DISASTER AREA ASSESSMENT
FOOD AND NUTRITION SURVEILLANCE PROGRAMME
RELIEF AND REHABILITATION COMMISSION

FOOD SHORTAGES SURVEY REPORT ON WELLO
(LASTA, WADLA DELANTA AND WEREHIMENO AWRAJAS)

ADDIS ABEBA, ETHIOPIA
MAY, 1978

5'63
H

DISASTER AREA ASSESSMENT
FOOD AND NUTRITION SURVEILLANCE PROGRAMME
RELIEF AND REHABILITATION COMMISSION

FOOD SHORTAGES SURVEY REPORT ON ...ELLO-
(LASTA, MADLA DELA...TA AND WERENTINENO ...RIKA)

...DDIS ABEBA, ETHIOPIA
MAY, 1978

SUMMARY

The last favourable harvest in the three Awrajas of Lasta, Wadla Delanta and Werehimeno was in 1967 Eth. C. (1974/75) main harvest. Although the 1968 Eth. C. (1975/76) main harvest was a failure it was not felt very much because of the remaining stock from the previous year. However, the deficit of the 1969 Eth. C. (1976/77) production aggravated the situation.

Most of the production of the crops grown during the 1969/70 Eth.C. (1977/78) main harvest were destroyed in all the Woredas of Wadla Delanta, Werehimeno and Lasta Awrajas. In particular barley, wheat and teff, the most important food crops, were seriously affected. At least 75% of the production of the major crops was destroyed in most of the woredas.

Pest, particularly Ephidis, was the main cause of destruction. Other causes were frost, rust, and heavy and inadequate rain. Barley was also affected by a fungus - Ergot, the consumption of which poisons the human and livestock population.

Prices of grain for the year 1970 Eth.C. (1977/78) are high as compared to the normal years. But there has been no significant difference between this year's market price and last year's because prices last year were already very high. Prices of livestock, however, are low for this year compared to last year's. Shoats (sheep and goats) and even cattle were sold for lower prices. It should be noted that this is a typical characteristic of a food shortage situation.

The food shortages in the three awrajas have made people much more susceptible to diseases. Epidemics of typhus and relapsing fever were reported. An outbreak of ergotism, resulting from consumption of ergotised grain, was also reported and further investigation is being conducted

The overall findings of the nutritional status analysis did not indicate the existence of a large scale malnourished children. However, when doing the analysis in a disaggregated manner and from the anecdotal findings, there are some pocket areas where even kwashiokor and marasmus cases have been found.

The food shortages in the surveyed and adjacent awrajas have affected over half a million people. To immediately alleviate the problems of the people, and to initiate and implement projects which can mitigate or, if possible, to prevent future disasters needs a radical and an all out integrated effort by all concerned agencies. Such an action would probably call for the renewal of the disaster area status declared about five years ago.

TABLE OF CONTENTS

PAGE

SUMMARY i

I. INTRODUCTION 1

II. OBJECTIVES OF SURVEY 4

III. SELECTED FINDINGS 4

1) Demographic Characteristics 4
2) Rainfall Condition 10
3) Crop Performance 12
4) Livestock Status 20
5) Market Flows and Prices 22
6) Health and Nutritional Status 26

IV. RECOMMENDATIONS 32

Annex I - Site Selection
Annex II - Methodology
Annex III - Map of Surveyed Awrajas
Annex IV - List of Selected Sites

. INTRODUCTION

A close correlation exists between a country's level of socio-economic development and the community's ability to cope with disaster. Frequent and cyclical emergencies can cause in particular a developing country's socio-economic state to regress rather than grow. Thus disasters are a development problem of major significance. They require actions at the national level, supplemented by local efforts, and the formulation of strategies of prevention or mitigation. In less developed countries, the actions should include not only relief and rehabilitation efforts to restore an area to its pre-disaster level but also to provide for accelerated development. This point should be underscored because the pre-disaster situation in almost all developing countries including Ethiopia, is not satisfactory. In many cases the pre-disaster balance between food supply and food requirements is extremely fragile and tenacious. If actions are aimed at restoring the situation to its pre-disaster status, they inevitably leave the population in a condition of pre-disaster vulnerability. Thus, when the population is rehabilitated to its pre-disaster situation the more important task of initiating projects to develop the affected region should begin. The projects should be integrated and complementary and should enable the people to up-grade the quality of their lives. It is in this light that unfavourable conditions which could result in disaster should be viewed in Ethiopia.

Five main harvest seasons have now passed since the drought in Wello and Tigrai, which claimed the lives of hundreds of thousands of human and livestock population, was made public. But now again the scepter of crop production deficit is knocking at the doors of a number of regions including Wello and Tigrai. In this report only the Wello situation will be presented; the other affected regions are treated in the recently issued "Meher" Synoptic Report (April, 1978) and in subsequent ad-hoc survey reports.

The forecasts received through the Food and Nutrition Surveillance Programme (FNSP) infra-structure, including the Disaster Area Assessment (DAA) Unit, have indicated areas of production deficits. The findings have been presented in FNSP publications such as Food Supply System Reports, "Belg" Synoptic Report (May, 1977), The Rains of October: A Special Report (November, 1977) and Preliminary Report On Wello Survey (January, 1977).

Other sources such as the Relief and Rehabilitation Commission Branch Offices and Administration Offices at different levels have also reported the existence of food shortages. The forecasts and the reports have been consistent in signaling Western Wello as the most affected area. Hence, in order to assess the magnitude of the problem, the DAA Unit launched a survey in Wello on January 18, 1978 with two teams.

Wello has twelve awrajas but the survey covered only the three western awrajas of Lasta, Wadla Delanta and Werehimeno. Western Wello is part of the plateau core of the North Western Massif with altitudes extending from 2500 meters in the valleys to over 4200 meters on the tops of the mountains. The plateau is caved into deeply dissected landscapes forming rugged relief and precipice slopes. The uncovered fertile soil of the unteraced slopes is washed down by the torrential rain and transported by the numerous streams to the Abay (Nile) and Tekeze Rivers. The peasant clearing the vegetation from the hills and mountains, creeping towards the top as the years passby, scratches the soil and harvests some grain. The land becomes a victim of surface and gully erosion and rocky land replaces the top fertile soil.

The rugged topography of the area dictates the settlements to be small and scattered clinging to the sides of the slopes. The hamlets are separated from each other by deep gullys and gorges. Obviously, in these awrajas the communication infrastructure is, to say the least, inadequate and a large part of the area is not easily accessible.

The inaccessibility of many sites makes the application of statistical sampling procedure in the study of problems such as food shortages very difficult bordering on the impossible or at best extremely costly. But there were indications that the more inaccessible areas might be comparatively more seriously affected than the others. Hence, in order to assess the food supply situation at a woreda level all the eight woredas in the three awrajas were included in the sample; and using a strictly random sampling procedure, a total of 24 Farmer's Associations were selected and helicopter service provided in studying the inaccessible areas. All the Farmer's Associations in the sample were visited and studied, except one which was located at an altitude too high for the helicopter and was then replaced by an adjacent site.

This report presents the findings of the survey conducted in Lasta, Wadla Delanta and Werehimeno Awrajas. However, based on the reports received from FNSP permanent field agents and from Wello Branch Office of the Relief and Rehabilitation Commission, as well as from discussions with Administration and other Government Offices in Wello, Wag Awraja is also considered to be affected as much as the surveyed awrajas. In addition, Borena Awraja, particularly the northern part, and Dessie Zuria Awraja are also likely to be affected, although to a lesser extent.

. OBJECTIVES OF SURVEY

The primary objectives of the survey were:-

a) To assess the magnitude of the "Meher" (Main Season) crop production deficit and the prospects for the 1978 "Belg" (short rainy season) production.

b) To assess the situation of the human population, livestock, rainfall, pasture and market flows and prices.

c) To forecast the effects of the crop failure on the food supply and human population.

d) To provide updated information to the Relief and Rehabilitation Commission on which management decisions related to urgent food aid and rehabilitation measures can be based to alleviate the situation.

Further, as a by-product, to provide pertinent and current information to other government agencies such as the Ministry of Agriculture and Settlement, Health, Commerce and Tourism, and Transport and Communication in the hope that the information will facilitate the formulation of responsive decisions.

I. SELECTED FINDINGS

1. Demographic Characteristics

1.1 Population Size Estimates

A census has yet to be conducted in Ethiopia. Consequently in any exercise of population estimates one has to rely on whatever sources are available. In this report the population size as presented by both the Administration Offices and the Central Statistics Office (CSO) are used. The figures of the Administration Office are based on the information provided by Farmer's Association and hence excludes the urban population. The CSO figures, however, are based on the results of the National Sample Surveys, First Round (1964-1967) and Second Round (1968-1971) which also did not include estimate of the urban population. To get the current awraja population projections a growth rate of 2.1% per year was applied to the CSO's 1970 rural

population figures. These estimates will vary in their reliability accroding to how well a particular awraja does or does not conform with the following assumptions:

a) the same rate of growth should be applied to all awrajas throughout the country, and

b) the rate of growth is constant over the projection period.

Even given these obviously questionable assumptions the CSO figures are considered the best available estimates and will be used as the basis for subsequent computations in this report.

