower expectations of their performance.

Self-help Projects. In 1961, the Tanganyika African National Union (TANU) had the task of converting a political party established to gain independence into a vehicle for mobilizing a citizenry for nation-building projects. One of the most dramatic positive changes seen over the past 17 years is the level and quality of self-help, whether measured in contributions of labor, money or village-based expertise. The political communication system is that much more effective, villages are much clearer as to their priorities, there is more money available, there is the realization that neither the central government nor the central party (now Chama cha Mapunduzi, or CCM) is going to meet all of their needs, and there are, in almost every village in Madunga, Magugu and Gallapo Wards, people who are skilled in construction and organization. Only the villages in large parts of Barabaig Division have failed to change as rapidly along these lines.

Typically, each of the villages in the three pilot wards in Bashanet, Mbugwe and Gorowa Division have, in the past year, contributed bricks and labor to build one new classroom for the village primary school, and often the money (often Shs. 80 per family) needed to hire skilled masons if no one in the village has that skill. Furthermore, each household often contributed the following: Shs. 20 to the construction of the CCM Headquarters in Dodoma; Shs. 30 per adult male and Shs. 20 per adult female for the district's private secondary school at Singe (near Babati); Shs. 10 for petrol for the CCM Landrover, and other money for local political party needs. Generally, the cooperative work on the village communal garden is less impressive.

WARD- AND VILLAGE-LEVEL INFORMATION

MADUNGA WARD, BASHANET DIVISION



Introduction. Bashanet Division has five wards, three on the rolling plateau above the Rift Valley, at altitudes ranging from 5500 to 7000 feet above sea level, and two at the foot of the escarpment at an altitude of approximately 4000 feet. Bashanet village (pop. 2478), just above the escarpment, serves as the divisional headquarters and as one of two commercial centers in the division. The commercial area, made up of approximately 50 of the village's 413 households, has 15 small shops, selling mostly the same goods, two restaurants, a butcher shop, a maize grinding mill, three churches (Roman Catholic, Lutheran, and Pentacostal), one "lodging" offering three rooms to rent, a government dispensary, a primary school and a primary court, six water points from a piped water supply, a National Milling Corporation (NMC) buying post (formerly the marketing cooperative), and a post office with Monday and Friday deliveries. Three buses a week connect the town with Babati, 36 miles to the east, and to Mbulu town, 40 miles to the north. A government-run cattle auction is held on the outskirts of the town on the second of each month. Other than the Irish Catholic priest and a Chagga shop owner/hotel keeper/postmaster, there are few other non-Iraqw in Bashanet village or ward.

Madunga Ward's headquarters is in the village of Utuari (pop. 1422), approximately 10 miles north of Bashanet and five miles off the main road. The two other villages in the ward are Madunga Kati (pop. 1452) and Qameyu (pop. 1458), each somewhat closer to the divisional headquarters. There are nine very small shops in the ward, including one cooperative shop in each village, but most of the shops carry very few items, and there is no maize grinding mill in the whole ward. For the most part, people living in all three villages are oriented towards Bashanet for their commercial needs.

Roads and Transportation. The only vehicles to use the approximately 18 miles of village "feeder" roads in Madunga Ward are trucks picking up produce from the NMC buying posts and the occasional Landrover owned by the political party or a government department. There are no privately-owned vehicles in the whole ward. There are seven small, hand-made bridges, more than half in poor repair, and there are two streams to ford, but the quality of the road is no barrier to vehicles and it is questionable how much improving these bridges would contribute to the economic development of the area.

Ecological Factors. There are no rainfall figures available for Bashanet or Madunga Wards, but it is unlikely that the area receives more than an average of 25 inches of rainfall a year. The ward's growing season is as short as any area in the district, due to the altitude and the heavy cloud cover which is an almost daily feature of Madunga for four months of mornings each year. For these reasons, the traditional varieties of maize planted, for example, have yields of approximately five (90 kg.) bags an acre at best, only half the yields possible in Dareda at the foot of the escarpment using the same seed. None of the hybrids grown in the district grow successfully under these conditions. Madunga Ward is hilly, with its northern perimeter bordering on a forest preserve with mountain peaks rising to 7500 feet. There are several seasonal marshes in the valley bottoms, and one small, year-round lake lies in the center of the ward. There are, in addition, several seasonal streams and hand-dug furrows which water the area, many of them used on a small scale for irrigation. Perhaps the most striking environmental feature relevant to the Village Development Project is that as much as 75% of the ward is covered with a tough, fibrous grass (moki, in Iraqw) which all livestock avoid. It is inedible during the dry season, and is thought to bother the gums and wear down the teeth of the cattle, sheep and goats even in the wet season. Although there are some stands of trees outside of the forest, most of the area is grassland with none of the low brush that is found in so much of the district. Madunga and Bashanet are the only wards with more sheep than goats. This is attributable to the vegetation cover, the people say, noting that "goats are mainly browsers and need shrubs," vegetation which is not found in the ward.

Livestock. Each of the three villages has its own cattle dip with a Dip Attendant in the employ of the government. During the wet season (November to April), when there are more ticks on the livestock and there is less heavy work to do in the fields, two or three times as many cattle use the dip as during the dry season. The villagers are told that they should dip their cattle each week during the whole year, but it is just as well that they do not take the suggestion seriously as all three of the cattle dips were not functioning for long periods in the past year; there was a water shortage at one, a leak in another, and all three went periods without the necessary chemicals. Despite this, the past two years have been considered good for livestock, although there have been some cases of a variety of cattle diseases. When Hanang District is short of chemicals for cattle dips, Madunga Ward is not considered a priority ward. In addition to the cattle dips, the buildings exist for a Veterinary Investigation Center (VIC) in Madunga Kati, but it is unequipped, there is no trained staff, and there are no medicines. It serves now as a residence for one of the ward's Dip Attendants.

The livestock census for Madunga Ward is found in Table V.

<u>Village</u>	<u>Households</u>	<u>Cattle</u>	<u>Goats</u>	<u>Sheep</u>	<u>Donkeys</u>	<u>Pigs</u>
Utuari	237	2,113	698	641	109	20
Madunga Kati	242	6,546	1,501	2,528	---	--
Qameyu	245	4,000	1,000	3,500	300	150

TABLE V: LIVESTOCK CENSUS FOR MADUNGA WARD, 1977

Source: Dip Attendant, Utuari.

Agriculture. Although many of the households in Madunga Ward were moved during Operation Villagization in 1974/1975, the villages are not as "nucleated" as many of the villages are in the district, especially in Mbugwe and Gorowa Divisions. Utuari village, with 237 households, for example, stretches out over almost five miles. Still, for a combination of reasons, gardens near the homesteads are relatively small by district standards: almost no one in Madunga Ward has access to a tractor, and therefore there is an upper limit of approximately four acres that any family is physically capable of putting into production; in many cases, people have an irrigated wet land garden plot of up to an acre in size as far away as two miles from their homes; and some families even divide up their dry land plots to spread their risks.

The best farmers in the ward might have three to four acres in production, but only receive a total of 10-12 bags of maize and 4-5 bags of beans total in a good year, and half that yield in a bad year. These farmers might also have 20-25 head of cattle, 15-30 sheep, 10-15 goats, 1-3 donkeys (to carry maize to be ground in Bashanet or possibly to carry water), and a similar number of pigs. The poorest farmers might plant only one acre of maize and beans, and get only 6-8 bags of produce from the land in a good year. They would own perhaps 2-5 head of cattle, 3-5 sheep, 2-3 goats, and no donkeys or pigs. (These idealized descriptions were given with the disclaimer that it is very difficult to estimate a person's wealth because few families keep all their cattle at one residence. Also, one never knows how many of the cattle a person herds each day might actually have been borrowed.) The consensus was, however, that neither a wealthy nor a poor farmer in Madunga Ward could live on the produce grown in the fields. "Everyone sells some cattle in order to buy maize down in Dareda, even in a good year."

The other main source of money in two of the three villages, Utuari and Madunga Kati, is the selling of onions. (Onions do not grow in Qameyu, for some reason.) A five-gallon container (debe) of onions sells for Shs. 40. A good farmer can sell 18 debes of onions a year for a total of Shs. 720, enough to buy approximately seven bags of maize.

Food Needs. The easiest (and often the only) way to learn how much food stuff a family uses in a year is to ask a person how often a debe of maize is ground into maize meal. Said a man in Madunga, who has a wife and three children:

I don't know how many bags of maize my family uses each year, but as a rule, my wife takes a debe of maize to the maize mill every sixth day. Towards the end of the rainy season, maybe we have enough vegetables so that she goes every seventh day. We have more than the children to feed, however. There are always visitors.

This would mean that a family of this size might use ten bags (90 kg. each) of maize a year. People generally use four to five times as much maize as beans.

Crop Sales Figures. Table VI shows the only crop sales figures available from National Milling Corporation (NMC) for Bashanet and Madunga Wards.

<u>Crop</u>	<u>Bashanet Village</u>	<u>Qameyu and Madunga Kati Village</u>
Beans II	158,751	22,500
Beans I	4,950	--
Maize	120,088	3,060
Wheat	6,930	--
Finger Millet	21,132	6,120
Njegere Peas	12,676	2,960
Ngwara Peas	360	--

TABLE VI: CROPS SOLD TO NATIONAL MILLING CORPORATION
IN 1977/1978 (IN KILOGRAMS) FROM BASHANET AND
MADUNGA WARDS

Source: NMC, Hanang.

Ward Work Calendar. All three villages in Madunga Ward have much the same seasonal work schedule, with the "year" thought to start in November when the rains begin:

- Nov - plant maize, beans and potatoes in dry land plots.
- Dec - continue planting maize, beans, and potatoes, "done by Christmas;" weeding fields begins.
- Jan - continue weeding.
- Feb - continue weeding; begin harvesting potatoes by the end of the month.
- Mar - continue weeding; harvest potatoes and beans.
- Apr - harvesting of potatoes and beans ends by the 10th of the month; begin planting a type of peas (njegere).
- May - weed peas; plant second crop of potatoes, and, for perhaps 10% of the households, plant small plots of wheat.
- Jun - weed peas and potatoes; begin harvesting maize.

- Jul - harvesting maize continues; begin preparing irrigated and marsh areas for cultivation.
- Aug - finish harvesting maize; plant maize, potatoes, beans and onions in wet lands.
- Sep - continue planting wet lands and "look for more areas to plant;" weeding wet land's crops begins; begin preparing dry land plots for planting maize, beans, and potatoes.
- Oct - weeding wet land's crops continues; preparation of dry land plots continues; harvest wheat and peas.

Pyrethrum. The daisy-like flower known as pyrethrum, from which an insecticide is extracted, can grow successfully in Tanzania at altitudes above 6000 feet. Pyrethrum has been grown successfully on a small scale in neighboring Mbulu under identical conditions for at least 20 years. A very small number of farmers in the ward grow the crop, some on plots as small as a tenth of an acre. Only five farmers in Utuari have planted pyrethrum, and an unknown number in the other two villages. Qameyu village planted 60 acres of pyrethrum, of very uneven quality and with poor spacing, in its communal garden, plowed free of charge by the District Agricultural Development Office in 1977. Madunga Kati has a similar quality garden of 100 acres, planted in the same year. Utuari has no communal garden at all. Pyrethrum is a very labor-intensive crop, which requires a lot of care, and probably is not well suited as a communal crop in these villages, at least at this time. More discouraging still is the fact that even under ideal conditions, three days of good sunlight are necessary for drying the harvested flowers before selling them, and for most of the eleven-month harvesting season, it is either damp and rainy at Madunga's altitudes or there is a heavy cloud cover and cool weather. Typically, under these conditions, drying the flowers on mats in the sun takes 7-10 days in Madunga. If it takes longer, as was the case in April this year, the flowers rot. The longer the flower takes to dry, the lower the pyrethrum content in the extract.

Pyrethrum Technology. The only employee of the Tanganyika Pyrethrum Board in Hanang District is based in Bashanet. He reports that pyrethrum in this area is a three-year crop which can be harvested for eleven months a year. Being so labor-intensive, it would be impossible for any family to cultivate more than an acre. An acre of pyrethrum, if well cared for, he said, could produce more than 1000 kilograms a year; average (poor) management could produce 200-500 kilograms a year, and the worst one could do is receive 50-100 kilograms. There are no well-cared-for plots of pyrethrum in Madunga, and it is unlikely that any farmer in the ward has more than half an acre in production. All of Bashanet Division produced only 16,500 kilograms last year.

The pyrethrum officer argued that the key to the expansion of pyrethrum in Bashanet and Madunga Wards was the provision of pyrethrum driers, fueled by kerosene, charcoal or firewood, all of which would be capable of drying 100 kilograms of flowers in as little as five minutes. He felt that the climate was such that solar driers would be inappropriate.

The work calendar for the first year of newly-planted pyrethrum is as follows:

- Mar - planting seedlings in field.
- Apr - weeding.

May - weeding.
Jun - weeding; Pyrethrum Board buying posts are closed for month.
Jul - weeding.
Aug - weeding; begin harvesting March seedlings.
Sep - weeding; harvesting.
Oct - weeding; harvesting; planting more seedlings.
Nov - weeding; harvesting; planting more seedlings.
Dec - weeding; harvesting.
Jan - weeding; harvesting; clearing old fields; opening new fields.
Feb - weeding; harvesting; clearing old fields; opening new fields.

Village-Specific Information.

Utuari.

School: Standard I (under construction).
Cattle Dip: Yes.
Dispensary: Yes.
CCM Office: Yes.
NMC: Yes.
Shops: One cooperative shop, two private.
Milling Machine: No.
Communal Garden: No.
Tractors: None.
Ox Plows: None.
Water: People use seasonal springs, marshes, and furrows; hand-dug wells in area have salty taste; people draw water from rivers in the forest during the dry season, five miles away, the closest year-round source.
Stated Priorities: (1) Permanent water source closer to people's houses; (2) Agricultural development for both food crops and pyrethrum.

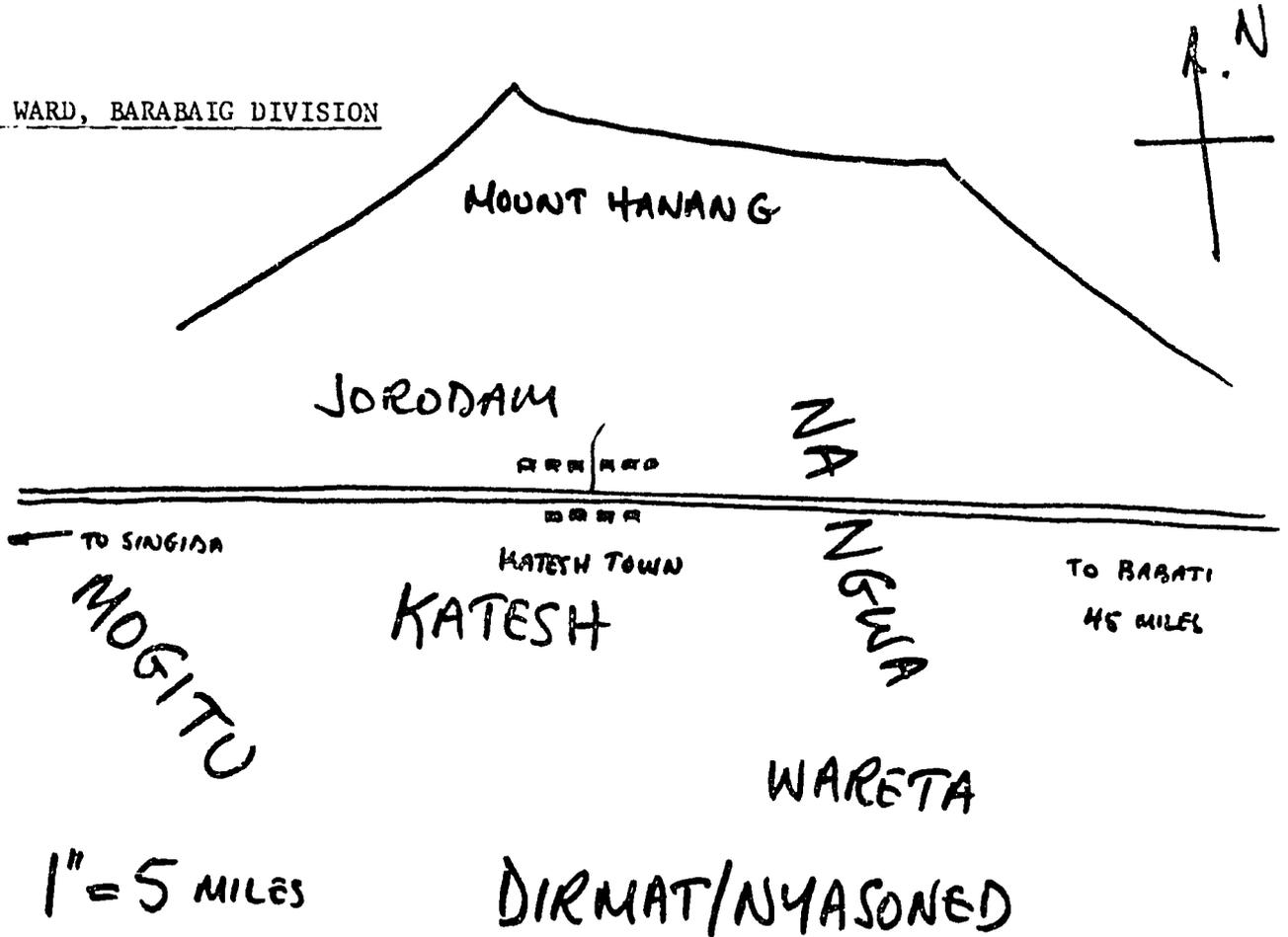
Qameyu.