The population size of the three surveyed awrajas, as indicated below,

Awraja	Administration Offices	Central Statistical Office (1977)
Lasta	325,138	277,600
Wadla Delanta	320,680	186,000
Werehimeno	329,225	241,000
TOTAL	975,043	704,600

is almost 980,000 according to the Administration Offices. But based on CSO's studies it is about 700,000. The figures given by the Administration Offices are consistently above those of CSO. Hence the development of a correction factor was necessitated. Taking the total population of the three awrajas, the ratio of CSO's estimate to the Administration Offices' figures is 0.72. This means that for every hundred people given by the Administrators CSO's figure will be only 72. Assuming that the bias of the interviewees in this survey will be of the same level as those of the Administrators, this correction factor will be used throughout the report.

1.2 Migration

The active labour force from deficit areas, in order to augment their purchasing power, usually migrate to areas where they can find temporary employment and return to their usual residence after accumulating some cash. However, if the migration follows an unusual pattern and particularly if all the members of households are migrating,

then it could indicate that the impact of food shortage has crossed the tolerance threshold for those families and possibly many others in the area.

In this survey, as indicated in table 1, nine (or 37.5%) of the

Table 1: Population Size Status by Awraja, March, 1978

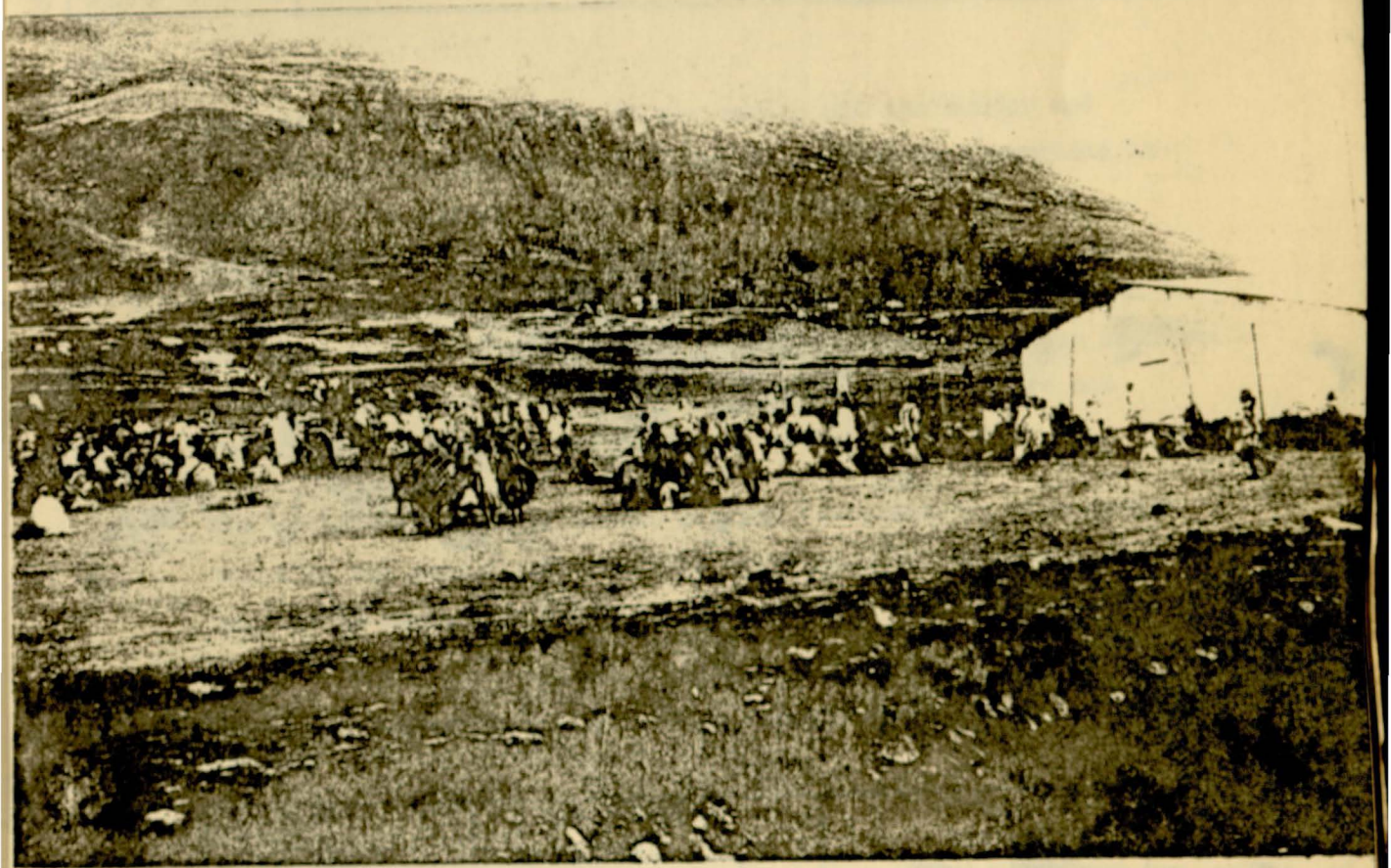
Awraja	Number of Farmer's Association Considered	Population Size Status in %		
		Normal	Below normal	Above normal
Lasta	11	45.4	54.6	-
Wadla Delanta	7	28.6	71.4	-
Werehimeno	6	33.3	66.7	-
ALL	24	37.5	62.5	-

Farmer's Associations studied reported that they had normal population size for that time of the year. However, 15 (or 62.5%) of the sites reported that the population size is below normal. Invariably, in the three awrajas the cause for the reduction of the population was reported to be migration due to food shortages. In 1977 the people migrated to Awssa (particularly to Assaita and Dubti), Kalu (particularly to Cheffa), Raya and Kobo and Yeju Awraja as well as to Dessie. According to the crop production forecast these awrajas are generally judged to be in a favourable condition agriculturally and labour was generally in high demand. The migrants, it was reported, have also gone as far as Addis Abeba and Wellega Administrative Region. In the majority of cases it is reported that the people had closed their huts and the entire family had migrated. The Relief and Rehabilitation Commission is collaborating with the Administration Offices in returning some of the migrants to their usual place of residence and supplying them with relief grain.

It should be noted here that since the rains have not yet appeared on time, the 1978 Belg production prospects are not favourable. This plight might force more people to migrate unless concerted efforts are taken to mitigate the impact of the current food shortage and the impending production deficits.

1.3 Population Needing Assistance

One of the most difficult kinds of information to collect is the number of people needing assistance, because the interviewee almost always tends to over-estimate the figure. This tendency coupled with the lack of accurate population figures dictates the application of a number of unacceptable assumptions in order to arrive at a reliable estimate of the number of people in need of food aid. Hence, it is expedient to treat the estimates given here as orders of magnitude only.



People are coming in increasing numbers to the RRC distribution centres, often walking for days to be provided with their single hope for survival. This is a picture of the distribution center and the people getting relief grain at Muja (Lasta Awraja).

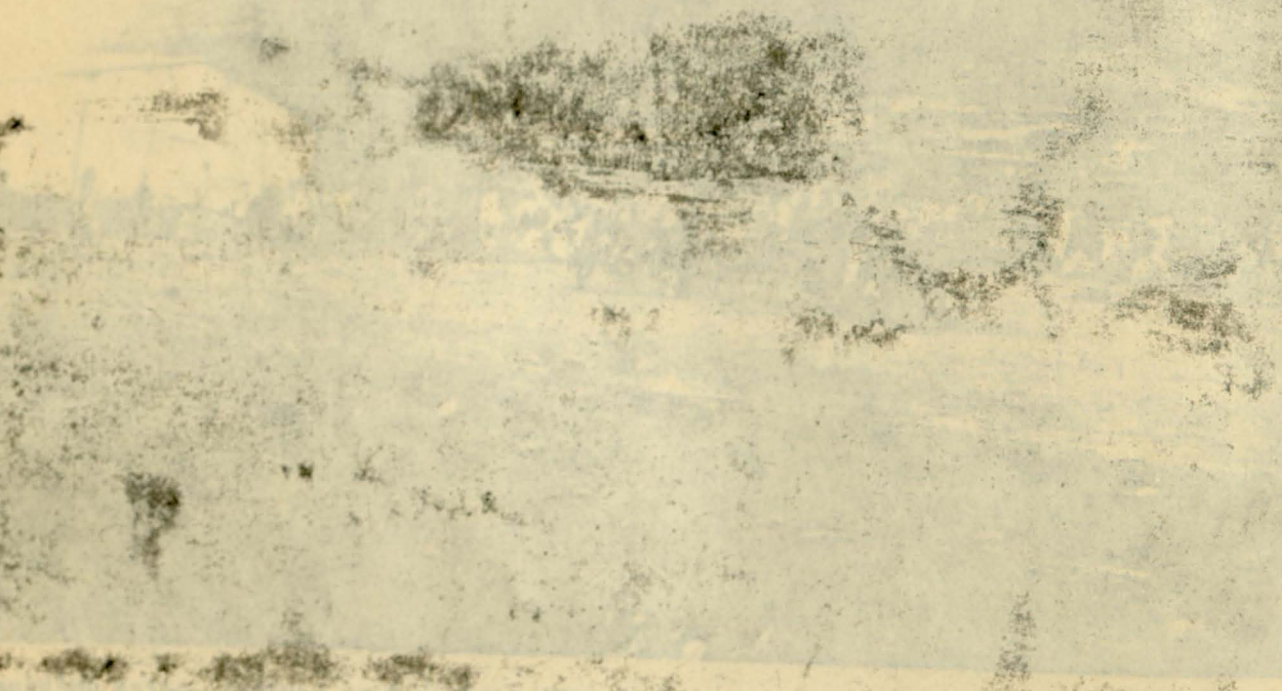


Table 2: People in the Sample and Number and Percentage of People Needing Assistance by Awraja.