School: Standards I-VII.
Cattle Dip: Yes; also an unstaffed, unequipped VIC.
Dispensary: Yes.
CCM Office: Yes.
NMC: Yes (under construction).
Shops: One cooperative shop, three private.
Milling Machine: None.
Communal Garden: 60 acres of poorly-cared-for pyrethrum.
Tractors: None.
Ox Plows: One, not in use.
Water: People use year-round stream, no one more than one mile away from water.
Stated Priorities: (1) Help to enlarge irrigated areas; (2) Pasture development to improve grass variety; (3) Maize mill; (4) Bus service to Basheret.

Madunga Kati.

School:	Standards I-VII; Standard I has three streams, II-IV has two.
Cattle Dip:	Yes.
Dispensary:	Yes.
CCM Office:	Yes.
NMC:	Yes; small NMC under construction.
Shops:	One cooperative shop, one private.
Milling Machine:	None.
Communal Garden:	100 acres of poorly-cared-for pyrethrum.
Tractors:	None.
Ox Plows:	One privately owned, usually based in Gitting.
Water:	People use seasonal streams and furrows and (salt-free) wells; only year-round source of water is the river in the forest, one to four miles away from people's houses.
Stated Priorities:	(1) Improved water supply; (2) Some way to prevent wild pigs from destroying crops in people's gardens.

KATESH WARD, BARABAIG DIVISION



Introduction. Barabaig Division has eleven wards, most of them on the semi-arid plains, north, east, south and southwest of Mount Hanang, where rainfall averages less than 20 inches a year, and in the years since 1970, drought has been the rule rather than the exception. These plains are the home of the pastoral Barabaig, a semi-nomadic, cattle-rearing population, which, for most of its nearly 1000 years in this area, eschewed agriculture. As so often happens to most pastoral populations, however, as population pressures have increased in neighboring agricultural areas, agricultural peoples have encroached on the less marginal of Barabaig land, so that there are several wards where the majority of the households are Iraqw. In order to prevent further encroachment on their land, almost all Barabaig have begun to cultivate plots near their homesteads to the point where, today, maize is a far more important part of their diet than milk. In the last two generations, there has been considerable intermarriage amongst wealthier Barabaig and Iraqw, the former often marrying an Iraqw woman as a second or third wife in order to have someone skilled at cultivating the land, and the latter marrying a Barabaig woman as a second or third wife in order to validate further their claim to grazing land. These semi-arid lands remain the areas where the most tradition-oriented peoples in the district live, the conservative response being deemed the more appropriate in the face of untested alternatives. The Barabaig have been the population, for example, that has resisted the efforts of the Tanzanian government to move populations into nucleated, "socialist villages" more than any other group in the country. Cognizant of this fact, the government has allocated more than Shs. 30,000,000 over the next four years to upgrade social and technical services to Barabaig areas in four Regions, hoping to make resettlement more attractive -- or even more feasible. Most of the allocation for "Operation Barabaig" will be spent in Hanang and Mbulu

District, the money having already been budgeted for the provision of water systems, veterinary centers and services, health facilities, schools, roads, staff housing and support services.

Katesh Ward, located on the southern slopes of Mount Hanang, is the ward that was selected as the pilot ward for the Village Development Project in Barabaig Division. Three of its six villages, Katesh (pop. 1520), Mogitu (pop. 870), and Dirmat-Nyasoned (pop. 1000), have a large enough percentage of Barabaig to be part of "Operation Barabaig," although only Dirmat-Nyasoned is in a primarily Barabaig area. The village of Wareta, just to the north of Dirmat-Nyasoned, was a totally Barabaig community until 1965. The present-day Village Chairman was the second Iraqw to move into the area. Now Wareta is two-thirds Iraqw, and many of the Barabaig residents are not permanently settled because, for much of the year, they leave the village in search for better grazing land and water sources.

Katesh town, on the well-travelled road between Singida and Babati, is the divisional as well as ward headquarters. It is a thriving community, with 15-20 shops and other commercial establishments, including one "lodging," and is the home base for a bus service operating between these two regional capitals. The town of Katesh (which is only a small part of Katesh village) is hardly Barabaig, although its Police Commissioner, the Headmistress of the primary school, and the Ward Secretary are all highly-educated Barabaig, and this commercial and administrative center is hardly "tradition-oriented." Most of the restaurants, shops, bars and other businesses, in fact, are owned by Tanzanians from outside the district. The road traffic is high, especially during the harvest season; while the wheat is being harvested on the very large, state-owned farm at Bassotu in western Hanang District, as many as 20 or 30, five- to eight-ton trucks pass through the town each day. And as a divisional headquarters, it has a full range of government services, including a court and police station, a post office, a large primary school, a cattle auction, and a major health center.

Roads and Transportation. The village "centers," whether the CCM office, the primary school, or some other government presence, of four of the six villages in Katesh Ward are either on the main road or within two miles of it. Only Wareta, five miles south of the main road, and Dirmat-Nyasoned, another seven miles farther south, can be considered at all far removed, and the soil in these areas is sandy enough that the feeder roads, which connect them to Nangwa, on the main road, are almost never impassible. In fact, the only place where villagers mentioned the condition of the roads as being a priority need or problem was in Jorodam, where there are two deeply eroded gullies which need either small bridges or culverts, both within a few miles of Katesh town.

Ecological Factors. Katesh Ward spans two distinctly different ecological zones, a medium rainfall area (20 to 30 inches per year) at the higher altitudes of 4500 to 6000 feet, and the semi-arid plains, already discussed, where low rainfall and a high evapotranspiration rate combine to make maize farming a risky enterprise. More than half the land in this latter category is uninhabitable in the division, either because of the low rainfall or because of tsetse fly infestation (or both), and large areas in Katesh Ward are in this same category. Although the ward's pastures did suffer during the drought years in the early and mid-1970s, by 1973 the grass cover had returned. In the opinion of the District Livestock Development Officer (DLDO), where there is little farming in Katesh Ward (and in other portions of the division), there is enough land for grazing and there are no overstocking problems. It is only

in those parts of the ward where there is extensive land under cultivation that he considers destocking to be a priority at this time. As the Barabaig move into more nucleated villages, it is likely that destocking will become a larger government concern.

Livestock. Four of the six villages in the ward have cattle dips, with Nangwa farmers using the dips located in either Katesh or Wareta and Jorodom farmers the facilities at Katesh. Katesh also has a staffed and equipped Veterinary Investigation Center (VIC), the only one that is functioning in the entire ward. The dip attendants at the four dips report that their dip tanks can accommodate 4000 head of livestock a day, five days a week, but rarely are there more than 2000 users per day. Only an average of 200 cattle a day were being dipped at a new dip in Mogitu during May this year, because of the seasonal grazing pattern of the cattle, but even during the height of the rainy season, when the cattle are grazed closer to the community (and when the tick population is higher), only 1200 cattle were using the dip on a daily average. The water lines to the dips in Mogitu, Wareta and Dirmat-Nyasoned have been broken or clogged twice each over a recent six-month period, so these dips have not been able to function regularly this year. The government has made Katesh Ward a priority ward for receiving the dip chemicals, so all the dips in the ward have been able to operate when there has been sufficient water. The main cattle diseases in the area have been anthrax, black water, and rinderpest, but nothing of epidemic proportions. There has been a major rinderpest campaign each of the last two years, which utilizes large numbers of the Livestock Development Office's staff and government vehicles. Farmers more often rely on purchasing their own medicine (and syringes) privately for treating diseases such as anthrax, because of the inability of the one operating VIC in the ward to care for all six villages.

The livestock census records for Katesh Ward are the most complete (although not necessarily accurate) of the four pilot wards in the Village Development Project. (See Table VII.)

	<u>Cattle</u>	<u>Goats</u>	<u>Sheep</u>	<u>Donkeys</u>	<u>Total Stock Units*</u>
Katesh	4,920	4,006	2,240	308	6,477
Jorodam	4,413	5,311	1,602	214	5,650
Mogitu	8,317	5,455	1,938	624	10,420
Nangwa	1,221	1,411	917	60	1,747
Wareta	4,568	1,927	789	85	5,286
Dirmat	4,678	950	601	182	5,170
Nyasoned	<u>5,941</u>	<u>1,531</u>	<u>950</u>	<u>239</u>	<u>6,676</u>
1977 Totals	34,148	18,791	9,037	1,712	41,426
1976 Totals	35,449	19,440	8,097	2,364	40,787
1973 Totals	47,140	26,117	10,767	2,967	57,484

TABLE VII: LIVESTOCK CENSUS FOR KATESH WARD, 1977

*Five (5) goats and/or sheep equal one stock unit.

Source: District Livestock Development Officer, Harar

Livestock Marketing.¹ Over a 20-month period, between August 1975 and April 1977, 6254 head of cattle were sold at the monthly, government-run auction at Katesh, for an average (and mean) price of Shs. 486. The average number of cattle sold each month was 313, with a range of 165 (December 1976) to 465 (March 1976).

Agriculture and Farm Management. The largely Iraqw villages in this ward, especially those closer to the slopes of Mount Hanang, are all nucleated as a result of Operation Villagization. Typically, in these situations, each household was given one acre of land at the site of the house, plus two or more acres elsewhere, from a half a mile to two miles from home. (An "acre" is measured 80 steps by 80 steps; if each step is roughly two and one-half feet long, this would be a fairly accurate measurement.) In areas where the land is fairly flat, there are often three or four lines of houses, each in almost perfect alignment with the other houses. The people in this division usually plant maize, beans, and vegetables (such as sweet potatoes and pumpkins) on these household plots, and maize, beans, and millet on the larger, more distant plots, but there are some variations on this pattern. Most of western "hamlet" (kitongoji) of Jorodam is made up of pastoralists, and few of them cultivate more than half an acre, this more often in millet or sorghum than in maize. In Wareta and Nangwa, there are large expanses of fields where wheat can be grown. In both of these villages, the communal farms owned by the villages are worked by tractors and planted in wheat, and individuals often hire tractors to work their own small holdings. In these two villages, however, another kind of pattern has emerged which dominates the agricultural picture. Wealthy tractor-owning farmers from the neighboring wards of Endasak and Gitting have gained access to large quantities of village land, often in amounts of more than 100 acres, either because individuals or the villages owe these farmers large amounts of money, from past work done on the fields, or through business arrangements made with present or past village leaders. A leader in one of these villages said that a major problem for his village was the unavailability of land. In this same village, however, an entrepreneur from Gitting, probably the wealthiest African farmer in all of Hanang, has at least 1300 acres in wheat production.

Wherever one finds, in Mbulu and Hanang District, large numbers of tractors, one finds three related phenomenon: (1) neither the hand hoe nor ox plows compete well with tractors, and most people would rather rent tractors to plow and harrow their land, even their one- to three-acre plots; (2) there will be a high rate of farmer and village indebtedness to the tractor owners; and (3) the tractor owners manage to do well on contract work, even in poor years. Perhaps the worst examples of poor farm management occur on village-owned, communal farms where tractors have been hired to do the cultivation. The Nangwa village farm is a classic example; the following narrative was offered by the Village Chairman.

We have a village communal farm of 70 acres, and it is all planted in wheat. Since most of the work is done by machines, the work would not require much organization or cooperation. The DADO told us this area is good for wheat, but we knew this anyway because rich

²I am indebted to Finn Kjaerby of BRALUP/University of Dar-es-Salaam, who provided me with the statistics and working notes for this section of the paper. BRALUP will be publishing two of his papers on livestock marketing in Hanang District during 1978/1979. Copies of his thesis, Agrarian and Economic Change in Northern Tanzania: A Study of the Pastoral Barabaig and Agro-Pastoral Iraqw of Hanang District, Arusha Region, which contains a great deal of useful information, are available at BRALUP and at the library of the university.

farmers have been renting land here for years. He even sold us special seed wheat at the subsidized rate of Shs. 100 per bag, half the normal price. We hired a tractor to plow our land at Shs. 120 per acre. The driver did not plow the land very well, but since we were not paying him until after the harvest, we could not control his work very well. We had him plow a second time at the same price. Then he harrowed the land two times because the soil was in such clods. This cost Shs. 60 an acre each time. Then he planted the wheat for us using a planter, using 79 bags of seed. That's another Shs. 60 an acre, plus Shs. 7900 for seed. Since our village does not own a tractor, we have to depend on the rich to plow and harrow our land at their convenience. Since we were not paying cash, the field was not prepared in time and we planted late. We'll be lucky to get five bags an acre at harvest time. Normally, we would expect to pay Shs. 20 per bag harvested to the owner of the combine harvester if we got eight or ten bags an acre. When the yield is so low, we have to pay him a bag an acre or 70 bags. With all these expenses, we'll be lucky to break even. But we've been lucky so far. At least the rains have been good this year.

They have only paid the Shs. 7900 for the seed wheat thus far, and still owe nearly Shs. 30,000 to tractor owners for plowing, harrowing, and planting. Once additional costs are added for bags, herbicides, and transporting the harvested wheat from the fields to the local buying post at Nangwa, the village will need approximately four bags an acre to cover planting costs and another bag an acre to pay for harvesting.

The crop production figures and wealth index for good and poor Iraqw farmers in the ward varies radically between the two ecological zones especially, but there are even gradations within the medium rainfall zone on the upper slopes of Mount Hanang in Jorodam and its eastern neighbor Nangwa. The best farmers in eastern Jorodam might have a total of two to three acres in production, fields of maize interplanted with beans. They plant traditional maize varieties and harvested no more than a total of 8-12 bags from their land, plus 3-4 bags of beans. In addition, these good farmers might have 5-20 head of cattle, 20 goats and sheep, and one or two donkeys. The poor farmers in this village might get half the food production of their more industrious and successful neighbors, have no cattle of their own, and own again perhaps 20 sheep and goats. "If you fail with cattle, you emphasize smaller stock," it was reported. No one, however, lives without cattle; the poor always have some borrowing arrangement with those better off. In western Jorodam, where it is reported to be much drier (although it is at the same altitude as the eastern portion of the village), there is more of a pastoral orientation. Here the fields are somewhat smaller and are planted in maize and millet (but not in beans), and there is more space between households. A good farmer in this area might grow only 6-8 bags of maize and 3-4 bags of millet on a two-acre plot, but would have 15-30 head of cattle, 20-25 sheep and goats, and two or three donkeys. A poor farmer, in the same area, would grow about half the foodstuffs, have somewhat smaller herds of goats and sheep, and would borrow up to six or eight cattle.

In Nangwa, again on the southern slopes of Hanang, the conditions are that much better for maize-growing that the village was selected for the National Maize Project (NMP). In 1975, the village was given free hybrid seed by the government and farmers were instructed in the use of TSP and SA fertilizers. The rains, however, were poor,

the fertilizer burned the crop, and the yields were very low. Despite the poor results, the NMP was continued in Nangwa during the next two years. Farmers were expected to pay half and then three-quarters of the cost of the inputs each year, and the yields were excellent. Good farmers got 13-15 bags to an acre, some even more, and these yields were generally achieved without the "offending" chemical fertilizers (which most farmers sold or threw away). This year, Nangwa, the same village so deeply in debt to tractor owners for work on its communal wheat field, has been removed from the NMP because it has an outstanding debt of Shs. 22,000. Said the Village Chairman,

Each farmer's debt to the NMP was not deducted at the National Milling Corporation buying post because the NMP was an agricultural department project and had nothing to do with the cooperative. It was really the job of the agricultural extension agents to collect the debt. But they didn't want to force people to pay. If you force people to do something, there will be problems later.