Awraja	Total in Sample	People Needing Assistance	
		Number	Percent
Lasta	16 095	14 145	54.2
Wadla Delanta	22 310	15 104	67.7
Werehimeno	46 985	35 991	76.6

The total number of people in the sample and the number and percentage of people in need of any assistance is summarized in Table 2. The survey indicates that Werehimeno is the most seriously affected, where almost 77% of the population is in need of food assistance. In a normal year the Belg production is expected to cover the remaining lean months until the main harvest. However, since the prospects for the Belg production are not favourable, external intervention is needed.

The estimated number of people needing assistance in each awraja based on the sample and using the correction factor developed earlier is summarized below in table 3. The corrected estimate

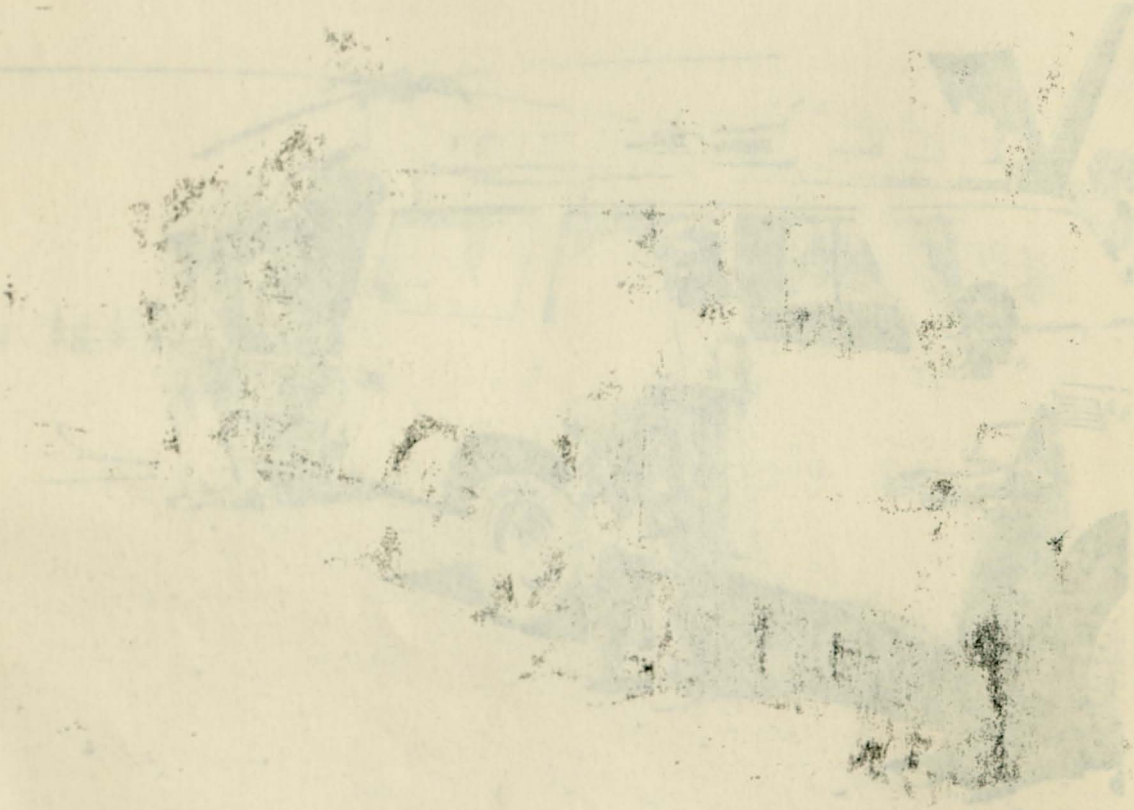
Table 3: Estimate Number of People Needing Assistance by Awraja, March, 1978

Awraja	Enterviewees Estimate	Corrected Estimate
Lasta	176 224	126 881
Wadla Delanta	217 100	156 312
Werehimeno	252 186	181 574
TOTAL	645 510	464 767

of the number of people in need of assistance in the three surveyed awrajas, is 464, 767 or 70.0% of the total population. However, as indicated earlier, Wag Awraja, with a total

population of 163,000, is also considered to be likely affected to the same extent as the surveyed awrajas. The potentially affected population in this awraja could reach as high as 100,000. To this should also be added 19,000 from Dessie Zuria and 16,000 from Borena Awraja which are also thought to be affected. In the aggregate, therefore, the potentially affected population in Wello Administrative Region could reach as high as 600,000. Needless to say, this is a staggering figure and if the effects of the crop failure are to be mitigated the problem needs an integrated and concerted effort from the concerned agencies.

Distribution centers located near any kind of road can be stocked easily with grain and food supplements. In this part of the country, that will not be close enough for many and the only alternative may be the air-lift. Survey helicopter being loaded with supplementary food for Waro (Meket Woreda, Lasta Awraja).



. Rainfall Condition

The Belg rains normally start in February and end in the month of May.

In February, 1977 the western areas of Wello including Lasta, Wadla Delanta and Werehimeno received rainfall amounts characterized by below or much below normal status. This deficit coupled with a late onset may have caused a delay in cultivation and sowing. In March the

Plowing a field of rocks, actually a dry river bed, while waiting for the overdue belg (small) rains, may represent this youngsters only hope of additional food before main harvest, some 7 to 8 months away.

conditions did not change much, except in Lasta where an amount normal for the period was received towards the middle of the month. Since much of the sowing occurs in this month, the observed deficit may have resulted in a great reduction of areas put to crops and a considerable crop failure. During April these awrajas again experienced a rainfall amount status of below normal or much below normal. These deficits were more severe and wide-spread than those observed in March. Although a rainfall deficit is not viewed as serious for the germination stage, the continuing failure of rainfall had a significant effect on the belg production.

Unlike in the other months, in May the three awrajas were characterized by a normal amount of rainfall. Although these rains were welcomed at the time of flowering, it was questionable as to how much recovery could take place from the previous deficits.

It is hence concluded that since the 1977 belg rain was not adequate, deficit in the production of crops was apparent in the three awrajas.

The main season rainfall was reported to be excessive except in June and September. During the first week of June a rainfall deficit was observed, however, normal amounts were received in the rest of June. The deficit experienced during this period is welcomed for belg crops. On the other hand, it might have caused a delay in main season cultivation or sowing. Excessive rains and occasional hailstorms were observed in the months of July and August. During this period since the main season crops are at their growing stage, the excess noted may have been highly destructive for crops. Reports from Mekdela (Werehimeno Awraja), Muja and Bugna (Lasta Awraja) indicate that many areas were affected by the unusually heavy rain and hailstorms. In September the rainfall was generally less than the normal amount indicating a reverse in the status of rainfall amount for those areas which had previously received abundant rains. At this time, since the crops were at the maturation stage, the observed deficit might not have had any serious effect on the crops. Also towards the beginning of October the rainfall condition was reported to be favourable for the crops. However, the excessive rains that came after the middle of October had a very serious effect on the maturing crops and particularly on those ready for harvest.

Here again, crop production may have been significantly affected.

This year, the survey team has reported that rains were not observed until the middle of March and has observed delay in cultivation and sowing. According to the prospect related to the team by the farmers, such a long delay in the onset of the belg rains severly affects production.

Crop Performance

The population in the three awrajas of Western Wello - Wadla Delanta, Werehimeno, and Lasta belong to the crop dependent food supply system.

Barley, wheat, and teff, inorder of importance as food sources, are the three most important crops grown in these awrajas. Other crops such as Aja, Field peas, Horsebeans and Lentils also grow.

The food situation of these awrajas has not been good for some years. The last favourable harvest in these awrajas was the 1967 E.C. (1974/75) main harvest. Although the 1968 Eth. C. (1975/76) main harvest was a failure it was not felt very much since the previous year's harvest was good. However, the deficit of the 1969 Eth. C. (1976/77) production aggravated the situation.

This year's (1970 Eth. C.) main season crop failure, which may possibly be followed by the failure of the coming Belg production, based on the rainfall deficit noted hitherto, may deteriorate the food supply situation. The damage to the important food crops, mainly due to pest, was observed as early as July,, 1977 i.e. during germination and growth periods. However, the severity of the damage was not felt until the flowering and maturation periods and this is the period when re-sowing is impossible and the stock from the previous harvest, if at all there was any remaining, gets depleted.