This year, farmers in Nangwa are planting either traditional maize, hybrid maize that they harvested last year (which will produce very mixed results), or new hybrid maize that they have been able to buy illicitly from farmers in villages which are still participating in the NMP. The rains have been much too heavy for maize this year, but yields are expected to average between 8-12 bags to an acre, still the best yields in the ward.

The range of farmers is much greater in the low rainfall areas on the plains, the area inhabited by Barabaig pastoralists. A study³ was made of 20 households in Dirmat-Nyasoned examining, amongst other things, the comparative importance of agriculture and pastoralism to a sample of Barabaig, stratified according to their cattle holdings. Fourteen households of poorer Barabaig controlled herds of approximately 15 head of cattle each, which typically included one or two cows or heifers which had been borrowed. These poorer Barabaig households averaged 7.75 members, with each household head averaging 1.7 wives, and each household having an average of 3.7 people of the age to be considered labor units. These 14 households averaged between 2.2 and 2.5 acres in maize production during 1973 to 1976, and harvested an average of approximately 1.5 bags (90 kg. each) of maize per acre. Four wealthier Barabaig households herd, on the average, 6 head of cattle, none of which were on loan. These households averaged 15 household members, each household head having an average of 2.2 wives. These wealthier households, however, had nearly twice the labor units (6.2) as the poorer Barabaig in the sample, but farmed a range of 2.1 to 2.9 acres of land between 1973 and 1976, rarely much more than half the acreage per labor unit of the poorer farmers; their average yields of 1.7 bags of maize per acre were only slightly more than the other population. The two wealthiest Dirmat households in the sample averaged 187 head of cattle each, herds large enough so that each household, with an average of 22.5 members, was divided into two or three geographically separate homesteads. The five adult males in these two households averaged four wives each, and the two households averaged 11 labor units. Between 1973 and 1976, they farmed four to seven acres, again about half the acreage per agricultural worker in the poorest households, and the maize yields were again about 1.7 bags per acre. Even the wealthiest Barabaig are more dependent upon maize than milk for a

³The statistics for this section came from the field notes of Finn Kjaerby of BRALUP/University of Dar-es-Salaam, and are used with his permission.

food staple, so all 20 families in the sample had to sell or slaughter cattle to meet their food needs. One obvious conclusion to be drawn from this study is that the wealthiest Barabaig, who have large families but relatively little land in maize production, must sell more of their cattle each year than the poorer or poorest families in the sample, but on a percentage basis, the poor do cull more of their herds annually. During a three-year period of the study, each of the poorest families in the sample sold an average of 1.2 head of cattle a year, each in the middle stratum sold 2.1, and each of the wealthiest sold 5.1. What these figures also demonstrate is the point that the more successful the Barabaig are as agriculturalists, the less cattle they are forced to sell each year. (See Table VIII.)

Iraqw farmers (at least) in the district, who do not grow enough maize, will sometimes resort to a traditional exchange system rather than sell their cattle. A farmer can loan a cow to a neighbor (the loan called komi), in exchange for approximately six bags of maize -- or what a donkey can carry in seven trips. When the cow gives birth, the calf, called tlher komi (or calf of the loan), is kept if it is female, and the cow is returned to the original owner. If only male calves are born, the cow is kept and the calves are given to the owner of the cow until a female calf is born. An alternative to this long-range commitment is for Iraqw women to "beg" for a basket of maize from a neighbor (firo). Sharing food is merely a way in which neighbors are expected to help out, although any woman who has to do this might also offer to help in her neighbor's fields as payment.

Crop Sales Figures. Farmers in the medium rainfall ecological zone maintain that even in a good year, they normally must sell livestock in order to buy maize to supplement their food needs. However true this might be, maize is also sold in order to meet cash needs. The only figures available from the NMC for Katesh Ward are found in Table IX.

	<u>Nangwa</u>		<u>Jorodam</u>		<u>Katesh</u>
	<u>1976/1977</u>	<u>1977/1978</u>	<u>1976/1977</u>	<u>1977/1978</u>	<u>1977/1978</u>
Maize	157,954	385,118	40,239	138,891	109,120
Sorghum	30,453	53	3,507	8,136	4,646
Wheat	123,297	-	11,075	57,978	1,571
Seed Beans	-	-	1,610	2,844	-
Beans II	2,160	32,244	-	92,404	12,749
Finger Millet	-	1,227	-	2,029	2,744
Pigeon Peas	-	379	68	3	240
Kunde Peas	-	216	-	820	109
Lentils	-	-	11	-	-
Sunflower Seed	-	-	22	303	-
Castor Seed	-	-	21	163	292

TABLE IX: CROPS SOLD TO NATIONAL MILLING CORPORATION
FROM KATESH WARD (IN KILOGRAMS)

Source: NMC, Hanang.

	No. of Households			Average Household Membership	Average No. Wives Per Household Head	Average Labor Units Per Household	Cattle Owned	Cattle Borrowed	Cattle Loaned Out	Average No. Cattle Herded	Sale of Cattle				Average No. Acres Farmed Per Household				Average No. Acres Farmed Per Labor Unit				Average Maize Harvest, Bags (90 kg.) Per Acre							
	Adults		M								F	'74	'75	'76	'73	'74	'75	'76	'73	'74	'75	'76	'73	'74	'75	'76	'73	'74	'75	'76
	M	F																												
Poorest Families	14	19	24	7.8	1.7	3.7	196	25	4	15.5	17	26	14	2.3	2.3	2.5	2.2	.62	.62	.67	.65	3.0	.8	.5	1.2					
Wealthier Families	4	7	9	15.0	2.2	6.2	252	-	7	61.0	7	11	8	2.1	2.4	2.1	2.9	.34	.39	.34	.47	3.0	.9	.9	1.8					
Wealthiest Families	2	5	11	22.5	4.0	11.0	380	-	6	187.0	11	14	6	7.0	7.0	4.0	4.5	.64	.64	.36	.41	2.9	.6	.8	2.6					

TABLE VIII: HOUSEHOLD, AGRICULTURE, AND LIVESTOCK DATA ON
20 BARABAIG HOUSEHOLDS IN DIRMAT-NYASONED, KATESH WARD

Source: FinnKjaerby, BRAIUP.

Ward Work Calendar. The following is a synthesis of the seasonal work calendar for Nangwa and Waretu villages. It can apply to Jorodam and Katesh villages as well, except that there is less emphasis placed upon wheat in these two villages, they do not plant hybrid maize, and the western hamlet of Jorodam does not plant much in the way of beans. The villages of Mogitu and Dirmat-Nyasoned, in the low rainfall ecological zone, plant neither wheat nor beans and would not plant hybrid maize.

- Nov - the rains start; cultivate and plant traditional maize, sorghum, millet and beans.
- Dec - continue planting traditional maize, short-term maize (katamani), sorghum, millet and beans until the middle of the month; plant hybrid maize; weeding begins.
- Jan - continue planting hybrid maize until January 10 (after which time "if you plant, it is like buying a chance on the lottery"); weeding continues.
- Feb - weeding continues; plow and prepare wheat fields.
- Mar - weeding continues, some fields as many as three times in all; begin harvesting beans; begin guarding fields (especially maize) from pests such as wild pigs; plant wheat.
- Apr - weeding ends; continue harvesting beans and begin harvesting katamani maize; continue planting wheat up to April 10; plant second crop of beans in bean fields up until April 20; continue guarding crops against pests.
- May - harvest all kinds of maize (katamani, traditional, and hybrids) towards end of month; apply herbicides to wheat crop (which hand pump); guarding crops continues.
- Jun - guarding crops continues, including a bird watch near the planted millet and sorghum; begin harvesting millet and sorghum.
- Jul - guarding crops continues; harvesting maize, sorghum and millet continues; begin harvesting April beans.
- Aug - finish harvesting maize, sorghum, millet and beans; begin harvesting wheat.
- Sep - continue harvesting wheat until mid-September; begin clearing land, burning corn stalks, preparing fields for November planting.
- Oct - continue preparing fields for planting; "there is no rest for farmers."

Village-Specific Information.

Nangwa.

School: I-VII, I-II having two streams; Nangwa Girls School, a post-primary school with four-year program for girls from Barabaig Division, run by Maryknoll Sisters.

Cattle Dip: None; use dips at Katesh or Wareta.
Dispensary: Yes, privately run by Catholic mission; nearest government dispensary in Katesh.
CCM Office: Yes.
NMC Office: Yes, space shared with CCM office.
Tractors: Five, one owned by Catholic mission, one by the Girls' School, three owned by individuals.
Ox Plows: None; "Our earth would be too difficult for oxen to plow."
Shops: One cooperative shop; several private shops.
Milling Machine: Yes, run by Catholic mission.
Communal Farm: Yes, 70 acres planted in wheat.
Water: Use water taps on pipeline extending from forest on Mount Hanang to Dirmat village; intake valve is frequently clogged and there are often breaks in the line; people use a seasonal stream for household use; cattle are watered in the same stream during the rainy season, and in the forest during the dry season.
Stated Priorities: (1) Improve water system/supply; (2) Agricultural projects, including the purchase of village-owned tractor and an increase in the land area available for cultivation; (3) Livestock projects, including introduction of dairy cattle: "As more and more land is put into wheat, cattle are leaving the area. In one hamlet of 80 houses, there are only four cows. Most of us don't drink any milk. Most of us just live like this. Do you think 1200 cattle (in all of Nangwa, less than a third in milk) can feed 2000 of us?"

Wareta (formerly Nangwa "B").

School: I-II, two streams of each.
Cattle Dip: Yes.
Dispensary: None; use private dispensary at Nangwa Catholic mission or government health center in Katesh.
CCM Office: None.
NMC Office: Yes, 364,030 kg. sold in 1977/1978, three-quarters of it in wheat.
Tractors: Six, owned by three people; 75% of farmers rent tractors.
Ox Plows: One, owned by Iraqw who farms five acres, with a team of four oxen.
Shops: None; use shops in Nangwa.
Milling Machine: None; use machine in Nangwa.
Communal Farm: 100 acres in wheat and 40 in "composite" maize; plowed "free of charge" by Iraqw farmer from Gitting in return for free use of 200 acres in village.

Water: Use water tap at the cattle dip when pipeline is working, with some people up to five miles from the water point; also use seasonal marshes in wet season; water cattle in forest, ten miles away, in the dry season; draw water in Nangwa, five miles away, when Wareta tap is out of order.

Stated Priorities: (1) Improved water system/supply; (2) Dispensary; (3) A milling machine.

Jorodam.

School: I, four streams; older children go to Katesh.

Cattle Dip: None; use dip at Katesh.

Dispensary: None; use health center at Katesh.

CCM Office: Yes.

NMC Office: Yes.

Tractors: Four privately owned; about 25% of households rent tractors.

Ox Plows: None; "Ox plows would not be practical in these soils, once the rains started."

Shops: One, a cooperative shop run by a women's group.

Milling Machine: None; must use machine at Katesh.

Communal Farm: 57 acres, only 38 of them planted because "we were late hiring a tractor."

Water: Only one water tap on pipeline between forest and Katesh; more often, people use seasonal streams in the village or draw water from streams in the forest during the dry season: "From August until November, the people here drink mud. Our pipeline is a 1½" plastic pipe. Nangwa's is a 6" metal pipe. This is our major problem.

Road: Badly eroded gully (or stream bed) needs one or two small bridges or culverts.

Stated Priorities: (1) Improved water system/supply; (2) Dairy cattle program; (3) A way to increase our agricultural production; (4) Improve the road to Katesh.

Katesh.

School: I-VII, four streams in I, two in II.

Cattle Dip/VIC: Yes.

Dispensary: Yes, a major health center for the whole division.

CCM Office: Yes.

NMC Office: Yes.

Tractors: Several.

Ox Plows: None in use.

Shops: Many, plus bars, other establishments.

Milling Machine: Yes.

Water: One water tank; several water points in the commercial center which people in Katesh village use, some up to two miles away.

Stated Priorities: Livestock and agricultural development programs.

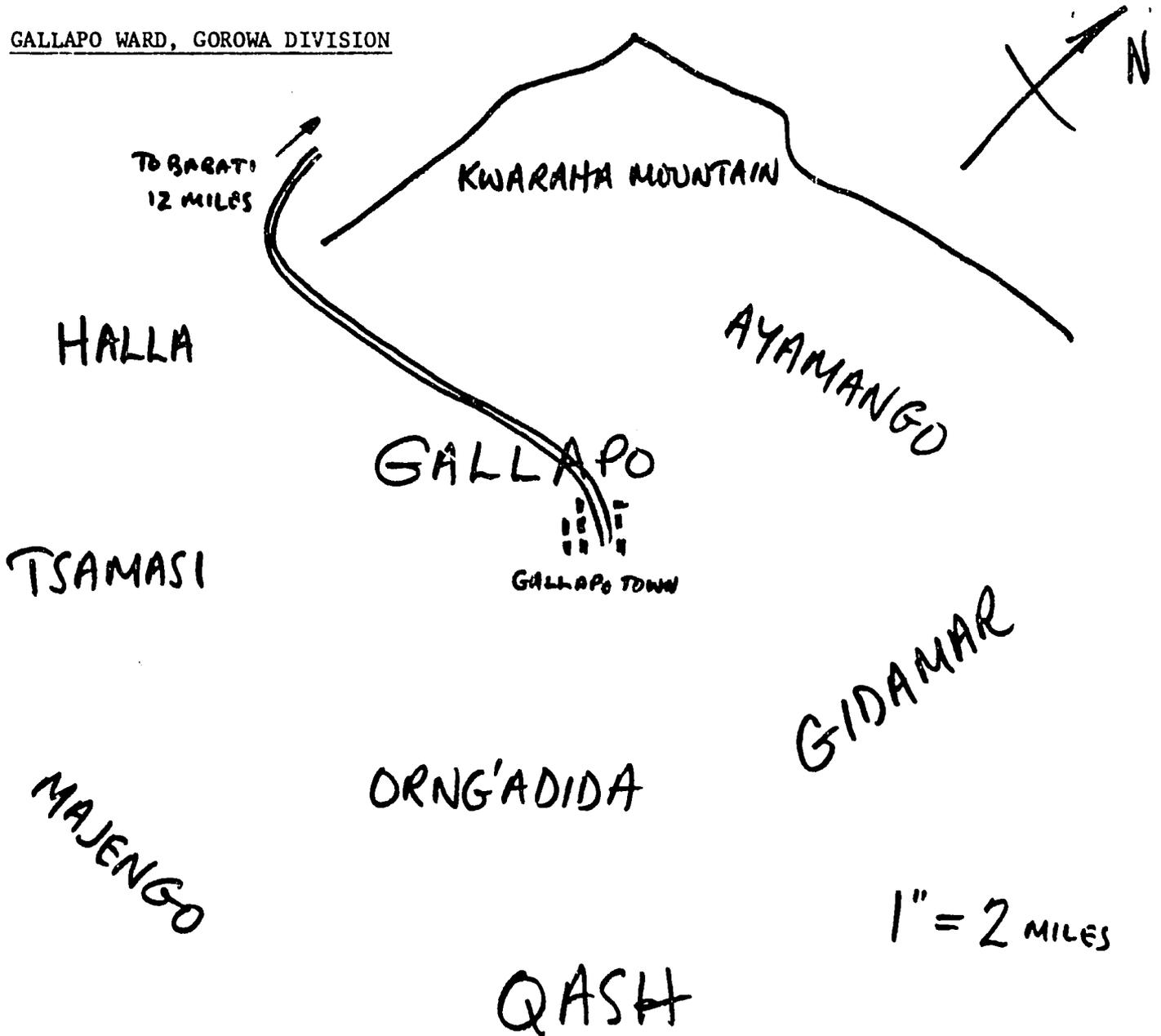
Mogitu.

School: Standard I, two streams, taught by volunteer (UPE) teacher, 125 students.
Cattle Dip: Yes.
Dispensary: None; use health center at Katesh; scheduled to receive a first aid box shortly.
CCM Office: Yes.
NMC Office: Yes.
Tractors: None.
Ox Plows: ?
Shops: None.
Milling Machine: None.
Water: Three water points, all very close together (near the cattle dip); some people up to three miles from the water points; pipeline often in disrepair.
Stated Priorities: (1) Improved water supply/system; (2) Larger watering trough for cattle, or more of them; (3) Dispensary.

Dirmat-Nyasoned.

School: I (44 boys enrolled, 18 girls: 62 total) and II (28 boys, 6 girls: 34 total).
Cattle Dip/VIC: Yes; VIC unstaffed, unequipped.
Dispensary: None; scheduled to receive a first aid box.
Police Post: Under construction (due to cattle raiding).
CCM Office: Shares office with head teacher.
NMC Office: None.
Tractors: None.
Ox Plows: ?
Shops: None.
Milling Machine: None.
Water: Two water points and two water tanks on pipeline extending from mountain intake, 17 miles away; frequent water problems.
Stated Priorities: Improved water supply/system.

GALLAPO WARD, GOROWA DIVISION



Introduction. Gorowa Division has eight wards, including the urban ward of Babati which serves as the headquarters of the division as well as the district. Because of Gorowa Division's proximity to Babati, its location near heavily travelled roads, and its relatively fertile and well-watered soils, it is, by far, the most populous of Hanang's four divisions.

Gallapo village, twelve miles southeast of Babati and ten miles off the main road, serves as the headquarters of Gallapo Ward, the pilot ward for the Village Development Project in Gorowa Division. Gallapo's eight villages, on the slopes

of Mount Kwaraha and the plains to the east and southeast, are amongst the most productive in the district. Only the NMC buying posts in Babati and Endasiwold (in Endasak Ward) bought more maize from farmers than the NMC buying post in Gallapo village in 1977/1978, for example, and there are more privately-owned tractors in Gallapo Ward than in any other ward, with the possible exception of Gitting. The district's first mission station was built in Gallapo village by German Catholics in 1908. The only European estate in the ward was first farmed in 1946, and Gallapo's beginning as a commercial center dates back to 1951 when the first sizeable shop was opened. Today, the commercial area of the village includes two Indian families and several Somalis, these residents owning the majority of Gallapo's 13 shops, restaurants, and three milling machines, and the same Greek family has lived on the above-mentioned estate, three miles from Gallapo, for the past 25 years. The ward headquarters includes the full range of government services, and a privately-owned bus service makes a daily round trip to Eabati for four shillings each way. Four of the villages have a majority of Cushitic-speaking Gorowa and closely-related Iraqw, and two others have a very high percentage of Bantu-speaking Rang'i from Kondoa District, just to the south of Hanang, but no village approaches being homogeneous, and some of them have as many as 15-20 ethnic groups represented. Three of the villages are overwhelmingly Moslem; the others are largely Christian.

Demographic Factors. The Ward Secretary for Gallapo Ward has much more detailed information than the District Planning Office in regard to census-type information, and, most likely, his information is more accurate. His data is presented in Table X, along with the population figures available from the district (for the sake of comparison).

	Ward Secretary's Figures							Planning Office Figures		
	Adults M	Adults F	Children M	Children F	School Children	Working Adults	House- holds	Total Pop.	House- holds	Total Pop.
Orng'adida	318	361	356	531	339	526	305	1,566	301	1,505
Majengo	170	180	90	85	135	350	260	525	199	1,095
Gedamar	189	201	232	208	190	390	230	830	203	891
Halla	190	200	214	220	127	390	217	824	277	1,200
Ayamango	310	360	260	420	164	670	330	1,350	234	1,108
Qash	226	364	490	457	471	690	346	1,537	384	1,500
Gallapo	327	330	466	275	211	826	398	1,378	208	1,040
Tsamasi	<u>382</u>	<u>386</u>	<u>556</u>	<u>389</u>	<u>277</u>	<u>786</u>	<u>363</u>	<u>1,713</u>	<u>302</u>	<u>1,470</u>
Totals	2,112	2,382	2,664	2,585	1,914	4,628	2,449	9,723	2,108	9,809

TABLE X: POPULATION CENSUS FOR GALLAPO WARD, 1977

Sources: Ward Secretary, Gallapo; Assistant Planning Officer, Hanang.

Roads and Transportation. The ten-mile road, which connects Gallapo with Senge on the main road, two miles south of Babati, is a district road. Much of this road is in good repair, but the portion of the road with a steep grade, approaching a year-round stream, is impassable for days at a time to all traffic, except for four-wheel-drive vehicles, during the rains. The same is true of portions of the feeder roads connecting the villages of Majengo, Tsamasi, and Qash to Gallapo, when the rains are heavy. Unlike the situation in Madunga or Katesh Wards, these district and feeder roads are important enough that re-surfacing, small bridges, drifts, and culverts can be considered priority projects which could have an immediate positive effect on agricultural production.

Ecological Factors. Like Katesh Ward, Gallapo Ward includes two ecological zones, Halla, Tsamasi and Gallapo villages being located on the highland slopes of Mount Kwaraha, and the other five villages being on the flatter, drier plains to the south and east. None of the villages in Gallapo Ward, however, can be thought of as occupying a semi-arid zone. In fact, all were thought to have sufficient rainfall to be chosen to participate in the National Maize Project (NMP), a project aimed at expanding maize production through the introduction of hybrid maize and chemical fertilizers. Even high rainfall areas in northern Tanzania, however, suffered from the drought in 1974-1976, the first two years of the NMP, and all of these villages had large numbers of families on famine relief. Oddly enough, several of the villages on the drier plains of Gallapo Ward plant both large quantities of hybrid maize and serena, a drought-tolerant sorghum recently developed for drought areas, and in a good year like 1978, both crops are doing extremely well. The eastern part of the ward borders on Tarangire National Park and does lie in a semi-arid zone. This area, however, has neither water supplies nor roads, and is inhabited only by small numbers of Barabaig who move in and out of the ward with their cattle. Two of the villages, Qash and Gedamar, officially have between 15-25% Barabaig population, but at least in the case of Qash, the pastoral population is more transient than resettled.

Livestock. The Veterinary Investigation Center (VIC) at Gallapo is unequipped, unstaffed, and merely serves as a residence for the Dip Attendant and Livestock Field Assistant who live in the village. Only Tsamasi and Gallapo have functioning cattle dips, so the facilities at Gallapo are actually shared with Gedamar, Ayamango, Majengo, Orng'adida, and Qash. (The village of Qash actually has a dip, but has insufficient water supplies for it to be functional, and it has been closed since 1976; Tsamasi shares its cattle dip with Halla.) Gallapo has been designated as an area for introducing improved dairy stock, and recently three milk cows and one bull were provided to the VIC by the District Livestock Development Office, but as the facilities are unstaffed and there is no support system, there really is no program as of yet. Several years ago, a pasture area was fenced off and Rhodes grass was introduced, but now the fence no longer remains and little of the improved pasture remains. The two functioning cattle dips have been short of water or chemicals or both often enough that the introduction of exotic breeds of cattle in the ward remains a risk.

The livestock census for Gallapo Ward for 1977 is shown in Table XI. The DLDO considers Gorowa as a ward which is overstocked. Most of the ward is considered good agricultural land, which means that more and more land is taken out of pasture each year, and in good agricultural years, profits from crop sales often result in the purchase of more cattle.

	<u>Cattle</u>	<u>Goats</u>	<u>Sheep</u>	<u>Donkeys</u>	<u>Pigs</u>	<u>Stock Units</u>
Orng'adida Gallapo	2,475	2,015	917	54	23	3,120
Gedamar	2,354	1,843	739	115	0	2,985
Halla	530	442	175	16	0	669
Ayamango	1,385	1,285	448	85	0	1,817
Qash	1,337	1,034	385	59	0	1,680
Tsamasi	2,510	1,569	620	94	1	3,042
Majengo	<u>2,453</u>	<u>1,167</u>	<u>475</u>	<u>23</u>	<u>0</u>	<u>2,804</u>
Totals	13,042	9,355	3,867	446	24	16,117

TABLE XI: LIVESTOCK CENSUS FOR GALLAPO WARD, 1977

Source: Ward Secretary, Gallapo.

Agriculture and Farm Management. Gallapo Ward is one of the most productive wards in Hanang, and many farmers think that the maize harvest in 1978 will be the best harvest ever. This year stands in great contrast to 1974, 1975, and 1976 when there was almost no harvest, and when people sold livestock and traveled to other parts of the district, even as far as Singida District, to buy food. The quality of the last two years certainly has skewed people's responses regarding potential yields and the wealth of the upper stratum of farmers, but the "production orientation" of Gallapo's farmers is no exaggeration.

There are two distinct groupings of villagers in terms of land holdings and population density in the ward. Farmers in the villages of Halla, Tsamasi, and Majengo each have a total of three or three and one-half acres of land, half an acre to one acre as a homestead plot and the remainder up to two to three miles away. People speak of a land shortage in these villages, and because land holdings are so small (and in Halla and Tsamasi, because the land is so hilly), no one owns a tractor. Of these three villages, only Halla has allocated land for a communal farm, and, at 21 acres, it is one of the smallest in the district. Farmers in the other five villages have one-acre homestead plots and five acres elsewhere, at greater distances from their houses. In some of these villages (Qash and Gedamar, at least), farmers have access to even more land, and some have planted as many as 20-50 acres this year. In these five villages, 24 farmers own a total of 33 tractors, most of them in Gallapo, Gedamar, and Ayamango (with two farmers in Ayamango owning five tractors each). There are two ways that tractor-owning farmers can expand their land holdings each year: they can open up non-allocated land on the periphery of the village; or, more often, they will plow and harrow two of the five acres belonging to a farmer "free of charge," and then be given the other three acres as payment. Between 40-75% of the farmers in these five villages (Gallapo, Orng'adida, Ayamango, Gedamar, and Qash) rent tractors, and more of them pay for this service by loaning (or "renting") out land rather than use cash.

Interestingly, Gallapo Ward has more ox plows than the vast majority of the wards in the district as well, with at least some in all villages and more than 200 in the ward, ranging from Gedamar with two to more than 60 in Qash. In two villages, Majengo and Qash, where 75% of the farmers rent tractors, most of the remaining 25% use or rent ox plows. Only in a hilly village like Halla, where the plots are small, would one find large numbers of people cultivating the land by hand. Local estimates were that 40% of the farmers in Halla rented tractors, 30% use ox plows (evenly divided between those who own and those who rent plows), and 30% use the hand hoe. Farmers opt to hire someone with an ox plow rather than a tractor, in some cases, because of better availability and in other cases because the Shs. 70-80 per acre charge is forty shillings cheaper than cost of a tractor plowing, and no harrowing is necessary. If a farmer opts to use only a hand hoe to cultivate the land, there is an upper limit of three (or at most four) acres that even the most industrious can put into production (unless a man has more than one wife or can call on other laborers). In cases where families are allocated more land than they are capable of farming by hand, they normally rent a different technology. Thus, it is much more often the case that in the villages which have "land shortages" and where the average size plot is less than this three- to four-acre maximum, that we find families cultivating by hand.⁴

Gallapo Ward is especially a maize-growing ward, and the yields are so much higher in this ward than in any of the other pilot wards that it is easy to understand Gallapo's "production orientation" and prosperity. Seven of the eight villages are in the National Maize Program (NMP), which sells agricultural inputs (hybrid seed and SA/TSP fertilizers) at subsidized rates, and by 1978, the program is so successful that people say that hardly anyone in Gallapo plants the traditional maize seed anymore. (Tsamasi is the only village in the ward that is not in the NMP, but it has been told that it will be included beginning next year. Many of its farmers buy hybrid seed from farmers in the participating villages, so even this village has experience with this new seed.) Farmers in all eight villages claim to have harvested between 15-25 bags (90 kg.) per acre when they planted hybrid No. 622 or 632 (by far the most popular variety) and used DDT. In Halla, it was estimated that 85% of the farmers use DDT. Two percent used the SA/TSP fertilizer package.⁵ Stated yields for

⁴Halla and Tsamasi are the villages which best fit this description, but there is an ethnic factor which complicates this correlation. Throughout the Arusha Region, the ethnic group known as the Arusha (sometimes identified as the "agricultural Masai") are known to be the most inclined to buy and use ox plows; the Rangi people from neighboring Kondoa District have a similar reputation. Most of the 30 ox plows in Ayamango village are owned by the third of the population that is Arusha, and most of the 60 ox plows in Qash are owned by the nearly three-quarters of the population that is Rangi. There are relatively few Rangi or Arusha families in Halla or Tsamasi where land holdings are so small and where as many as 30% of the families use only the hand hoe.

⁵Farmers in Halla were the only ones to admit that SA/TSP could help the yields, "if proper instruction is given." Most farmers felt that, at best, fertilizer did not help because the soils are already so rich, and at worst, (under poor rainfall conditions) the fertilizer burned the crop. Complained one person, "playing to an audience" at a meeting:

No one teaches us how to use the fertilizer. There are no demonstration plots in the whole ward. I've lived here for ten years now and I have yet to see the agricultural extension agent. Do you suppose if we built him an office to sit in he would come and use it? No, I'm not going to use this fertilizer, when there is no expert here. Our crops got burned by fertilizer one year. We threw it away the next. Even I helped people throw several bags away.

some of the other varieties of maize were: UK 511 (composite) -- 12 to 18 bags to an acre; katamani (a quick maturation variety) -- 7 to 15 bags; and traditional (kinyeji) varieties -- 8 to 10 bags. (All of these estimates were for "good years;" the range of yields given reflecting such factors as care, spacing, weeding, the use of insecticides, etc.)

Although in good years, maize is a major cash crop as well as a good crop, farmers in the district grow a number of other "food crops" almost solely as cash crops. Second only to maize sales in the ward is the crop of pigeon peas, a crop that is usually interplanted with maize. It is almost never eaten. The traditional grain crops, indigenous to the area, are sorghum, bullrush millet, and finger millet (eleusine), but today these grains are used exclusively for brewing local beer (which is a means for making money) or as a cash crop. Maize is so universally popular in the district that even those peoples, who migrated into Gallapo Ward from Kondoa and Singida Districts, where these grain crops are the staple, plant the crops only to sell (-- or look upon them as "famine food"). Serena, a sorghum which was introduced in Hanang District in 1977, has grown very rapidly in popularity in Gallapo Ward, but again it is not viewed as a food crop. Because it is so bitter, serena is deemed unacceptable even for brewing beer, but its yields are so much higher than the traditional millets and sorghum, its growing season is so much shorter, and it requires so much less guarding from the birds, just prior to harvest (because the birds, it is presumed, also find it bitter), that there are now hundreds of acres of the crop growing in the fields of the ward's most cash-oriented farmers.⁶ The increase in "sorghum" sales between 1976/1977 and 1977/1978 in Gallapo/Orng'adida is directly attributable to the increase in acreage planted in serena, and the 1978/1979 figures will be even higher. (See Table XII for figures on crops sold in Gallapo Ward.)

⁶It is fortunate that the market price for serena is controlled by the government, for it is seen as having no market value to the Gallapo farmers. Unlike the situation that exists for the traditional millets and sorghum, where the local free market (but illegal) price for the grains is two to three times the government price, serena would command almost no price. Government officials still look to serena as a near-miracle crop with all the features one would want in a drought-tolerant crop (short growing season, grows on as little as 15 to 18 inches of rain, requires no fertilizers, has the advantage of not being a hybrid, etc.), but they acknowledge that it has not passed the taste test yet. They argue that this is the crop, however, that people will be eating when Hanang becomes victim of the next drought.

	<u>Orng'adida and Gallapo</u>		<u>Qash</u>	<u>Ayamango</u>	<u>Gedamar</u>
	<u>1976/1977</u>	<u>1977/1978</u>	<u>1977/1978</u>	<u>1977/1978</u>	<u>1977/1978</u>
Maize	116,300	1,726,381	586,269	121,599	337,387
Sorghum	7,740	151,859	158,349	1,362	14,825
Finger Millet		21,037	18,288	2,459	1,865
Bullrush Millet	900	34,669	1,890		261
Beans I	22,598	10,241			
Beans II	29,250	19,371		360	
Pigeon Peas	4,590	246,309	41,983	15,389	58,329
Grams	270	2,820	1,555		
Njegere Peas		26			
Ngwara Peas		661	3,773		
Lima Beans		2,768			
Kunde Beans		506			
Castor Seeds	1,105	6,741	2,398	451	
Sunflower	850	5,962	50	2,437	
Bees Wax	42	63	21		
Sesame Seeds		146	25		
Coffee	732	480			

TABLE XII: CROPS SOLD TO NATIONAL MILLING CORPORATION
IN GALLAPO WARD (IN KILOGRAMS)

Source: NMC, Babati.