The crop failure in the last cropping season, the detail will be discussed later, which was mainly due to pest followed by rust, heavy rain and frost damage to the important food crops, has adversely affected the food supply situation of the awrajas particularly the dega regions (table 4). Barley, the most important food crop, was reported to be the most vulnerable to Ephidis the pest which affected most of the crops. The crops were also affected by other pests such as Degeza (grass hopper family) cutworm, and army worm. Barley was also attacked by a fungus - Ergot, which affects

and finally replaces the maturing kernel. Excessive consumption of the ergotised grain poisons the human and livestock population. The effect of the fungus on the health of the population will be discussed later.

It was reported that at least 75% of the production of the major crops i.e. barley, wheat, and teff was destroyed in most of the woredas. In some woredas upto 100% production destruction was also reported. This

The darker barley on the right has been infected with ergot, a fungus which attacks and eventually completely replaces the maturing kernel. Lacking any alternative in these predominately barley areas, the cropper must eat even the diseased grain.

leaves most of the population with a meagre production, which may last them for a month or two, and the rest in need of immediate relief assistance. It should be noted here that even the meagre amount of crop available for the peasant might be the ergotised barley.

In the discussion presented below the crop performance will be discussed separately for each surveyed awraja.

Werehimeno

All three woredas in the awraja - Legambo, Mekdela, and Tenta were affected by a serious crop damage.

Barley is the only crop grown in Legambo woreda, 95% of its production was destroyed due to pest damage from germination to maturation, and hailstorm and frost damage from flowering to harvest periods.

In Mekdela woreda most of the damage to the crops occurred during flowering and maturation period with some pest damage to teff during germination. Barley, the most important food crop, Aja and Lentils were the crops seriously affected. 75% of Barley production, due to heavy rain, 45% of teff and 60% of field peas production, due to pest and heavy rain, 75% of Aja and 50% of horse-beans production, due to rust, 75% of lentils production, due to frost and heavy rain, was destroyed.

Tenta woreda grows barley and teff only. The damage to barley occurred from the period germination to maturation due to lack of rain and pest, whereas the damage to teff occurred during harvesting period due to heavy rain. It was reported that 85% of barley and 50% of teff production was destroyed. The details of the destruction of the major food crops by woreda could be summarized as follows:

Woredas	Barley	Teff
Legambo	95%	Not grown
Mekdela	75%	45%
Tenta	85%	50%

Barley, which is the most important food crop grown, was seriously affected in all the woredas. The situation seems particularly serious in Legambo Woreda, where barley is the only crop grown and was almost completely (95%) destroyed.

Wadla Delanta

There are only two woredas in the awraja - Delanta, and Wadla Dawnt. Most of the damage to the crops in Delanta was due to pest. There was also frost damage to barley and horsebeans, and pest damage to fieldpeas and horsebeans. Although some barley and fieldpeas were damaged during germination, most of the damage to the crops occurred during flowering and maturation period. It was reported that 90% of barley, 100% of wheat and teff which are the first three important food crops in the woreda, 85% of horsebeans, 45% of fieldpeas production was destroyed.

The damage to the crops in Wadla Dawnt occurred during the period of germination to maturation. All crops were affected by pest. Other sources of damage were lack of rain to barley during germination, heavy rain damage to barley and wheat, pest damage to horsebeans and fieldpeas during flowering and maturation period. Barley, wheat and teff, which are the most important food crops in the woreda, were seriously affected. It has been reported that 85% of barley, 80% of wheat and 100% of teff production was destroyed. Horsebeans and fieldpeas were also affected to an extent of 60% destruction.

The details of the food crop destruction could be summarized as follows:

Woredas	Barley	Wheat	Teff
Wadla Dawnt	85%	80%	100%
Delanta	90%	100%	100%

The two woredas were affected by a serious production destruction. However, Delanta Woreda, with two of the major three crops completely destroyed and 90% of the remaining crop lost, is the most seriously affected.

Lasta

Bugna, Meket, and Muja are the three woredas in the awraja. Most of the damage to the crops in Bugna occurred during flowering and maturation period. There was also damage before and after this period. The damage to horse beans and fieldpeas during germination was particularly extensive. All crops which grow in the areas were seriously affected. The causes of the damage were p pest, heavy rain and hailstorm to barley; heavy rain, pest, rust, and hail-storm to wheat; heavy rain, pest and hailstorm to teff; heavy rain, hailstorm, pest and rust to horsebeans and fieldpeas. It was reported that 70% of barley, 90% of wheat, 65% of teff, 95% of horsebeans, 80% of fieldpeas production was destroyed.

In Meket most of the crops were damaged during flowering and maturation with some damage during germination and harvest. All important crops in the woreda were seriously affected mainly due to pest to all crops, except lentils which was affected by rust. Barley was also affected by rust, and teff by hailstorm and inadequate rain. It was reported that 65% of barley, 50% of wheat, 73% of teff, 100% of lentils, 35% of aja, 30% of horsebeans and fieldpeas production was destroyed.

The crop damage in Muja woreda occurred during germination to maturation. All crops in this woreda were seriosly affected with 75% of barley, 95% of wheat, 60% of teff, 95% of aja, 55% of horsebeans, 80% of fieldpeas and 100% of lentils production destroyed. Pest and rust damage to the cereals, and pest, frost and rust damage to the pulses were the main causes of destruction. Wheat and aja were also affected by inadequate rain during germination, and aja by heavy rain during flowering and maturation.

The details of the major crops by woreda in Lasta Awraja could be summarized as follows:

Woreda	Barley	Wheat	Teff
Bugna	70%	90%	65%
Meket	65%	50%	73%
Muja	75%	95%	60%

Compared with Wadla Delanta and Werehimeno, the production situation in Lasta seems better. It could be said that what is produced may sustain a part of the population for a few months.

Attempts are already being made to instruct the farmers on the proper preparation and application of the insecticides being destributed by Ministry of Agriculture and Settlement Agents. Pest destruction is common in the area, the remedies will ameliorate the problem, but will do nothing for the ergot affected barley seeds.

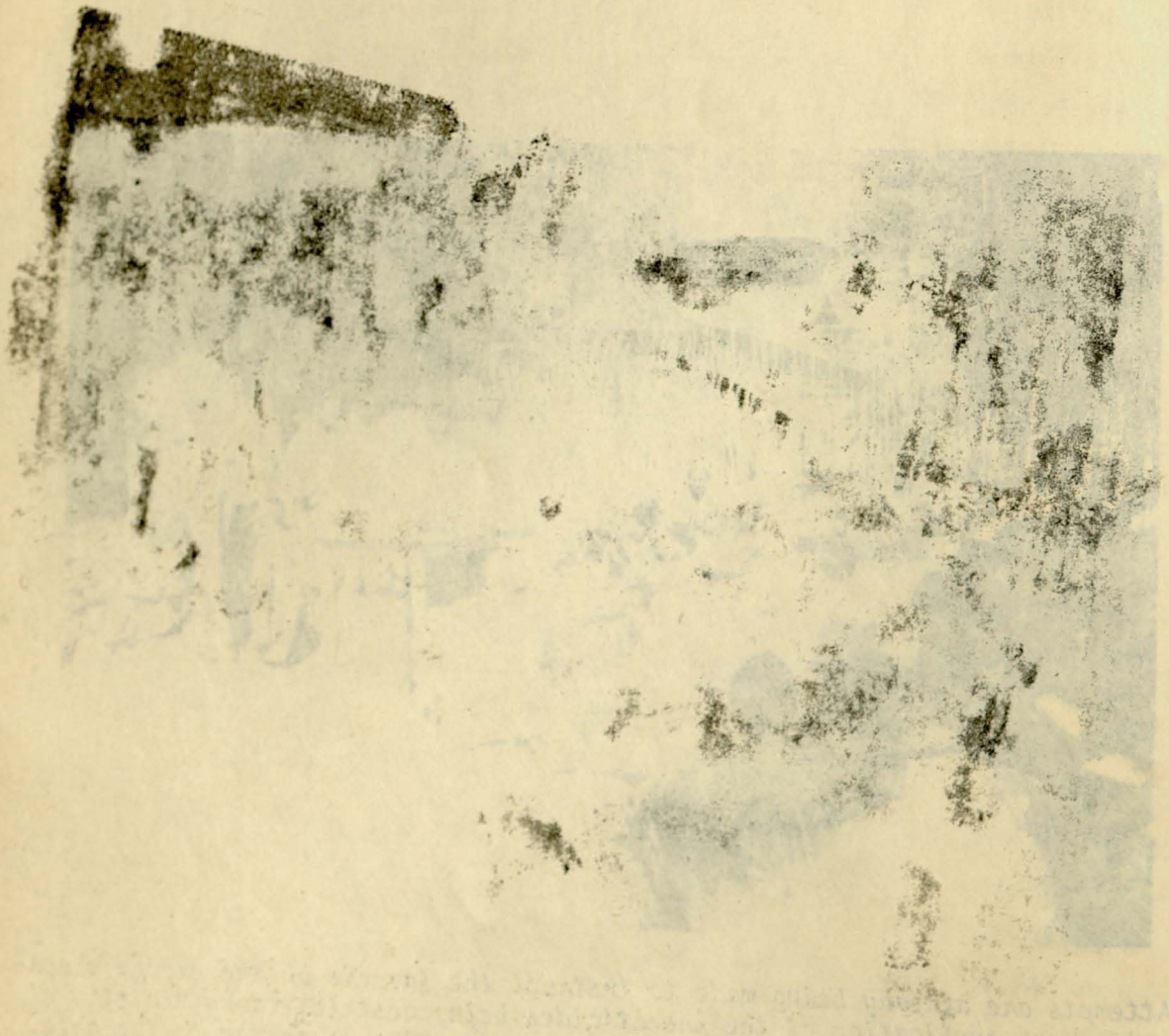


Table 4a: Unusual Event of Cropping Calendar by Type of Disaster (TD)*, Percentage of Production Destroyed (PPD), Awraja, Woreda and Period** for the Major Three Crops.

Awraja, Woreda and Period		Barley		Wheat		Teff	
		TD	PPD	TD	PPD	TD	PPD
LASTA							
Bugna:	G	2+7	10	7+5	20	7+2	25
	F+M	7+2	45	7+5+2	60	7+2	30
	H	7+4	15	4	10	4	10
Meket:	G	2	10	2	10	-	-
	F+M	2+5	55	2	40	2+4	65
	H	-	-	-	-	3	10
Muja:	G	2	50	2+3	15	2	15
	F+M	2+5	25	5+2	80	2	45
	H	-	-	-	-	-	-
WADLA DELANTA							
Wadla Dawnt:	G	2+3	60	2	10	2	75
	F+M	6	25	2+6	70	2	25
	H	-	-	-	-	-	-
Delanta:	G	2	20	-	-	-	-
	F+M	2+6	70	2	100	2	100
	H	-	-	-	-	-	-
WEREHIMENO							
Legambo:	G	2	35				
	F+M	2+4+6	55	NG	-	NG	-
	H	4+6	5				
Mekdela:	G	-	-			2	20
	F+M	7	75	NG	-	7	35
	H	-	-			-	-
Tenta:	G	1+2	50			-	-
	F+M	1+2	35	NG	-	-	-
	H	-	-			7	50

NG = Not Grown

**Period: G = Germination
F+M = Flowering & Maturation
H = Harvest

*Type of Disaster: 1. Lack of Rain
2. Crop Pests
3. Inadequacy of Rain
4. Hail
5. Rust Disease (Wag)
6. Frost
7. Heavy Rain

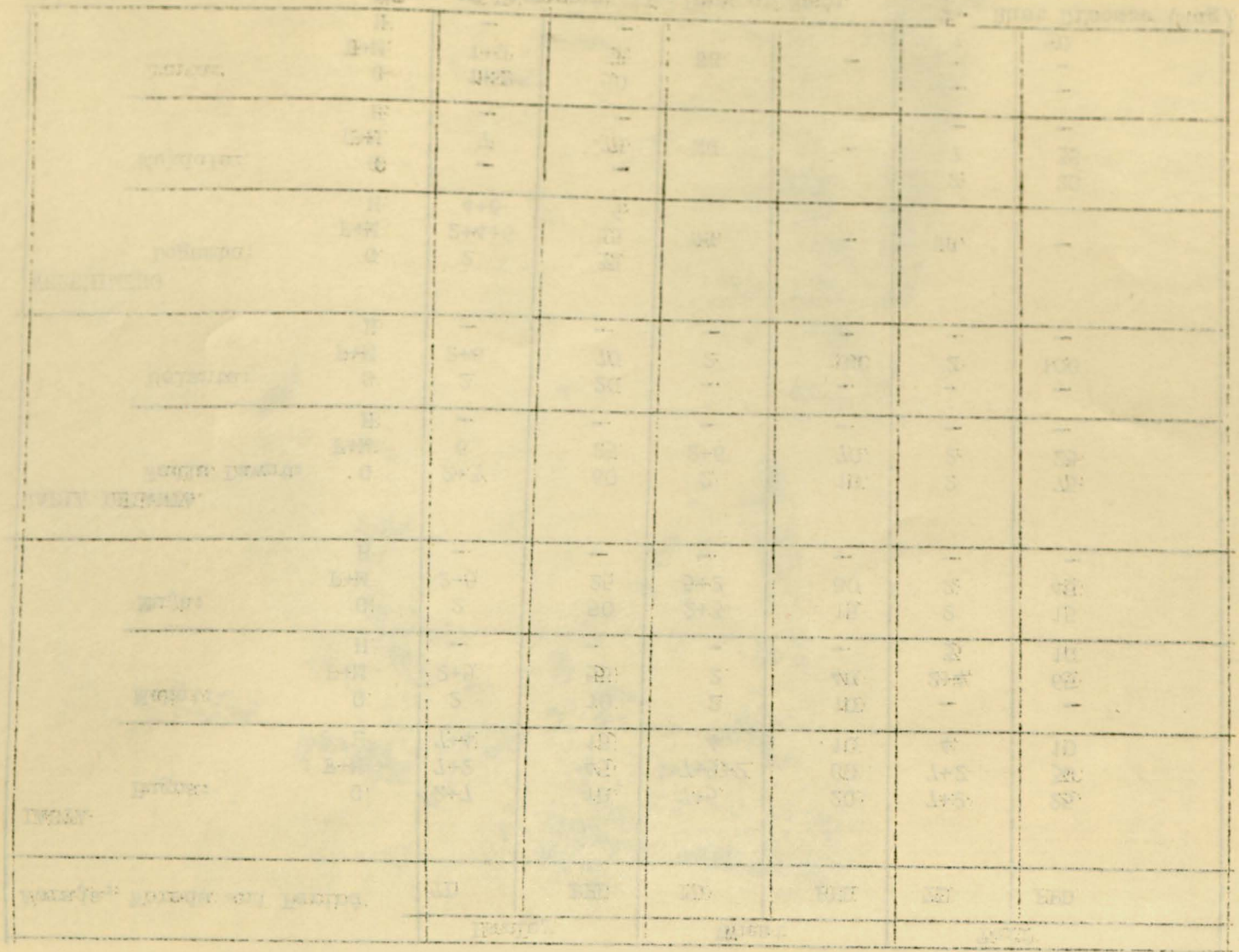


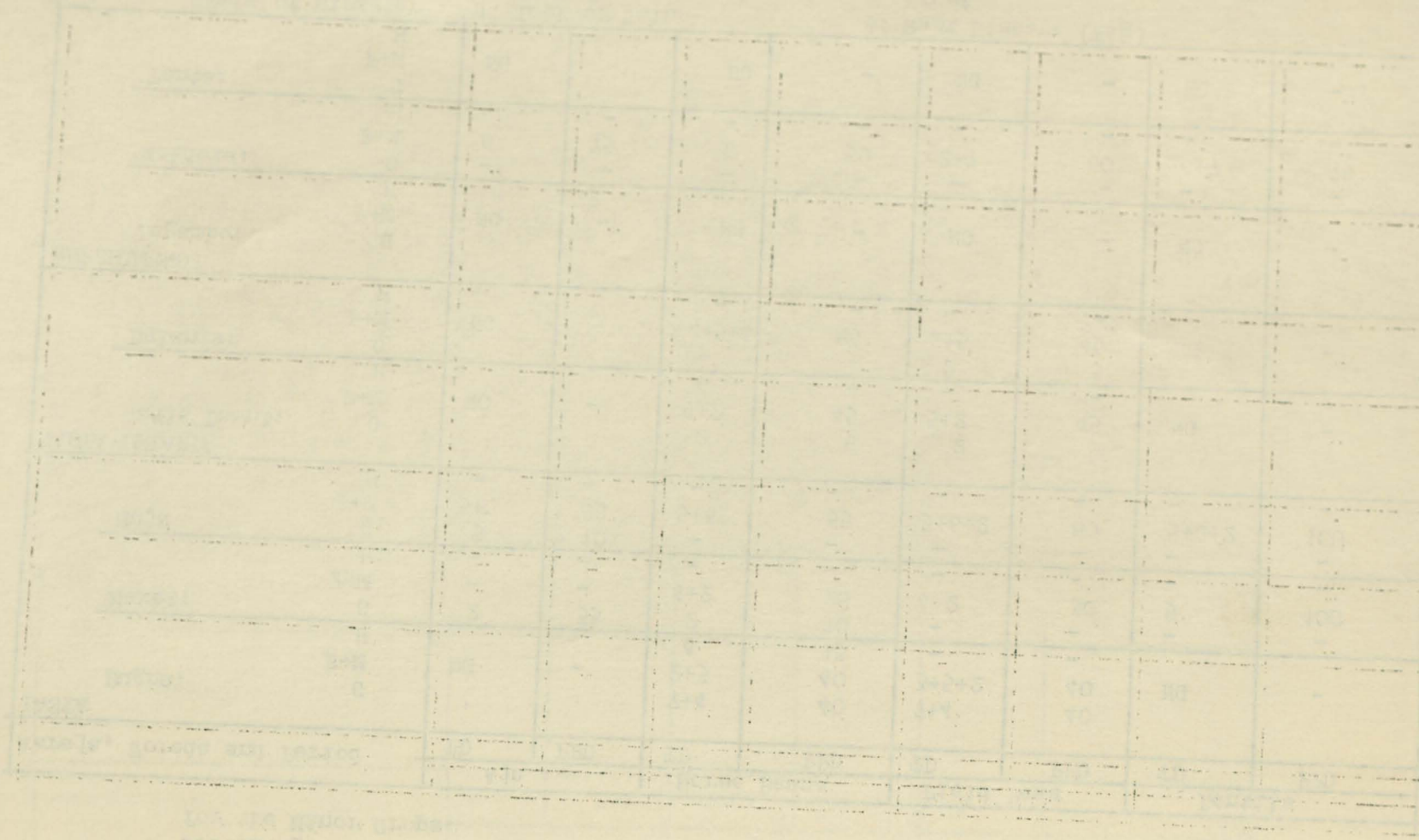
Table 4b: Unusual Event During Cropping Calendar by Type of Disaster (TD)*, Percentage of Production Destroyed (PPD), Awraja, Woreda and Period** for the Minor Crops.