As in the case of Katesh Ward, no general statement can be made about the range of livestock holdings and crop production that would apply to all of Gallapo Ward's villages. The best-off farmers in Halla village, where there is a shortage of land and each family farms less than four acres, might harvest a total of between 40-50 bags of hybrid maize from their two acres of land in a good year, but they would have fewer than 20-30 head of cattle, about the same number of smaller livestock, and one or two donkeys. The worst-off families would herd no cattle of their own, own a few sheep and goats, have no donkeys, and harvest 7-10 bags of maize from an acre of land in that same good year. In Tsamasi, next to Halla and also an area where land holdings are small, two of the three hamlets in the village have abundant grazing areas and there are more cattle in this village than in any other in Gallapo Ward. Still, estimates were that as many as 60% of the households in Tsamasi had virtually no cattle, had as few as 10 goats, almost no sheep, and no donkeys. The most successful farmers in Tsamasi might have 50-60 head of cattle, almost as many goats, 30-40 sheep and three to five donkeys. Maize production estimates for Tsamasi ranged from 15 bags of hybrid maize to an acre (this being the village that is not in the NMP and has not been getting any technical advice) down to 7-10 bags for the poorest, both estimates being for a year of plentiful rainfall. Gallapo village, like Tsamasi and Halla, lies on the slopes of Mount Kwaraha and is, therefore, in the same medium rainfall zone. Its cattle holdings were smaller than Tsamasi's, but farmers' land holdings were considerably larger (averaging over five acres), and its maize harvest is far larger than any two other villages combined. The estimates for farmers in Ayamango, Qash, Gedamar and Orng'adida, all with more than five acres and abundant pasture areas, all fell in a similar range: the wealthiest farmers would have more than 100 head of cattle, 50-80 goats, 40-50 sheep, up to 9-10 donkeys, and reportedly would harvest between 20-25 bags of maize per acre; the poorest farmers would have perhaps two or three head of cattle, 8-10 goats, almost no sheep, no donkeys, and would harvest 7-10 bags in this hypothetical good year. These four villages, plus Gallapo and Majengo, are the villages in the ward which have planted quantities of serena; farmers estimated their yield in a good year (such as 1978) as being 8-10 bags to an acre. Both pigeon peas and beans have been doing poorly throughout the ward this year, succumbing to disease or waterlogged fields (or both), and few farmers in any of the villages expected to harvest more than three or four bags of either.

The variation in estimated maize yields was attributed to several factors: the varieties of seed planted, whether or not DDT was used, the spacing of plants, the care in weeding the crop, and the extent to which various pests would ravage the crop before it was harvested. Halla's fields, for example, are on the mountain slopes, next to a forest reserve, up to two miles from people's houses. Ever since the village was resettled and the houses moved away from the periphery of the fields, wild pigs and baboons have been a constant threat to the unharvested maize, and men are forced to spend nights guarding their fields during the harvest season. In Qash, Ayamango, Gedamar and Majengo, all on the plains, rats are a major problem to the villages' maize, both when it is in the fields and when it is in storage at their homes.

Several men (in most cases, with families of eight to ten people) reported that their wives would mill a four-gallon debe of maize every three or four days, and use one and one-half debes of beans each month -- or, approximately, 20 bags of maize and five or six bags of beans a year. Yields of maize have been high enough in 1977 and 1978 that surpluses could be sold. Frequently listed priority needs for individual households included clothing and household items (sugar, kerosine, cooking oil), ox

plows, and construction materials for the building of a modern house. (Some of the expenses for building a fairly typical size house were: 30 sheets of 8' corrugated aluminum roofing at Shs. 36 each; Shs. 500 for rafters; Shs. 100 per window; Shs. 150 per door; 10 bags of cement at Shs. 42 each; and hundreds of locally-made fired bricks at five bricks for a shilling.) Other uses for surplus cash income included the purchase of large and small livestock, including dairy cattle, pigs, and oxen, the rental of tractors (so as to be able to expand land under cultivation), furniture for houses, and locally-brewed or bottled beer.

Ward Work Calendar. The following is the work calendar for the ward as a whole. The major difference between the calendar for Katesh Ward and Gallapo is attributable to the fact that parts of Katesh Ward grow wheat (rather than the fact that Gallapo has a longer rainy season). Madunga Ward receives less rain than most (and perhaps all of) Gallapo's villages, but planting there goes on for more months than in Gallapo because of the irrigated areas.

- Nov - begin planting sorghum, millet, serena, all varieties of maize, and pigeon peas, after the middle of the month.
- Dec - planting continues.
- Jan - planting continues; weeding begins.
- Feb - planting ends; weeding continues.
- Mar - begin planting beans; weeding continues.
- Apr - planting of beans and weeding continue.
- May - planting and weeding end; work slacks off; begin harvesting maize planted in November.
- Jun - harvesting of maize continues; begin harvesting other crops planted in November and December; begin harvesting beans late in month.
- Jul - harvesting continues.
- Aug - harvesting ends.
- Sep - begin clearing and preparing fields for November planting.
- Oct - preparation of fields continues.

Village-Specific Information.

Tsamasi.

- | | |
|------------------|--|
| School: | I-V. |
| Cattle Dip: | Yes. |
| Dispensary: | None; use dispensary at Gallapo. |
| CCM Office: | Yes. |
| NMC Office: | Yes, shared with CCM. |
| Tractors: | None. |
| Ox Plows: | More than 12. |
| Shops: | Yes, one small cooperative shop sharing CCM building. |
| Milling Machine: | None; use machine at Gallapo. |
| Communal Farm: | None in village; have borrowed 20 acres in Gedamar, planted in hybrid maize. |

Tsamasi (cont.)

Water: No pipeline or other improved water source; draw water from year-round river, with some people up to two miles from water source.

Stated Priorities: (1) Improved water supply/system; (2) Road work -- one 20' bridge, five drifts, and two culverts; (3) Dairy cattle and other livestock development projects; (4) Join NMP (scheduled for 1978-1979) and get good agricultural advice; (5) More land for village.

Halla

School: I; three streams.

Cattle Dip: None; use dip at Tsamasi.

Dispensary: None; use facilities in Gallapo.

CCM Office: None.

NMC Office: None.

Tractors: None.

Ox Plows: 20-25; two ox-drawn trailers.

Shops: None.

Milling Machine: None.

Communal Farm: Yes, 21 acres of maize and pigeon peas.

Water: One hamlet draws water either at a water point on the pipeline to the Catholic mission or (more often) from a year-round stream, with everyone within a half mile of the river; the other hamlet draws only from a river, with everyone within three-quarters of a mile of water.

Stated Priorities: (1) Improved water system/supply; (2) Road work -- resurface and put in culvert(s) on main road from Babati to Gallapo (which goes through Halla); (3) Pest control (baboons and wild pigs); (4) Dairy cattle; (5) Cattle dip; (6) Fruit trees.

Majengo

School: I-II.

Cattle Dip: None; use dip at Gallapo.

Dispensary: None; use facilities at Gallapo.

CCM Office: None.

NMC Office: None.

Tractors: None.

Ox Plows: 36.

Shops: None.

Milling Machine: None.

Communal Farm: None; "there's not enough land."

Water: Draw water from river bed, from a marsh, and from two very shallow, hand-dug wells.

Majengo (cont.).

Stated Priorities: (1) Improved water supply/system; (2) Road work -- one 60' bridge and two drifts, 30' and 100' long; (3) Dispensary; (4) Agricultural inputs -- problems getting DDT and hybrid maize variety #622; (5) More ox plows and ox-drawn equipment (weeders, planters, trailers); (6) Cattle dip and sufficient chemicals and drugs; (7) Dairy cattle; (8) Pest (rat) control and better crop storage facilities.

Qash.

School: I-VII, two streams I-IV.
Cattle Dip: Yes, but not used in over two years due to shortage of water; use dip at Gallapo.
Dispensary: None; use facilities at Gallapo.
CCM Office: Yes, temporary structure.
NMC Office: Yes; need godown.
Tractors: One, privately owned.
Ox Plows: 60.
Shops: Two privately owned; one cooperative shop.
Milling Machine: Yes, one privately owned.
Communal Farm: ?
Water: Draw water from three unprotected springs, all fairly close to each other; also use three water points on pipeline when line is in good repair; people claimed that the springs were infested with bilharzia.
Stated Priorities: (1) Improved water supply/system; (2) Dispensary; (3) Repair pipeline to cattle dip; (4) Village-owned tractor (have applied for loan from Rural Development Bank, but have a Shs. 46,000 debt to NMP).

Ayamango.

School: I-IV.
Cattle Dip: None; use dip at Gallapo.
Dispensary: None; use facilities at Gallapo.
CCM Office: None.
NMC Office: Yes.
Tractors: Two people with five (5) each.
Ox Plows: More than 30.
Shops: None.
Milling Machine: None.
Communal Farm: ?
Water: Draw water for 10 months a year from a lake, shared with livestock; also use water cap at Greek estate, up to five miles from homes of some villagers.
Stated Priority: Improved water supply/system.

Gedamar.

School: I-II, two streams in Standard I.
Cattle Dip: None; use dip at Gallapo.
Dispensary: None.
CCM Office: None.
NMC Office: Yes.
Tractors: 9, one farmer with 2.
Ox Plows: 2.
Shops: Just beginning a cooperative shop.
Milling Machine: None.
Communal Farm: ?
Water: One water tap for whole village, some people living up to two miles away from pipeline; water line was out of order for six months last year, one month in 1978; at these times, people must draw water in Gallapo, five miles away.
Stated Priorities: (1) Improved water supply/system; (2) Cattle dip.

Gallapo.

School: I-VII, two streams.
Cattle Dip/VIC: Yes; VIC is unequipped.
Dispensary: Yes.
CCM Office: Yes.
NMC Office: Yes.
Tractors: 10, one farmer with 2.
Ox Plows: 20; some reports of difficulty getting spare parts and additional plows.
Shops: One cooperative shop; 13 privately-owned shops; several other establishments.
Milling Machines: Three.
Communal Farm: Yes; 222 acres -- 132 acres in maize, 65 acres in serena, 16 acres in pigeon peas, 9 acres in beans, all shared with village of Orng'adida.
Water: Pipeline with several water points; a river and several year-round (unprotected) springs.
Stated Priorities: (1) Dairy cattle program; (2) Expansions of drought-tolerant crops (including sunflower and other oil seed crops).

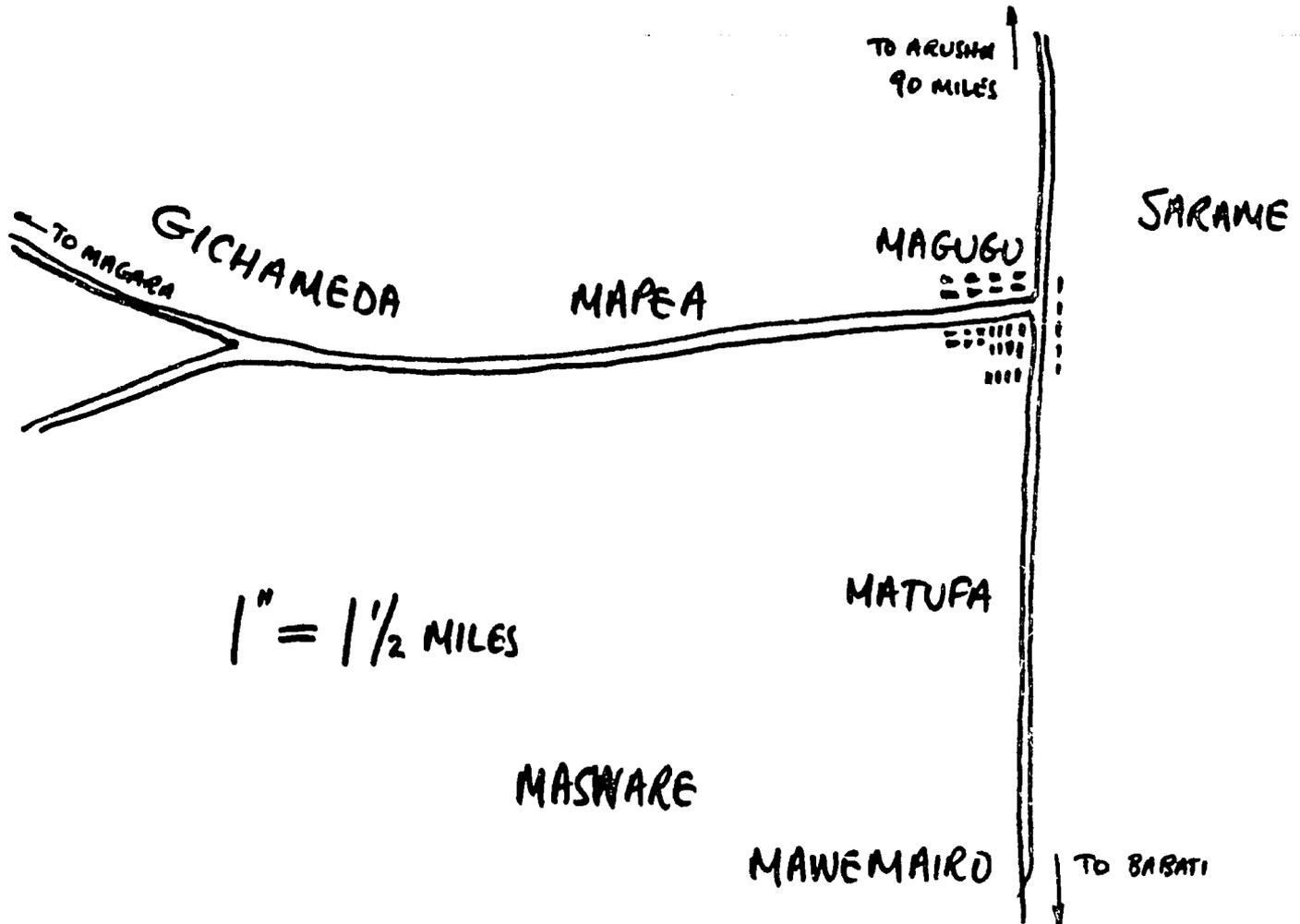
Orng'adida (split off from Gallapo on November 2, 1977).

School: Two classrooms under construction; students use Gallapo school and temporary Standard I at Gallapo CCM office.
Cattle Dip: None; use dip at Gallapo.
Dispensary: None; use facilities at Gallapo.
CCM Office: None.
NMC Office: None; share buying post with Gallapo at present.
Tractors: Three.
Ox Plows: "Many, some people with 2 or 3 plows."

Orng'adida (cont.)

Shops: Sharing cooperative shop with Gallapo.
Milling Machine: One, privately owned.
Communal Farm: Yes; see Gallapo information (above).
Water: There are five water points on pipeline extending from Gallapo to Qash, all for Orng'adida's use, but pipeline is often broken; also use river; most people within half a mile of a water tap.
Stated Priorities: (1) Improved (more reliable) water system/supply, including a new tap at school under construction; (2) Dispensary; (3) Re-draw map of village so people can be sure of exact location of household plots; (4) More land, especially for next generation; (5) Dairy cattle program.

MAGUGU WARD, MBUGWE DIVISION.



Introduction. Mbugwe Division is a semi-arid area, which lies north of Babati, includes the plains between the Rift Wall and Tarangire National Park, and extends north to Lake Manyara and Kiteto District. It is a small division with only four wards and a grand total of only 14 villages. The division takes its name from a population known as the Mbugwe, a Bantu-speaking agricultural group, but only two villages in the whole division are largely Mbugwe villages, Mwada and Sangaiwe, and, in actual fact, all of the wards are extremely heterogeneous. Masai pastoralists from Kiteto District graze their cattle in the northern part of the division, near the boundaries of Lake Manyara and Tarangire National Park, and Barabaig pastoralists live in small numbers well to the south and west of Magugu town, not far from the Rift Wall. Greek-owned sisal estates in the division attracted laborers, especially from Singida, Iramba, and Kondoa districts in the central part of the country, and population pressures pushed the Iraqw out of the western highlands, above the Rift Wall, into the division. Sisal is no longer grown in much quantity in Mbugwe Division, and few of these expatriate-owned estates are still functioning, but the legacy of heterogeneity, target employment and a wage-earning orientation, quasi-urban social organization and values, and dependency all very much define the distinctive character of the division today.