Awraja, Woreda and Period		Aja		Horse Beans		Field Peas		Lentils	
		TD	PPD	TD	PPD	TD	PPD	TD	PPD
LASTA									
Bugna:	G			7+4	40	7+4	40		
	F+M	NG	-	2+3	40	3+5+2	40	NG	-
	H			4	15	-	-		
Meket:	G	2	35	2	10	-	-	-	-
	F+M	-	-	4+2	20	4+2	30	5	100
	H	-	-	-	-	-	-	-	-
Muja	G	3	10	-	-	-	-	-	-
	F+M	5+7	85	5+6	55	5+6+2	80	5+6+2	100
	H	-	-	-	-	-	-	-	-
WADIA DELANTA									
Wadla Dawnt:	G			2	5	2	5		
	F+M	NG	-	5+2	45	5+2	45	NG	-
	H			-	-	-	-		
Delanta:	G			-	-	2	5		
	F+M	NG	-	2+5+6	85	2+5	45	NG	-
	H			-	-	-	-		
WEREHIMENO									
Legambo:	G								
	F+M	NG	-	NG	-	NG	-	NG	-
	H								
Mekdela:	G	-	-	-	-	-	-	-	-
	F+M	6	75	6	50	2+7	60	6+7	75
	H	-	-	-	-	-	-	-	-
Tenta:	G								
	F+M	NG	-	NG	-	NG	-	NG	-
	H								

NG.= Not Grown

*Type of Disaster : 1. Lack of Rain
2. Crop Pests
3. Inadequacy of Rain
4. Hail
5. Rust Disease (Wag)
6. Frost
7. Heavy Rain

**Period: G = Germination
F+M = Flowering and Maturation
H = Harvest



4. Livestock Status

In Lasta, Wadla Delanta and Werehimeno, 220, 139, and 120 households, respectively, were interviewed on livestock status. Estimates of livestock alive during the survey period and number bought, sold and dead in the last three months prior to the survey period as reported by the interviewees are given in table 5. Shoats (sheep and goats) are reported to be the most common in all the surveyed areas.

The offtake rates* of cattle and shoats in Werehimeno Awraja were 24.2% and 34.0% respectively. In Wadla Delanta the offtake rate of cattle is 7.9% which is less than Werehimeno and may indicate that the former is less affected than the latter. The offtake rate of shoats in Wadla Delanta and Lasta is reported to be 28.1% and 20.0%, respectively. In the three awrajas the offtake rate for shoats is higher than those of the other animals. This performance can be explained by the fact that the shoats are relatively abundant and that, in time of food shortages people prefer to sell the shoats first.

The average holding per household in Lasta is approximately estimated to be 3 head of cattle and 5 head of shoats; in Werehimeno 2 heads of cattle and 4 heads of shoats; and in Wadla Delanta 2 heads of cattle and 3 heads of shoats. In time of food shortages the peasants could thus alleviate their problems only to a very limited extent by exchanging their livestock for grain.

It should perhaps be noted that no major disease outbreak except for the ergot poisoning was reported in the surveyed awrajas.

---

*Offtake rate = $\frac{\text{Dead + Sold}}{\text{Alive+Dead + Sold}} \times 100$

Table 5: Livestock Alive, Bought, Sold and Dead in the three months preceding survey date by awraja

Type	Awraja	Alive	Bought	Sold	Dead	Offtake Rate (%)
Cattle	Werehimeno	213	0	60	8	24.2%
	Wadla Delanta	232	2	17	3	7.9%
	Lasta	655	3	26	47	10.0%
Shoats (sheep & goats)	Werehimeno	394	2	151	52	34.0%
	Wadla Delanta	485	4	122	68	28.1%
	Lasta	1154	6	160	128	20.0%
Equines	Werehimeno	85	17	0	10	10.5%
	Wadla Delanta	109	3	0	3	2.7%
	Lasta	237	17	1	11	4.4%

5. Market Flows and Prices

Many of the sites in the sample reported that crop production failre has been an intermittent phenomenon for the last three or four years. This has reduced the purchasing power of the subsistence crop dependent population of the surveyed awrajas. The peasants are, at best, selling their limited livestock to buy grain or, at worst, depending on relief food. Crop production failrue had made the rural population to buy grain mych more that what it used to buy. Werehimeno, Wadla Delanta and Lasta have shown an increase of 55%, 44% and 40% respectively in the amount of food bought for consumption compared to what they normally buy.

5.1 Crops

Prices of the major grains are extremely high, although the average price index, based on last years price which was already very high is relatively small. However, the actual prices reported for major and minor crops, although they might have been exaggerated in some areas, are indicative of the severity of the problem. The market flows and prices in each awraja are discussed below.

Wadla Delanta

Prices of barley, wheat and teff, the basic food crops of the awraja population, were reported to be exorbitantly high. The prices of the other crops such as horse beans and field peas were also unfavourable for the buyers. (Table 6) However, the current prices are almost the same with that of the comparable period of last year. This indicates that the Wadla Delanta population was also experiencing high prices for grain even last year.

Lasta

Prices of major grains in Lasta Awraja are comparatively better than Wadla Delanta. However, this does not imply favourable condition since prices are still high. Of the three woredas, Meket seems to experience higher prices. The other two woredas although they seem to operate better than Meket, are also experiencing high grain prices. Prices of pulses are similarly inflated.

Werehimeno

Prices of major grains in Werehimeno are reported to be incredibly high. Tenta Woreda is the most seriously affected area and is identified as seriously 'vulnerable' area. Price of wheat, although it is not a basic food source to the area, is also reported to be extremely high. Price of African millet is similarly inflated. In both cases, it is suspected that the prices reported are highly exaggerated.

Even prices of the least important crops are reported to be extremely high in the three woredas.

.2 Livestock

Prices of livestock in all the surveyed areas have been reported to be below that of last year The price indices, based again as the ratio of current average price to last year's price over the same month, confirm the fact that livestock are currently being sold at a lower price than last year over the same period. (Table 7)

As mentioned earlier, the purchase of food grains is made possible from the sale of livestock. Therefore, the capacity of the population to buy food grains depends on the availability of livestock for sale. However, the low price offered for livestock forces them to sell more of their livestock to get the minimum food requirements since prices of grains have been reported to be unusually high.

In conclusion in almost all the areas studied, it has been reported that while the price of grain has increased the price of livestock has gone down. This phenomenon has been observed in some other Administrative Regions where food shortages had occurred and is thus taken as one of the reliable indicators for the imbalance between food supply and food demand.

Table 6: Average Consumer Price Per Quintal/(Birr) and Average Index, by Woreda and by Crop

Awraja / Woreda	Grain 1		Grain 2		Grain 3		Pulse 1		Pulse 2		Oilseed	
	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index
Wadla Delanta												
Wadla Dawnt	B 80.00	100.0	W 110.0	100.0	T 130.00	108.3	H90.00	100.0	F 90.00	112.5	F_1 80.00	72.2
Delanta	B 90.00	138.0	W 130.00	126.5	T 120.00	100.0	H55.00	127.5	F 95.00	118.8		
Awraja Av.	B 85.00	119.0	W 120.00	131.3	T 125.00	104.2	H77.50	113.8	F 92.50	115.7		
Werehimeno												
Legambo	B 50.00	100.0	S 75.00	100.0			H75.00	100.0	L 75.00	100.0		
Tenta	W250.00	100.0	T 75.00	100.0	A 150.00	115.4	H150.00	120.0	F 60.00	100.0		
Mekdela	B 50.00	66.7	S 90.00	100.0			H75.00	250.0	F175.00	120.0		
Awraja Av.	B 50.00	83.4	S 82.5	100.0			H100.0	156.7	F103.30	106.7		
Lasta												
Gidan	B 75.00	115.4	W100.00	117.6	T105.00	123.5	H60.00	109.1	F 75.00	150.0		
Meket	B100.00	100.0	W115.00	109.0	T110.00	115.8	H80.00	100.0	F 85.00	100.0		
Bugna	B 65.00	130.0	W 95.00	100.0	T100.00	142.9	H55.00	110.0	F 55.00	91.7		
Awraja Av.	B 80.00	115.1	W103.30	109.0	T105.00	127.4	H65.00	106.4	F 71.70	113.9		

NOTE:
B = Barley
W = Wheat
T = Teff
S = Sorghum
A = African Millet
H = Horse beans
P = Field peas
L = Lentils
F_1 = Flax

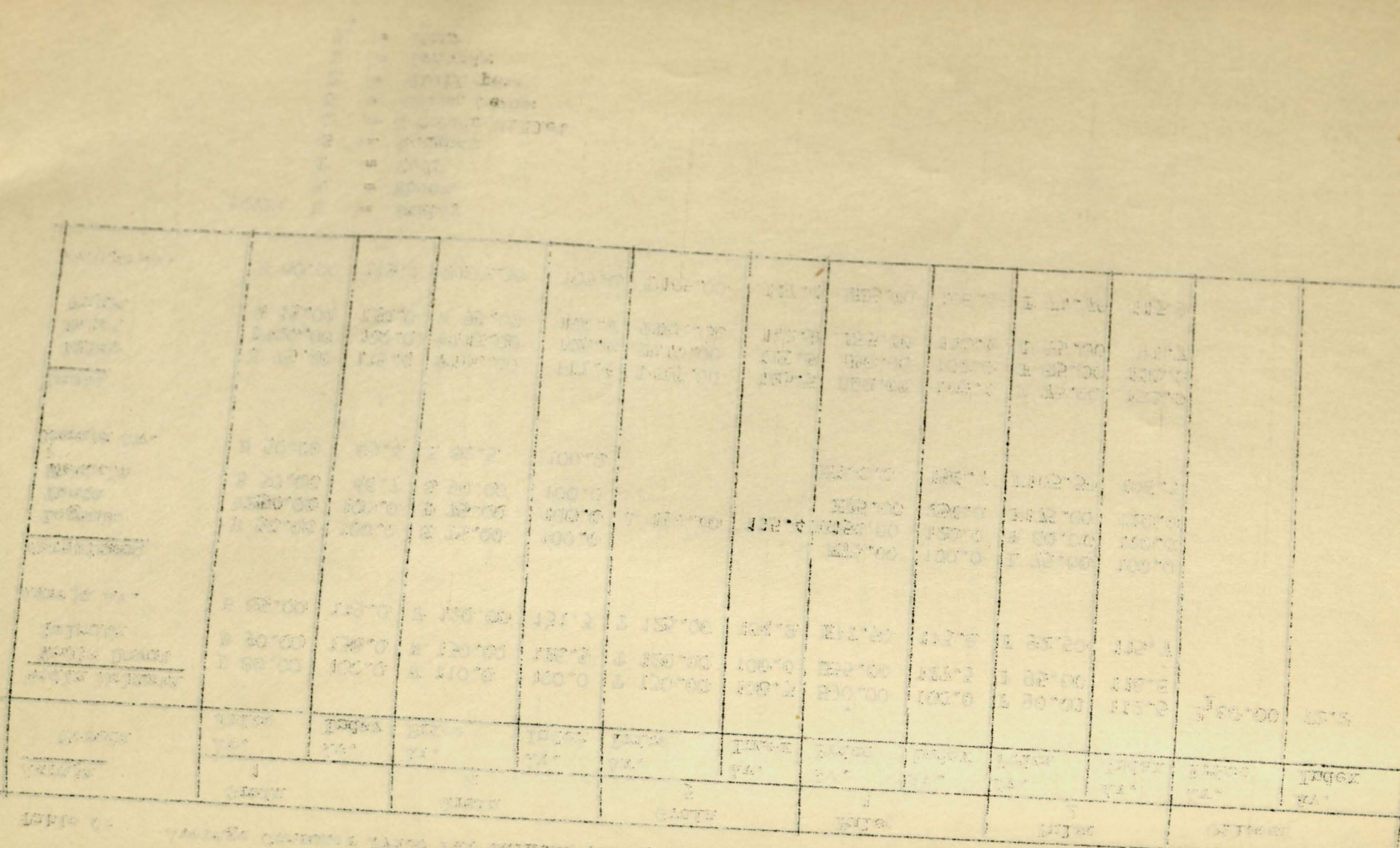


Table 7: Average Price of Livestock and Equines (Birr/head) and Average Index by woreda.

Awraja / Woreda	Cattle		Shoats		Donkeys		Mules		Horses	
	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index	Av. Price	Av. Index
Wadla Delanta										
Wadla Dawnt	M 125.00 F 105.00	89.3 91.3	M 5.25 F 10.30	75.0 77.4	34.00	85.0			55.50	105.7
Delanta	M 116.25 F 87.50	83.0 62.9	M 9.00 F 10.25	65.5 60.3	17.75	78.0			27.50	50.0
Awraja Av.	M 120.00 F 95.00	85.7 73.8	M 8.00 F 10.30	46.5 66.9	24.70	82.1			41.50	77.2
Werehimeno										
Legambo	M 55.00 F 55.00	61.1 73.3	M 19.50 F 9.50	92.9 42.2	30.00	75.00				
Tenta	M 65.00 F 80.00	86.7 91.4	M 8.00 F 6.75	88.9 87.1	18.00	85.7	102.50	75.9		
Mekdela	M125.00 F120.00	83.3 96.00	M 11.00 F 11.00	91.7 100.0	30.00	111.1	230.00	100.0		
Awraja Av.	M 81.70 F 85.00	77.8 88.7	M 12.80 F 9.10	91.4 88.8	26.00	85.8	143.3	85.9		
Lasta										
Gidan	M191.25 F165.00	98.1 100.0	M 8.50 F 12.00	47.2 52.7	43.75	66.0	325.00	95.6		
Meket	M160.00 F152.50	92.8 93.8	M 19.25 F 18.00	85.5 90.00	52.50	97.7	303.30	100.0	133.30	100.0
Bugna	M160.00 F138.30	98.0 93.3	M 12.30 F 12.70	73.3 69.4	53.30	88.8	285.00	100.6	90.00	60.0
Awraja Av.	M171.35 F153.20	96.2 96.1	M 13.45 F 14.40	69.7 70.2	49.50	82.5	306.50	98.2	121.80	91.2

NOTE:- M = Male
F = Female

6. Health and Nutrition Status

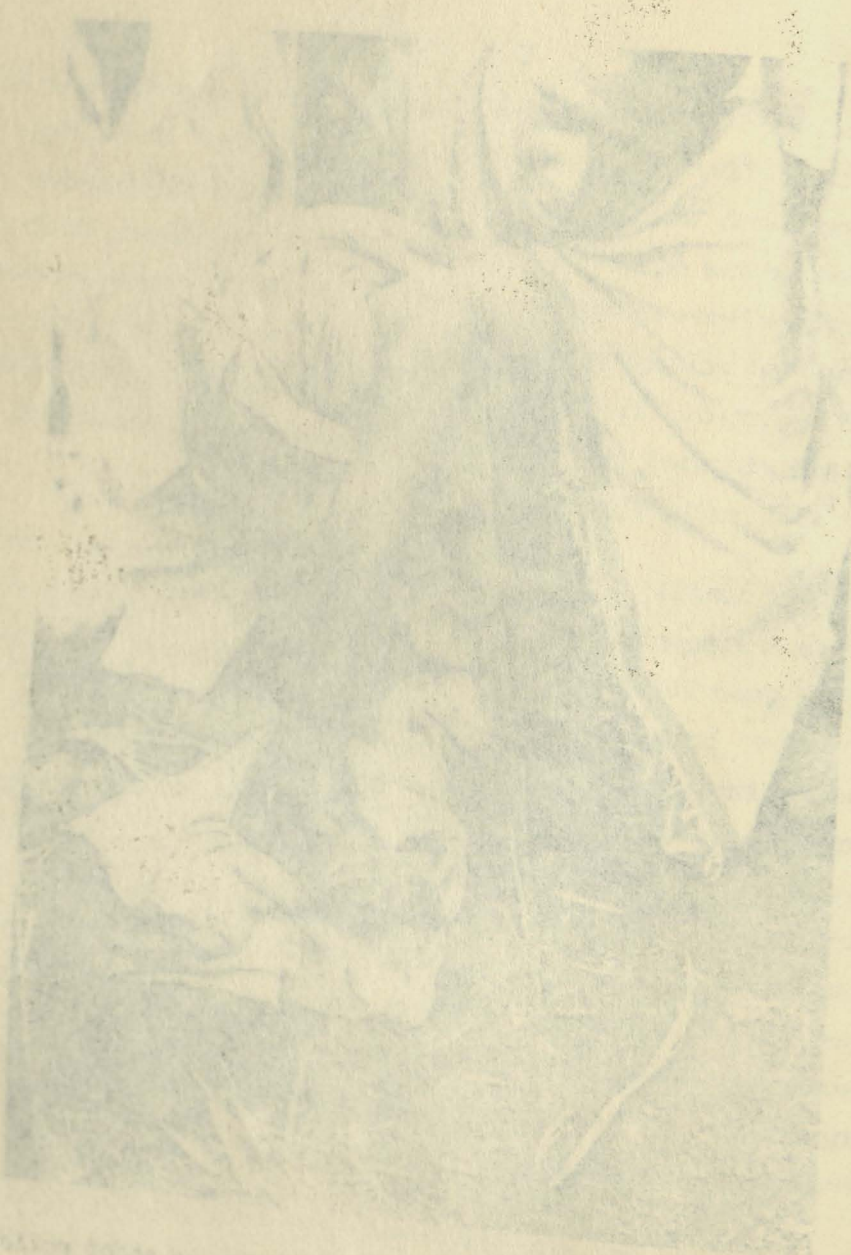
6.1 Health

One of the major findings during this survey were those of health problems affecting mainly the human population. When people are malnourished they are susceptible to all kinds of diseases. In the three awrajas of Lasta, Wadla Delanta and Werehimeno, where food shortages have occurred outbreaks of several diseases particularly typhus and relapsing fever in the highlands and malaria in the lowlands were reported. The highlanders reported that members of their community who had migrated to the lowlands in search of work and food have come back home with typhus.