Magugu Ward is the largest of the four wards in Mbugwe Division, its seven villages having about half of the divisions's population. Its villages typify both the history and ethnic mix of the whole division. Mawemairo (pop. 1545) with approximately one-quarter of its population made up of Mbugwe, is the most "Mbugwe-dominated" village in the ward, but household heads in the village come from perhaps 25-30 different ethnic groups. Gichamedia (pop. 1110), in contrast, has but one Mbugwe family; Nyaturu from Singida District are more numerous than any other group, but they number no more than one-sixth of the village's population and there are between 35-40 ethnic groups represented. The most "urban" of the villages is Magugu (pop. 2070) itself, sixteen miles north of Babati, located on the main road to Arusha. It serves as both the ward and divisional headquarters. The Ward Secretary jokingly said that "people from every ethnic group in Tanzania live here, and some from Kenya, too." It has 17 shops, three butcheries, two maize mills, three restaurants, four lodgings, three bars, a daily market, a post office and a police station, a petrol station, a bank branch open two days a month, four different Christian churches for its minority Christian population, and a mosque. The primary school has two streams in most of its classes. A major government health center is under construction. And Magugu village even has an "international agency" located on its periphery: the Tropical Pesticides Research Institute (TPRI), one of the research bodies once operated by the now-defunct East African Community, has been doing work on four varieties of mosquitoes and various insecticides at its Magugu research station since 1958. Between 20-25 buses travel this road each day, probably three to four times as many trucks, and for both, Magugu town serves as an important stop. How far removed these villages in Magugu Ward are from the kin-based bonds and patterns of reciprocity and exchange of the largely homogeneous villages of Katesh and Madunga Wards is epitomized in this account, offered by a ward-level politician:

The richest African in Magugu Ward is a man born in Moshi, who runs a bar here. He owns another bar in Babati. But this is not why he is wealthy. In 1974, he had one bar and was not particularly rich. But that year and the following years the rains were very poor, and most of the people here were receiving famine relief. When this man saw that the famine relief was not going to be sufficient, he bought maize from farmers in Moshi and sold it to people here at the price of a debe (four-gallon tin) of maize for a calf. Certainly people knew that they were being cheated, but what else could they do? Now he has not only two bars, but more than 100 head of cattle.

The commercial and main residential part of Magugu village, on the main road, has changed little over the last few years. Already laid out in streets, most of the houses were not moved during Operation Villagization, nor was land re-distributed. The other six villages in the ward were all changed radically in form (although not in composition) by the resettlement operation. The other six villages in the ward, Gichamedia, Mawemiro, Mapea, Sarame, Matufa, and Masware, were all dispersed or non-nucleated villages until 1975, but now most of these are neatly laid out in uniform, one-half or one-acre plots, with several lines of houses in each village, the vast majority of them having been built within the last three years.

Roads and Transportation. The main road, which runs through the ward, connecting the future capital of Dodoma with Arusha, is one of the nation's most important. Until recently it was kept in fairly good repair, but the heavy rainfall during the first four months of 1978 left this road in extremely poor condition, so much so that truck traffic had to slow to five to ten miles an hour for several miles between

Magugu and Babati. Arusha Region (rather than Hanang District) has responsibility for maintaining this road, and some work with earth-moving equipment was being done on it in June 1978. The only other road of much importance in the ward is the road running west from Magugu through Magara at the foot of the Rift Wall on up to Mbulu town above the escarpment. The portion of this road that lies in Hanang District is the district's responsibility; there are a few hundred yards of road which are virtually impassable during the rains and could use resurfacing, but for the most part, this road is in decent repair. There are also feeder roads connecting Masware and Sarame to the main road and running through the villages. Most of these are in good enough condition to handle the small amount of traffic using them, but an important bridge did wash out near Masware, cutting it off from Mawemairo and the main road during the rainy season. The five main agricultural producers in the ward are five large estates, one owned by a European, two by Indians, another sold this year to the state-owned National Food Corporation (NAFCO), and a fifth owned by the Hanang District Development Corporation (HANADECO). None of these had difficulties procuring agricultural inputs or selling their crops due to the condition of the local roads.

Ecological Factors. Magugu Ward is regarded as a low rainfall, semi-arid ecological zone. Over a recent six-year period, it received between 8 and 37 inches of rain a year, but in the year (1975) it received 37 inches of rain, 21 inches fell in one month and did more harm than good. The median annual rainfall figure (for an admittedly short period) would appear to be approximately 25 inches; in addition, the rainfall reliability figures are poor. These two facts make maize a marginal crop on large portions of the plains, although some is grown (especially on two non-African estates near Mawemairo). Grain crops such as millet, sorghum, and serena, oil seed crops, and some varieties of peas are all more successful in these dry areas. The variable that makes Magugu much more attractive agriculturally than the rainfall figures imply is the presence of large numbers of plots irrigated by furrows and streams, in most of the villages, fed by the run-off from above the Rift Wall; in these areas, people can get two crops a year off the same acreage. Paddy rice is a staple and grows extremely well in Magugu, for example, despite the ecological zone designation, and was the second most important cash crop after sorghum and serena in 1977/1978.

There are two other features of this ecological zone which are terribly predictable for this part of Tanzania. First, large numbers of cattle die in this ward due to sleeping sickness, a disease which affects humans as well. The tsetse fly population is still so high on the periphery of the inhabited areas that Barabaig pastoralists, whose cattle used to graze in Magugu Ward during the dry season, have now moved back to Barabaig Division on a permanent basis. The District Livestock Development Office operates a Tsetse Control Centre, out of the village of Masawe, which is involved primarily in brush-clearing operations. It was once located in Sarame, and will probably be moved to another village in Magugu in 1979. Secondly, the human population of this ward in particular is subject to chronic malaria, a fact related to both the heat of the plains and the numerous marshes and areas under irrigation. In general, Magugu Ward's environment is the least healthy of the four project wards selected for the Village Development Project.

Livestock. At present, the cattle dip in Magugu village is the only functioning dip in the ward. This facility serves the cattle in six of the seven villages in the ward, plus those in the village of Sangaiwe in neighboring Mwada Ward. A new

cattle dip is being built this year in the village of Masware,⁷ the village in the ward which is doing without dipping services at present because it is too far from Magugu. The buildings for a Veterinary Investigation Center (VIC) exist in Magugu, as well, but they are unequipped and are used primarily as residences for the ward's two livestock staff. The Dip Attendant reported that the Magugu cattle dip operates five days a week when there is sufficient water. There has been no problem during the past few years getting sufficient chemicals for the dip. During the rainy season and while there is abundant grass to graze on, approximately 600 cattle a day use the dip; for four of five months, in a typical year, the number drops down to about 400.

Livestock census information was only available for five of the seven villages in the ward, and even this information could only be obtained at the village level. (The other two villages, Magugu and Sarame, probably have livestock figures similar to those of Matufa.) Mapea and Gichamedda have small livestock populations because the two villages are pressed for land, have little pasture area near the village, and the open land to the north of both villages is infested with tsetse.⁸ There is abundant land near Masware, but both the human and animal populations are circumscribed by the tsetse fly.

⁷A pipeline is being installed, bringing water to the center of Masware, but there still will be no water point closer than one and one-half miles from the newly-constructed cattle dip. This raises the question, of course, as to how often the new dip will operate once it is constructed. There is a seasonal marsh near the dip which will probably be the main source of water for most of the year (despite the inconvenience), but it will be impossible to bring sufficient water to the dip from the village water point without a separate pipeline being put in.

⁸Of 30 Barabaig families initially registered in Gichamedda, only one Barabaig man remains. He lost 40 of his 120 cattle last year to diseases, and is concentrating on farming now, having sent the remaining cattle home to Barabaig Division. The main reason he did not leave Gichamedda is because his wife is not a Barabaig.

	<u>Cattle</u>	<u>Goats</u>	<u>Sheep</u>	<u>Donkeys</u>
Masware	758	1,037	311	10
Mapea	173	251	168	--
Gichameda	108	185	200	1
Mawemairo	2,181	2,261	1,108	28
Matufa	974	680	257	1
Sarame	--	--	--	--
Magugu	--	--	--	--

TABLE XIII: LIVESTOCK CENSUS FOR MAGUGU WARD, 1978

Source: Village Chairmen, Masware, Mapea, Gichameda, Matufa and Mawemairo.

Agriculture and Farm Management. Agriculture in Magugu Ward is far more diverse than its uniformly flat, dry, hot plains would suggest. Several technological and cultural factors are responsible for this diversity. The first of these, the availability of irrigated land to up to 50% of the population in some of the ward's villages, has already been mentioned: wet lands crops as varied as paddy rice, sugar cane, bananas, vegetables, and onions are planted on these plots, as well as maize and pigeon peas, crops which are not normally associated with irrigation. A second factor, already mentioned, is the presence of large estates and the people's history of working as laborers for non-African and (more recently) state farms. These estates have had, thus far, less of a "demonstration effect" on African farmers than many would expect. In Gichameda, for example, where the Magugu-Magara road serves as a boundary between farmers' plots and a European's estate, the contrast in quality between African-grown, traditional maize and estate-grown serena could not be more extreme. Rather the impact on farmers has been more that they are oriented towards the wage-earning sector, and the alternative of working for the minimum rural wage (Shs. 8.85 per day) is always present. The district farm run by HANADECO, for example, hires 30-60 day laborers from the villages of Mapea and Gichameda six days a week during the whole year.⁹ A third characteristic of Magugu Ward is the fact that it is not only more heterogeneous than most other wards in the district. but also it is

⁹This alternative of wage employment to working on one's own fields is not restricted to the estate sector. One entrepreneur, who lives in Babati, has two acres of rice and another one of groundnuts in Magugu (as well as tens of acres of land in maize in Gallapo and houses for rental in three different towns). He is more a "farm manager" than a farmer, because much of his time is spent managing labor. He pays a laborer Shs. 80 to weed one acre of rice, and Shs. 100 per month plus food to protect the rice crop from the birds towards harvest time. "The food costs me more than the salary."

more stratified as well. Despite guidelines set out by the political party (and rhetoric to the contrary), there are still numerous opportunities for rural capitalism to flourish in Tanzania, especially in an area with the mix of factors found in Magugu. The area does not have the agricultural potential of a place like Gallapo or Dareda, and there are few tractors so the prosperous are less obvious; but there is ample opportunity for individual initiative, and it is especially apparent that the more "urban population" of Magugu (or even Babati) manipulates the factors of production (including rented labor and/or land) to successful advantage. A final cultural characteristic, necessarily linked to the last, is that of dependence, even submission: large portions of the populations in these villages seem as resigned to the social order and their subordinate place in it as others seem ambitious and successful. Such populations end up taking fewer risks (planting, for example, traditional crops rather than serena) or renting out land or labor for (theoretically) fixed amounts for someone else's greater gain.

In five of the seven villages in the ward, people's houses are located on one-acre plots and each farmer has rights to two to five acres elsewhere, depending upon both the amount of land available in the village and the access individuals have to land in other villages. In most of these villages, this more distant land is divided into irrigated and non-irrigated plots, with some farmers farming four or five distinctly separate pieces of land. The village of Sarame has no irrigated land within its boundaries; in the other four villages, up to 50% of the farmers plant some wet crops. Farmers in the remaining two villages of Magugu and Gichamedia live on quarter-acre and half-acre plots respectively, the former situation the rule because Magugu is more a town than a village, the latter condition brought on by a shortage of land in the Gichamedia area. In addition to the household plots, Gichamedia farmers have one to four acres on the periphery of the village or elsewhere, and Magugu farmers have two to five acres.

The fact that Magugu is not that wealthy a ward (and normally is not regarded as a ward with much agricultural potential) is reflected in the fact that few farmers own tractors or ox plows. There are fewer than 10 African-owned tractors in the ward. Up to half of the farmers, however, in some villages rent tractors, including all those who put more than three acres into production. Tractors are rented from the private estates in the ward or from wealthy African farmers from as far away as Gallapo. Only Mawemairo, with a relatively large Arusha population, has many ox plows (estimated at 26). Throughout the ward, there was very strong bias against such plows, the most frequent criticisms being that the soil in the ward is too heavy or too hard, in the dry season, or too wet in the irrigated areas, and that the animals' hooves get infected too easily while plowing in the wet soils. One man, who once owned a plow and who did see the value of ox plows in the Magugu area, marshalled the following series of arguments against his returning to the use of oxen:

I used an ox plow here for many years, drawn by six oxen. I did not find it hard to train the animals. You have to use oxen, however, and not bulls. Bulls are too arrogant and self-assertive (wajauri). I would merely tie up two oxen who were not used to drawing a plow with four who were, and they would be trained within a week's time. The soil in the Babati area is better for plows, but it is manageable here. When tractors became more available, I sold my plow and the oxen. That was when I could rent a tractor to plow my land for fifty shillings an acre. Now it costs more than twice that to rent a tractor, and I (...next page)

see my mistake. But it would not make sense for me to buy an ox plow these days. The plows we get here break easily, and oxen cost up to two thousand shillings each. And who would herd them? My wife is busy in the fields. I am getting too old, and anyway, I have my farms to look after. These days, the government forces me to send my children to school, so they are no help with cattle or in the fields. I'm in a situation where I can't own any cattle. It is expensive renting tractors from the rich, but it is much less trouble.

The crop variety is much greater in Magugu than in any of the other pilot wards, because of the combination of wet- and dry-area crops and because maize is so unsuccessful. Generally, the same crops are grown on the homestead plots as are grown on the dry farm lands, one to two miles from the center of the village: traditional sorghums and millets, some maize, varieties of peas and beans, and the newly-introduced (and very popular) groundnuts. The exceptions are that people generally plant cassava (a "famine food") and sweet potatoes on their homestead plots, and cash crops such as serena (and very occasionally small amounts of cotton) farther away. All the villages except Gichamedea and Mapea plant more sorghum (of the traditional variety) than maize, and rice is the more popular of the two staples. The best maize in the villages is grown on the irrigated plots where it competes with rice for space. Gichamedea farmers explained that they planted less sorghum and millet than maize because these two crops come into harvest at the same time as rice.

Not only does this mean that we have to harvest at the same time, but since the birds swarm over both crops at harvest time, we would have to be in both fields at once. Rice is our staple here, so if we can only plant one crop, we plant our food crop rather than a cash crop. With maize, of course, we do not have this problem because the birds cannot get at the grain and the crop requires no guarding.

There is the presumption that birds will also swarm over serena because it is also a sorghum, but there was no evidence of this and the conventional wisdom amongst people who planted serena was that the birds also found the crop to be bitter. While very few farmers in Gichamedea have planted serena, the Village Chairman of Magugu estimated that more than half the people in his village were growing at least a quarter of an acre of this new crop, and it is certainly the crop that is emphasized the most in talking with district agricultural officials about Magugu Ward.¹⁰ The seed was made available to all of the ward's villages except Masware, the most distant and inaccessible of the seven villages. Finally, although none of the villages in Magugu Ward is in the National Maize Project (NMP), because of the unsuitability of the area for maize, the agricultural extension worker in the area reported that perhaps 75% of the Gichamedea farmers have tried to plant some improved varieties of maize. The only improved maize seed made available to farmers through official channels is a composite variety (UK511) and a quick-maturing variety (katamani), although hybrid maize can be bought from villagers in areas within the NMP.

¹⁰An unexpected problem developed with serena in Magugu and other parts of Hanang District this year. This is the second year of the crop in the district, and some of the seed saved from last year's crop developed a disease known as "head smart." The only unaffected crop seen in the ward this year was on the Levy Estate, recently sold to NAFCO. The yields in all other fields examined, including the nearly 500 acres on the HANADECO farm, will be reduced because a poor selection of seeds was (...next page)

The following information on average crop yields in "good" and "bad" years was obtained:

paddy rice - good year: 20-30 bags per acre (200-pound bags); bad year: 10-15 bags; if poorly weeded or planted late: 4-5 bags.

maize, hybrid (#622) - good year: 8-10 bags per acre; bad year: 5 bags.

maize, traditional and katamani - good year: 6-8 bags per acre; bad year: 3 bags.

sorghum, traditional - good year: 6-8 bags per acre; bad year: 3 bags.

sorghum, serena - good year: 10 bags per acre; bad year: 6 bags.

(It should be noted that even in a good year, hybrid maize yields are half of what they are in an area like Gallapo.) This year is regarded as a good year (by Magugu standards) for maize, sorghum and serena, and a bad year for rice; last year was a good year for all crops except serena (iIANADECO, for example, harvested only six bags an acre on its large estate), but 1977 was the first year that serena had been planted.

Crop Sales Figures. Crop sales figures for Magugu Ward are very sparse. There are, at present, only two NMC buying posts in the ward, and single-village records exist only for Mawemairo. The figures for Mawemairo are complicated, however, by the fact that the maize sales (at least) from the more than 800 acres of non-African estates in the area are included; in fact, the villagers of Mawemairo are growing more than twice as much serena as maize in 1978 (local figures were 1083 to 509), and do not regard maize as a very profitable cash crop.

¹⁰(cont.) made available One of the advantages of serena is that it is not a hybrid and seed can be saved from year to year, but the prevalence of head smart will force the farmers to buy seed for next year (at least), negating this advantage.

	<u>Magugu Buying Post, Including Magugu, Mapea, Gichameda, Sarame, Matufa, and Masware</u>	<u>Gichameda Buying Post</u>
Maize	17,068	237,650
Rice	33,600	364
<u>Sorghum/Serena</u>	83,303	85,259
Pigeon Peas	6,904	7,920
Ngwara Peas	19,878	643
Kunde Peas	14,720	236
Choroko	2,817	55
Castor Seeds	3,503	23
Sesame	1,760	9
Finger Millet	10,278	-
Beans II	5,054	-
Sunflower II	2,223	-
Groundnuts	55	-
Cotton "A"	492	-
Cotton "B"	1,885	-

TABLE XIV. CROPS SOLD TO NATIONAL MILLING CORPORATION
FROM MAGUGU WARD, 1977/1978 (IN KILOGRAMS)

Source: NMC, Babati.

Ward Work Calendar. The following "idealized" seasonal work schedule can apply generally to all seven villages in Magugu Ward. All farmers, however, do not have access to irrigated plots in any village, and there are no irrigated plots in Sarame.

Aug - begin clearing and preparing land in dry areas; begin planting maize, vegetables, and onions in irrigated areas.

Sep - planting in irrigated areas continues.

Oct - begin planting dry-land maize, millet, and sorghum; plant wet-land rice; start weeding wet-land crops planted in August and September.

Nov - same as October.

Dec - continue planting rice; transplant onions; begin harvesting wet-land maize planted in August and September.

Jan - continue harvesting wet-land maize; transplant rice; weeding of dry-land grain crops begins.

- Feb - continue transplanting rice; continue weeding dry-land crops; begin weeding rice.
- Mar - same as February.
- Apr - begin guarding rice paddies and sorghum/millet fields against birds; begin harvesting onions.
- May - begin harvesting maize, millet and sorghum planted on dry lands in November; begin harvesting rice planted in October.
- Jun - same as May.
- Jul - same as May and June.

Village-Specific Information.

Magugu.

School: I-VII; I-IV have two streams; there is also a two-year, post-primary, technical school for 80 students (masonry, carpentry, domestic science).

Cattle Dip/VIC: Yes; VIC is unequipped.

Dispensary: Yes; rural health center is under construction.

CCM Office: Yes.

NMC Office: Yes.

Tractors: 2, privately owned.

Ox Plows: None.

Shops: One cooperative, 16 privately owned, plus many other commercial establishments.

Milling Machine: 2, privately owned.

Communal Farm: 35 acres -- serena, cotton, cow peas, fruit trees.

Water: Two public water points on pipeline; three seasonal, protected wells with salty water.

Stated Priorities: (1) Build modern houses, perhaps with help of loans from the National Housing Bank (but first reportedly need surveyors to make certain that existing streets and house plots are properly laid out); (2) Increase land under cultivation.

Mapea.

School: I-III.

Cattle Dip: None; use dip at Magugu.

Dispensary: None; use facilities at Magugu.

CCM Office: Yes.

NMC Office: None; cooperate with Magugu.

Tractors: One, broken down.

Ox Plows: One.

Shops: Some; no cooperative shop, but women do have a cooperative straw-making business.

Milling Machine: ?

Mapea (cont.).

Communal Farm: Yes, 10 acres borrowed from Asian-owned estate in late March, planted (late) in serena but poor yield expected.

Water: Draw their water mostly from irrigation furrows; pipeline from river near Rift Wall is due to be laid in Mapea in near future.

Stated Priorities: (1) Improved water supply/system; (2) More land suitable for household plots (as several areas in the village flood now) and more land for farming; (3) Village-owned tractor.

Gichameda.

School: I-IV completed; V-VII various stages of construction.

Cattle Dip: None; use dip at Magugu.

Dispensary: None; use facilities at Magugu.

CCM Office: Yes.

NMC Office: None; cooperate with Magugu.

Tractors: One.

Ox Plows: Two.

Shops: One private, one cooperative.

Milling Machine: One, privately owned.

Communal Farm: 6½ acres of maize.

Water: Pipeline is presently being laid; immediate plans for four water taps, one for each of three hamlets (vitongoji) and one for the school.

Stated Priorities: (1) More land for agriculture; (2) More land cleared for cattle grazing so as to remove threat of tsetse fly; (3) Village-owned tractor.

Mawemairo.

School: I-VII.

Cattle Dip: None; use dip at Magugu.

Dispensary: None; use facilities at Magugu.

CCM Office: Yes.

NMC Office: Yes.

Tractors: Two, privately owned (belonging to one farmer).

Ox Plows: 25.

Shops: One cooperative shop; several private.

Milling Machine: Yes.

Communal Farm: 20 acres planted in maize and serena, down from 32 in 1977.

Water: Use water from river near village; pipeline is expected in near future.

Stated Priorities: (1) Need to expand land under production; (2) Village tractor; (3) Improved water system/supply.

Matufa.

School: I-V, two streams in I.
Cattle Dip: None; use dip at Magugu.
Dispensary: None; use facilities at Magugu; have first aid office.
CCM Office: Yes, built in 1977 at expense of Shs. 21,650; opened in January 1978 by Prime Minister.
NMC Office: None; cooperate with Magugu.
Tractors: None.
Ox Plows: None.
Shops: Several small, privately owned shops.
Milling Machine: One, privately owned.
Communal Farm: 40 acres, 17 planted in groundnuts and 23 in serena; (the announced "target" figure for the communal farm, given to the Prime Minister in January, was 546 acres).
Water: Use irrigation furrows; no piped water supply.
Stated Priorities: (1) Improved water system/supply; (2) Village-owned tractor.

Sarame.

School: I.
Cattle Dip: None; use dip at Magugu.
Dispensary: None; use facilities at Magugu.
CCM Office: Yes.
NMC Office: None; cooperate with Magugu.
Tractors: ?
Ox Plows: ?
Shops: One, cooperative.
Milling Machine: None.
Communal Farm: 23 acres of serena.
Water: Pipeline is being built in area shortly; presently draw water in Magugu.
Stated Priority: (1) Improved water supply/system.

Masware.

School: I-III.
Cattle Dip: None; dip under construction.
Dispensary: None; use facilities at Magugu.
CCM Office: Yes.
NMC Office: Yes.
Tractors: None.
Ox Plows: None.
Shops: ?
Milling Machine: None.
Communal Farm: None.
Water: Pipeline under construction; only one water point planned for village.
Stated Priorities: (1) Completion of water system; (2) Completion of cattle dip; (3) Dispensary.

SOME CONCLUDING OBSERVATIONS ON THE
USAID-FUNDED VILLAGE DEVELOPMENT PROJECT

1. During my discussions with Hanang District department heads, I learned that they wished to change the pilot ward in Mbugwe Division, adding Magugu (and its seven villages) and deleting Magara. I supported their decision, told them that there would be no problem respecting their wishes, and the detailed information on Magugu Ward in this report is presented with the assumption that such a change is easily done. I was on the design team that selected Magara Ward as a pilot ward, I feel that the ward was chosen for the wrong reasons, and the substitution of Magugu will pose no major alterations in the project. It is in the same ecological zone as Magara, needs almost no road work, already has a gravity-feed water system under construction, and is more convenient to Babati (an important consideration for the first year). Acceptance of this change from what is set out in the Project Paper is a kind of validation of two basic premises of this project: (1) that there is flexibility built into the project, so that additional information can be incorporated into the on-going processes of planning and implementation, and (2) that local Tanzanian officials are full participants in all phases of the project.

2. Last year when I talked with Hanang District people about priority needs, the District Development Director and District Planning Officer reported that "roads are no problem in Hanang," the main roads being national trunk roads. The Area Commissioner and CCM Chairman essentially agreed, but at the last minute (anticipating the loss of an important component of a district development project) listed several roads as needing upgrading, almost all of them village roads. It so happens that only one of these roads falls in a pilot-ward area (Madunga-Bashanet), and that one needs only a few short bridges and drifts. One district road which leads to one of the pilot wards (Singe to Gallapo) does need some heavy-equipment work done on it for perhaps three of its 10 miles, and Gallapo ward itself needs several drifts and bridges. Neither of these road projects is listed in the Project Paper. If this project is going to emphasize "integrated ward development," then these roads should take precedence over several of the roads that are listed in the paper. This points up the need again for the project not to get locked in to the project design paper.

There remain two other, even more important questions regarding the road component of this project: (1) the severely-deteriorated conditions of the regional and district roads in Hanang this year as a result of the heavy rains, and (2) the question of developing roads versus developing a capability to build/maintain roads. As one Division-level politician noted, "What is the sense of improving the Madunga-Bashanet road (listed as a "first priority" village road) when lorries refuse to come to Bashanet because the (district) road up the Rift Valley escarpment is in such poor condition." The project may very well end up having to do a lot of work on district and regional roads. It would seem to me that the "growth" versus "development" argument, as regards road work, is a spurious one in both Mbulu and Hanang Districts. Certainly, the local Com-works departments can be "up-graded" at the same time (or immediately following) the improvement of the roads that this project undertakes; in some of the cases, the condition of the roads is such that major work must be done before any development in other sectors can take place.

3. Having helped design this project, I am very partial to the development strategy, the coordination of research, planning, and implementation, and the phasing model employed. However, I would argue that the Project Paper, regardless of how good it might be, loses much of its importance once the project is finally approved and the contractor selected. After that the direction/success of the project is much more dependent upon the personnel selected (especially the Regional Planner/Economist and three Rural Development Specialists), the quality of their interactions with regional- and district-level civil servants and politicians, the extent to which they have internalized the philosophy underlying the project, and the degree to which they see that philosophy as being capable of being operational once actual implementation begins.

4. This is an ambitious and, in many ways, an idealistic project. There are, however, two virtually "no-lose" components: water and roads. Village people will be involved (hopefully) in discussing the location of water points and (certainly) in maintaining the feeder roads, and the local Water and Comworks departments must develop other maintenance capabilities and be able to implement future similar projects, so there is a "development" component to both of these; but water and road projects are especially "growth" or infrastructure projects which require primarily money, machinery, and expertise. If this project, over a four-year period, does nothing more than upgrade several hundred miles of roads and bring a safe, permanent water supply to within half a mile of every household in 30 wards in these districts, it will be viewed as a major success by Tanzanians at all levels.

The more complex (and skeptics might add "no-win") components involve "development" (as opposed to merely "growth"), the process of facilitating change in agriculture and animal husbandry practices with the goal of increasing people's self-reliance, their incomes, their productivity, and improving their general social well-being. This project will provide money and some of the things money can buy, including advice, but Tanzanians for the most part will be implementing the livestock and agricultural development projects. There is almost an expectation amongst many government officials, that these departments will be/remain ineffectual in their dealings with village people. (As noted in the body of this report, one Tanzanian quoted the President as saying that agricultural production in this country would not decline at all if all agricultural staff were removed from the districts.) If these livestock and agricultural development programs have any measure of success (and they are central to this project), they will be seen by many as a "bonus."

The point about the level of effectiveness of the agricultural field staff is almost a moot point in Hanang, however, because there are already so few extension staff working in the pilot wards. To remedy this situation, the Project Paper calls for the training of villagers as para-professionals, known as Village Agricultural Leaders. Whatever the reputation of the existing District Livestock Development Office and the District Agricultural Development Office and the respective staffs, it must be recognized that these are the established, recognized organizations in the district for implementing programs in their areas. Care must be taken to make sure that the cadre of Village Agricultural Leaders and whatever staff is hired by the project (as data collectors, for example) are not perceived as threats or as a parallel, autonomous structure by the civil servants in these two offices. Whatever short-term advantages there might be to having control of local personnel and implementation during

the life of the project, no long-term purpose will be served by the project's creating its own separate bureaucracy.

In sum, all four central components of the Village Development Project -- water, roads, agricultural, and livestock -- are equally popular projects at the district level (as they should be because the Project Paper incorporates many of the ideas that the key civil servants, working in the district, included in their recent annual development plans). Acceptance of the specifics of the four components at the village level will be more uneven, not because livestock and agricultural development projects are unpopular, but because they are more difficult to implement.

5. There are at least four aspects of the Project Paper where the reception at the district level has been less than enthusiastic, where the premises on which the Village Development Project is based are not so popular.
 - a. Water Points and Priorities. The project design team and the district-level planners seem to look at water projects from different perspectives. The Tanzanian concern is first that villages have a year-round, permanent water supply within two to three miles of each household. If an irrigation furrow or marsh is located in a village, rather than concern themselves with protecting a water source or providing a more sanitary alternative, the Tanzanian planners turn to other villages where there is no water. Secondly, in several instances, where new pipelines are being laid in villages, very few water taps are provided and women still have to walk great distances for water. The Water Department's position is threefold: (1) water is closer to homes than it was before the pipeline was put in; (2) even the few water taps installed are often either left turned on or are broken by the users, and (3) more water taps can always be added at a later date. The American premise seems to be that all villages in the pilot wards should have safe, permanent water systems, regardless of the situation faced by people in other wards, and that all households should have close access to these water points.
 - b. Tractors vs. Ox Plows. The Project Paper argues that the mechanization of agriculture leaves areas dependent upon too many outside forces (viz., the availability of spare parts and the price of diesel fuel), that the cost of tractor cultivation is too high for farmers, and that small-scale farming does not require the labor-saving methods that tractors admittedly bring to agricultural production. In place of tractors, the Project Paper calls for the use of more "appropriate technologies," specifically in the case of farming, the introduction of ox plows and other ox-drawn equipment. President Nyerere's statements on the development of peasant agriculture certainly support this position, and it is the position of the district development team in neighboring Mbulu District. In Hanang District, however, the position of the senior civil servants, last year and this, has been that the district is "too advanced" for ox plows, and that countries, such as the Soviet Union, where the most impressive gains have been made in agricultural production, the emphasis has been on the mechanization of agriculture. Alternatively, these officials propose that USAID purchase large numbers of tractors for the District Agricultural Office to rent out to villages -- or that means be developed whereby village cooperatives

could more readily purchase their own tractors. The leadership of many Hanang villages share this bias against ox plows, as is noted in the body of this report.

- c. Experts. The Project Paper calls for one expatriate Rural Development Specialist to be attached to the District Planning Office at the district headquarters, that perhaps an American involved with the road construction or with Comworks would be based in the district as well, and that all other experts (Americans whose fields are agriculture economics, hydrology, agriculture, livestock development, range management, etc.) would be based at the regional headquarters and be responsible for all three districts in the project area. One of the concerns, on the part of the design team, was that a town like Babati or Mbulu not be "overrun" by resident (and conspicuous) expatriates. The most senior civil servant in Babati, at the time this research was done, argued that, on the contrary, the district needed as many resident experts as it could get.
- d. Research. Phase I of the Village Development Project, lasting one year, is especially a planning and research year, during which time an information system will be established so as to collect, analyze, and evaluate data on traditional farming systems and to monitor initiatives in agricultural and livestock development during the life of this project. The senior civil servant in Hanang responded to this research emphasis by saying:

The day is long past when this country can afford to have a Garry Thomas or even a Tanzanian sit in a village for two years doing research. What can the farmer tell us that we do not already know? We know our needs. We need development projects: roads, water, tractors, crop diversification, dairy cattle, veterinary centers, better housing for our peasants, schools. Do we need research to tell us these things? We need money and equipment and experts, and then we will get development.

This might be a country where the President and Prime Minister berate civil servants and politicians for "not listening to the peasants," the above-quoted official articulates a simplistic view of the development process, and he shows little understanding of what can be learned from village-level research, but this is a viewpoint that is widely shared in Tanzania. The position is not only one of disdain for what the "peasant" can teach, but it is also a statement that collecting village-level data is too time-consuming a process for a country that "must run while others (can afford to) walk." I am quite sure that these officials would be unwilling to accept the distinction between "growth" and "development," that there can be "growth without development."

6. There has been some question as to whether the Village Development Project pays sufficient attention to the status of women or whether this project, with its emphasis upon infrastructure (roads and water, especially) and livestock and agricultural development, will have much of an impact upon the quality of women's lives. Implicit in this criticism is the idea that perhaps more attention should have been paid to maternal-child health programs or to nutrition or to preparing

women for non-traditional careers in the project area. In fact, such criticism represents an extremely stereotyped view of what the woman's world is in rural Tanzania, and is very ethnocentric. Women are not "homemakers" in Tanzania, their world is not solely one of child care and food preparation. Women in Hanang District are farmers, and if, for example, they will not necessarily profit from the substitution of serena for maize on the acreage that goes with their household, they can profit directly from the communal fields that women's groups in some villages do plant. They will also benefit directly from the introduction of improved dairy cattle, in that they milk the cattle and control the distribution of milk. There is a farmer training component in this project, and it is very likely that a large number of women will be selected for the role of Village Agricultural Leader. The improvement of local roads helps anyone who travels them, uses imported agricultural inputs, or sells surpluses. And water projects directly help women, because it is they who must draw and carry the water.

While it would be an exaggeration to say that the Village Development Project is especially a women's project, in that there are spheres that men control (such as the sale of cash crops, surpluses, and improved cattle), an integrated rural development project, such as this, will have a positive effect on women's lives, if only because "women's place" in Tanzania includes so many sectors. This project is not male-oriented in design; care needs to be taken that it not become male-oriented in its implementation, especially in the agricultural development sector of the project. Probably, the easiest ways for women farmers to benefit as much as men in this sector is for women to be chosen at the village level as Village Agricultural Leaders and at the district level as agricultural extension staff.

7. The District Livestock Office has divided the district into zones where the emphasis will be on introducing either improved dairy stock or beef stock. More research is necessary on this point, but it is probable that the people living in both of these zones all prize cattle especially for their milk production, and do not place nearly as much emphasis on how quickly an animal matures to a target body weight. The people in Nangwa village in Katesh Ward, for example, do not have the pasture area for large numbers of improved beef cattle, but because most of the village falls in a semi-arid ecological zone, it is targeted for the introduction of just this kind of stock. If improved dairy cattle were to be introduced to a village such as Nangwa, the risk is that, on the one hand, they would need to graze too large an area, thereby reducing their milk production; on the other hand, stall feeding is probably out of the question because the rainfall is usually inadequate to support the necessary grass production. Assuming that dairy cattle cannot be stall-fed on serena, the obvious answer is for Nangwa's farmers to raise limited numbers of beef cattle, a maximum amount of serena, and use the money from the sale of these two products to buy milk. But even Babati imports tens of gallons of reconstituted powdered milk each day from Arusha, and Hanang District is many years away from producing milk surpluses for purchase in its semi-arid areas. At this point, it is also questionable as to whether Nangwa's farmers would be willing to spend their money on imported milk, anyway. So the problem remains: how can the Village Development Project formulate an acceptable, feasible strategy for farmers in semi-arid ecological zones to meet what they see as a priority need: increased milk production?

8. The Tanzanian government has distributed two improved varieties of sorghum seed in Hanang District, lulu and serena, both of which are highly tolerant of the effects of drought conditions. Lulu is unpopular amongst the farmers because it is devoured by the birds that swarm over the crop at harvest time. Serena has other kinds of problems, discussed at length in this paper, but has much more promise. Head smut disease can be eliminated with a better choice of seed or with seed dressing; and as people (in Gichamedea, for example) realize that birds are not attracted to the crop, they might be more willing to plant it than the traditional sorghum and millet. But the real problem with serena is its taste. At present, it is grown only as a cash crop, although the district's leaders insist that it will be eaten during the next drought. It is unlikely that serena will be planted in any fields where maize is presently grown, however, until people either acquire a taste for it or place less faith in maize as their main staple due to crop failure. Serena even has difficulty competing with the traditional sorghum and millet, because these grains are highly desired for the brewing of local beers, in urban markets as well as in the villages, and beer, like porridge, made from serena is bitter. Although the official government price for bullrush millet, traditional sorghum, and serena is the same (one shilling a kilogram), the former two command a "free market" (but illicit) price of two to three times the official price -- while serena, of course, would have a lower price on the open market. Despite all of these drawbacks, serena will be grown in great quantities in Hanang District, because it does have a combination of advantages over other crops: it has a shorter growing season; it is an uncomplicated crop; it requires no fertilizer; it is unattractive to the birds; it is fairly disease resistant; there are already, in 1978, ample examples of its doing well; it is drought tolerant; and, most of all, it can be considered a cash crop. (There would be much more resistance to planting serena, obviously, if it were being introduced solely as a food crop.)
9. In attempting to project what the consequences of introducing serena on a large scale might be, two other points need to be made. First of all, there is the question of where do those farmers plant it who either do not have access to additional land or, if they do have more land, do not have the access to either an ox plow or tractor. If three acres is as much land as any one family can put into production with a hand hoe, for what crop do they substitute serena? If the introduction of serena is coupled with a program for increasing acreage under production through the introduction of more and/or better ox plows, where do the farmers, in a number of villages (Nangwa, Mapea, and Gichamedea, for example) get more land? Secondly, the obvious social consequence of a successful introduction of serena is that some farmers will be far more successful serena growers than others, and individual farmer incomes will increase differentially. What is unknown is who exactly in each village will be the best serena growers, what they will do to improve their life chances and at what cost to their less ambitious neighbors, and what a village will look like socially, five years after the successful introduction of a differentially-accepted, successful cash crop. A rich Barabaig pastoralist might put the new wealth into the purchase of new cattle, a culturally-sanctioned decision and behavior; a wealthy Gallapo farmer might put the new wealth into a maize mill, an action which would meet the newly-perceived needs of his village, but will establish a new kind of power relationship between him and his neighbors.

Tanzania has an official social and economic philosophy which equates socialism with the elimination of income extremes (and even differences); socialism, theoretically, is not merely an egalitarian attitude of mind. At this time, when very little village land is in communal production and ujamaa villages are merely resettled villages rather than socialist villages, agricultural development will certainly lead to increased income differential in the rural areas and the prospect of greater social class stratification, as well. The government's choice then is to attempt to equalize rural incomes either through (1) increasing the communal sector and decreasing the private sector of each village, a step which, experience has shown, leads to a decline in agricultural production, or (2) increasing the level and efficiency of rural tax collection, a policy which is almost impossible to implement in an equitable way. The most likely choice is yet a third option, which is to extend present policy and to ignore both rural income extremes and the excesses of rural entrepreneurs, because the rural capitalist class is a productive class and the country is more pragmatic than it is concerned about pragmatism's contradictions.

10. Those villages which are already the most productive and most cash-oriented will be those most responsive to change initiatives; these would include all the villages in Gallapo Ward and the villages of Nangwa and Jorodam (and possibly Katesh and Wareta) in Katesh Ward. Farmers in these villages will be well enough off to risk change, and they have certain cultural features, already discussed, which predispose them to attempt to maximize in non-traditional ways. The least responsive villages are likely to be the most homogeneous and the least agriculturally productive; these would include the villages of Mogitu and Dirmat-Nyasoned in Katesh Ward and the three villages in Madunga Ward. There are some excellent government leaders in these areas at the ward and/or village level, but poorer farmers cannot abandon easily the logic of their traditional technologies and, as mentioned in the report, the rich cattle herders in the southern parts of Katesh Ward will be most interested in investing new wealth in old ways. Magugu Ward is less easy to predict at a ward or whole-village level, because its population is so much more heterogeneous and its history is so peculiar to that area. The safest prediction is that the acceptance of or resistance to change will be much more uneven in Magugu's villages than in the other villages, because of the wider range of peoples, its more urban or "quasi-urban" nature, and its seemingly more varied world views and values.

APPENDIX A: DISTRICT POPULATION FIGURES BY DIVISION, WARD, AND VILLAGE

<u>Division</u>	<u>Ward</u>	<u>Village</u>	<u>Households</u>	<u>Population</u>	
GOROWA	Kiru	Kiru	112	860	
		Erri	464	2,036	
		Kirundogo	514	3,992	
		Kirudick	188	1,512	
		Imbilili	300	1,109	
		Danghalloy	420	2,100	
		Kiongozi	189	800	
		Malangi	263	1,036	
		Kiruroma	230	920	
		Ward Totals	2,680	14,365	
		Mamire	Mamire	498	2,540
			Mwikansi	185	925
			Endagile	142	710
			Chemchem	104	520
			Endakiso	382	2,325
			Ward Totals	1,311	7,020
		Gallapo	Ayamango	234	1,108
			Giyedamar	203	891
			Qash	384	1,500
			Majengo	199	1,095
			Halla	277	1,200
			Tsamasi	302	1,470
			Gallapo	208	1,040
			Orng'adida	301	1,505
			Ward Totals	2,108	9,809
		Bonga	Ayasanda	343	1,837
			Endamanachan	451	1,755
			Bonga	349	1,745
			Ward Totals	1,143	5,337
		Gidas	Bubu	246	1,235
			Gidabaghai	230	1,150
			Boay	237	1,185
			Gidas	545	2,725
	Gijedaboshka		264	1,232	
		Ward Totals	1,522	7,527	
	Riroda	Sigino	347	1,885	
		Duru	336	1,580	
		Endabeck	491	2,355	
		Riroda	405	2,025	
		Nakwa	292	1,460	
		Ward Totals	1,871	9,305	

APPENDIX A (continued)

<u>Division</u>	<u>Ward</u>	<u>Village</u>	<u>Households</u>	<u>Population</u>	
GOROWA (cont.)	Singe	Singe	324	1,688	
		Maisaka	634	2,798	
		Nangara	385	1,925	
		Himiti	191	955	
		Managha	150	900	
		Ward Totals	1,684	8,266	
	Babati	Babati	1,730	9,411	
		Ward Total	1,730	9,411	
	Division Totals			14,049	71,040
	BARABAIG	Masakta	Masakta	422	2,110
			Masagaroda	441	2,205
			Ward Totals	863	4,315
		Endasak	Endasak	320	1,600
Endasiwold			255	1,775	
Mara			185	925	
Mtaskron			186	930	
Endagau			487	2,495	
Getaghul			324	1,296	
Ward Totals			1,502	9,021	
Gitting		Gitting	581	2,324	
		Barjomot	230	937	
		Ward Totals	811	3,261	
Gidahabiek		Hidet	182	910	
		Gidahabiek	256	1,325	
		Ward Totals	438	2,235	
Sirop		Sirop	310	1,550	
		Matangarimo	214	1,070	
		Simbay	270	1,350	
		Ward Totals	794	3,970	
Katesh	Dirmat-Nyasoned				
	Nangwa	443	1,848		
	Mogitu	174	870		
	Katesh	314	1,520		
	Jorodam	374	1,496		
	Wareta	260	1,300		
Ward Totals	1,565	7,034			

APPENDIX A (continued)

<u>Division</u>	<u>Ward</u>	<u>Village</u>	<u>Households</u>	<u>Population</u>	
BARABAIG (cont.)	Gendabi	Gendabi	111	555	
		Dawar	209	1,045	
		Ward Totals	320	1,600	
	Bassodesh	Bassodesh	259	1,295	
		Garawaj	202	1,010	
		Ward Totals	461	2,305	
	Bassotu	Hirbadaw	322	1,610	
		Bassotu	234	1,302	
		Mulbadow	276	1,380	
		Gawidu	141	705	
		Dangaida	211	1,055	
		Ward Totals	1,184	6,052	
	Balangdalu	Balangdalu	79	450	
		Ward Total	79	450	
	Gehandü	Gehandü	161	805	
		Nurumba	242	1,210	
		Ward Totals	403	2,015	
	Division Totals			7,693	42,258
	BASHANET	Ufana	Ufana	344	1,720
			Luxmanda	125	625
Setchet			189	1,445	
Ward Totals			658	3,790	
Madunga		Utuari	237	1,422	
		Madunga Kati	242	1,452	
		Qameyu	243	1,458	
		Ward Totals	922	4,332	
Bashanet		Endamanang	177	977	
		Guse	201	1,206	
		Nar	257	1,542	
		Bashanet	413	2,478	
		Ward Totals	1,048	6,203	
Dabil		Seloto	574	2,870	
		Dabil	363	1,865	
		Mandi	350	1,820	
		Sabilo	188	940	
		Ward Totals	1,475	7,495	

APPENDIX A (continued)

<u>Division</u>	<u>Ward</u>	<u>Village</u>	<u>Households</u>	<u>Population</u>
BASHANET (cont.)	Dareda	Bermi	290	1,450
		Dareda	590	1,610
		Dohom	294	1,470
		Gajal	373	1,865
		Managha	216	1,030
		Arri	225	1,325
		Sharmo	160	800
		Ward Totals	2,148	9,550
		Division Totals	6,551	31,370
MBUGWE	Nkaiti	Nkaiti		
		Minjingu	339	1,356
		Vilima Vitatu	284	1,420
		Ward Totals	623	2,776
	Mwada	Mwada	336	1,444
		Sangaiwe	310	1,555
		Kisangaji	386	1,192
		Ward Totals	1,032	2,891
	Magara	Magara	224	1,120
		Moyamayoka	476	2,360
		Ward Totals	700	3,480
	Magugu	Magugu	370	2,070
		Mapea	194	1,270
		Gichamedia	222	1,110
		Maswale	192	960
		Sarame	232	1,160
		Matufa	259	1,295
		Mawemairo	309	1,545
		Ward Totals	1,568	9,410
			Division Totals	3,923
		District Totals	32,216	163,225

Source: District Planning Office, Hanan.

N.B. In a number of cases (and perhaps in most), these figures are clearly estimates, calculated on the basis of reported households per village times an average household size. For Masakta Ward in Barabaig Division, for example, the number of households was multiplied by the number five, in Madunga Ward in Bashanet by the number six. It is conceivable that the population given for the district is short by as much as 40,000 to 50,000 people, and there might well be more than 111 villages. The Population Census of 1978, taken in August, will provide the best possible count and base for

APPENDIX B

Kumb. Na: VY/1638/A.

HESABU ZA MIFUGO WILAYA YA YANAM - 1977

NANANG DISTRICT LIVESTOCK CENSUS - 1977

TARAFU Division	KATA Ward	NG'OMBE Cattle	MBUZI Goats	KONDOO Sheep	PUNDA Donkeys	NGURUWE Pigs	JUKU Chickens	BATA Ducks	SUNGURA Rabbits	IBWA Dogs	PAKA Cats
Barbaig	Katesh	37172	19891	10726	1722	87	7853	16	-	518	782
	Endesak	22792	13991	9260	861	410	4135	-	-	923	656
	G/babiek	15472	7477	4621	387	17	1347	-	-	307	205
	Masakta	22539	5249	2689	204	2	1224	-	-	73	56
	Sirop	13820	6781	2986	397	-	2670	-	-	197	320
	Gitting	15271	6897	3796	570	297	3686	-	-	493	204
	B/lalu	12059	5481	2942	820	-	1522	-	-	583	278
	Bassodesh	14582	7885	1921	559	-	4590	-	-	222	536
	Gendabi	11188	8801	5113	1565	18	2301	-	-	474	447
	Gchandu	8676	5816	2930	416	-	2104	-	-	396	349
	Bassuto	29715	8358	4044	1119	47	2263	-	-	161	289
Jumla Total		203,290	96627	50328	8620	878	33395	16	-	4347	4122
Bashanet	Dareda	14342	8647	3781	531	262	7652	125	-	1128	1393
	Dabil	16985	10542	5340	1413	248	6732	8	-	397	115
	Bashanet	16396	8090	8456	1085	137	7387	16	-	545	787
	Ufana	13120	3324	4741	742	116	3992	-	-	252	446
	Madunga	13064	3078	5933	598	242	6286	29	-	344	602
Jumla Total	7390	73907	40179	28251	4369	1005	32049	178	-	2666	3543
Gorowa	Gallapo	13042	9355	3867	446	24	6662	125	-	880	588
	Gidas	16847	5775	3019	243	41	4294	25	7	646	655
	Mamire	10492	8487	3678	345	-	4938	43	-	292	439
	Bonga	12811	3520	1805	105	107	6561	-	-	784	102
	Riroda	30628	11879	5172	710	14	6794	-	4	898	1395
	Kiru	15310	9724	4680	401	27	6539	120	-	498	729
	Singe	7976	5824	4146	87	-	6320	107	10	703	730
	Babati	4422	3156	1291	71	72	2340	123	13	145	234
Jumla Total		111534	57720	27664	2468	285	44438	543	34	4846	4878
Mbugwe	Mwanda	6283	3454	2348	80	-	1097	24	-	30	144
	Mkaiti	4175	3008	2617	119	-	-	-	-	85	98
	Mogugu	5019	5610	1908	-	-	-	-	-	-	-
	Magara	5401	4260	2324	-	256	-	-	-	-	-
Jumla Total		20878	6338	9257	205	256	1097	24	-	115	242
Jumla Kuu Grand Total		409,69	200,804	115,500	15,662	2,429	110,979	761	34	11,974	12,785