The most drastic disease, however, was the one that has claimed the lives of several people and made others disabled after loosing one, two, three or all four limbs. This disease knows as ergotism is caused by the fungus. Claviceps Purpurea which attacked the kernel of barley. The disease is locally known as " lib akilt", literally meaning one which melts the heart, caused by eating the ergotised barley. All the affected areas are in the highlands at an altitude of 11,000 ft. and higher. The farmers grow only barley since the other cereals, pulses and legumes apparently do not survive the frosts of the area. The population, for lack of an alternative is forced to eat the infected barley. The excessive consumption of the affected barley caused an outbreak of ergotism. The disease created gangrene and auto-amputation of limbs, sometimes death, and the loss of milk in lactating mothers.

According to what was reported by the local people, the livestock paricularly equines were first affected by the disease which caused miscarriage. This was noted by the people as early as 1973. Then, in 1977, the human population began to experience cases of ergotism. Through this survey it was difficult to determine the number of people who have died and who are at present affected by the disease. However, from the information given by one of the members of a group who has been to the area to study the issue more thoroughly, out of a number of 93 people who have been affected, 47 people were reported to have died

The effect of eating the diseased crop is ergot poisoning which attacks the limbs: starting with intense itching, a blackening gangerous condition soon develops followed by auto-amputation within a matter of weeks.



in a period of four to five months. A medical officer from Dessie, who was given a chance by the survey team to visit one of the affected areas reported that the Health Officer in Lalibela, had informed him that 100 cases in a population of about 5,000 can be a rough estimate The survey teams reported that the disease is mainly spread in the adjacent mikitil woredas of Lasta and Wadla Delanta namely Warro in Lasta and Gazo Belay and Angot in Wadla Delanta.

From the writings in medical dictionary and other medical books, ergotism is chronic poisoning from excessive or misdirected use of ergot as a medicine or from eating ergotised grain. The disease has the following symptoms most of which were reported by the people affected and some witnessed by the survey team and other people both from the medical and non-medical profession during the survey period.

Acute Symptoms: burning pain of the abdomen, vomiting, great thirst, diarrhea.

Delayed Symptoms: oedema of face and extremities, abnormal sensation of the skin, tonic contraction of muscles, slow weak pulse, tinutus, miosis, blurred vision, intestinal and uterine contraction, loss of speech and inability, to walk, skin gangrene after some time, death due to respiratory and cardiac failure.

Chronic Symptoms: indefinite pain, disturbed digestion, itching, numbness, anesthesia of arms, legs and toes and fingers, contraction of limbs. Limb becomes cold becomes dark in color, dry gangrenous fingers and toes. Cataracts are common, internal organs become gangrenous.

The Relief and Rehabilitation Commission suggested that experts from the Ministry of Health and the Ministry of Agriculture and Settlement be pulled together and conducted a multi-discipline investigation in the affected areas. A combined medical and nutrition tea.. was

despatched to the area and a broader view of the problem is expected from its report. However, it is regretable that an agricultural expert was not included as a member of the team.

Pending expert investigation on the disease, the survey team had advised the local people to refrain from eating the diseased grain, and the Wello Branch Office of the Relief and Rehabilitation Commission had been advised to give priority to these areas in distributing relief grains.

.2 Nutritional Status

One of the indicators that can be used in examining the impact of food shortage is the nutritional status analysis of the affected population particularly the young. In this study, the anthropometric measurements of weight and height of children under ten years of age were taken. The results of the measurements of weight for height analysis are compared with the Harvard Standard, in the absence of local standard.

Table 8 : Percent of Children in Each Harvard Standard Range, Number of Children Considered, Mean Percentage and standard Deviation by Awraja.

Awraja	Percentage of Harvard Standard						No. of Children Considered (n)	Mean ($\bar{x}$)	Standard Deviation (S.D.)
	100	90-99	80-89	70-79	60-69	60			
Iasta	21.9	34.0	30.7	12.1	1.4	0	215	91.3	10.3
Wadla Delanta	24.4	23.1	35.9	7.7	3.8	5.1	78	89.4	13.9
Werehimeno	15.9	23.9	38.1	17.7	2.7	1.8	113	87.8	11.7
ALL AWRAJAS	20.7	27.0	34.9	12.5	2.6	2.3	406	89.5	11.4

In the 24 sites, the anthropometric measurements of weight and height of 406 children of both sexes were considered. The results in percent of children in each Harvard Standard range, mean percentage and the standard deviation by awraja are summarized in Table 8. The result shows that 79.3% of the children were found to be below standard. The table also indicates that 17.4% of the children were found to be below 80% of Harvard Standard showing that they are affected moderately or severely and requiring immediate attention. The overall result of all awrajas had a pooled mean of 89.5% of Harvard Standard with a pooled standard deviation of 11.4.

There is no indication of large scale severe malnutrition in the findings of the status analysis. However, it has been reported by some health personnel that there are pocket areas in Warro, Gazo Belay and Angot where children are severely malnourished*. In Werehimeno it was reported that some cases of kwashiorkor and marasmus were observed in children who visited the Tenta Health Center. People from the other two awrajas have also reported similar conditions.

However, large scale loss of life due to malnutrition has not been reported and could probably be accounted for the effort of emergency relief distribution mounted by the Relief and Rehabilitation Commission.

*The condition of some of the children in Selonaje of Warro Mikitil Woreda (Lasta Awraja) was so depressing that the survey team decided to delay its survey schedule and air lifted supplementary foods of FAFFA and DSM from the RRC store in Lalibela.

IV. RECOMMENDATIONS

The causes of food shortages are multifarious. To mitigate the impact of the shortages and, if possible, to prevent such disasters in the future requires the active participation of various agencies. It has been already stated that actions should focus not only on immediate relief activities but also on long term rehabilitation/development/projects.

In mapping the strategy of attack against the problem in Wello due consideration should also be given to the following suggestions. It should be noted here, however, that some of these suggestions which called for much more urgent actions were conveyed earlier to the concerned agencies and are already being implemented.

1) Warehouses should be built in Ginba and Masha (Werehimeno), Warro and Ayna (Iasta), and in Kon, Gazo Belay and Angot (Wadla Delanta). The construction of such stores could probably be done by local contractors with the necessary guidelines.

2) The Relief and Rehabilitation Commission's store at Tenta which was partially destroyed late 1975 should be repaired. Only corrugated iron sheets are probably needed.

3) Grain and other assistance commensurate with the extent of the problem should be transported to the remote areas before the rains start. The ergotised barley should be immdiately replaced by other food crops. This could be facilitated by organizing transportation by small four-whell driven vehicles and draft animals. The availability of assistance near the residence of the affected population would strengthen the attempts of the government offices who are trying to dissuade the peasants from selling their plough oxen.

4) Families who need full or partial ration should be primarily screened at the Farmer's Association level and the list forwarded to the Woreda Revolutionary and National Campaign Coordination Committee. The amount of relief assistance provided to similarly affected families should be standardized.

5) Relief food should be discouraged and food for work programmes be intensified. The programmes should contribute, directly or indirectly, towards increasing crop production. Programmes such as construction of feeder roads and minor repairs of main roads could be organized at the Farmer's Association level.

6) The inadequacy or absence of communication infrastructure was one of the basic factors which led thousands of Ethiopians to perish in the remote areas of Wello in the early seventies. Road construction, therefore, should be intensified to connect Dessie, at least, to the awraja capitals with all weather roads.

7) Pesticides, insecticides and fertilizers should be made available in sufficient amount at the affected areas. Pest and insect control, terracing and afforestation activities should be aggressively intensified. The deployment of a large number of skilled agricultural personnel is needed for effectively implementing the activities. The assignment of the Food and Nutrition Surveillance Programme field agents in Wello should be rationalized in order to cover all awrajas.

8) Many of the sprayers used in the area are operated by batteries. Appropriate measures should be taken to ensure a continuous supply of sufficient batteries to the farmers.

9) Non-susceptible barley seed should be provided to the ergot fungus affected areas. Money has been distributed to the awrajas for buying seed from the surrounding areas. The buying of grains in these areas would further aggravate the food supply situation. Hence it is strongly recommended that seeds should be bought from other regions where surplus production is indicated.

10) Agricultural research should be intensified aimed at identifying some other crops, including a non-susceptible barley; which can grow in the affected areas.

11) The commercial buffer stock should be further strengthened so that the ever increasing grain market prices can be curtailed.

12) The Rural Land Reform Proclamation should be implemented urgently. The Farmer's Associations should be re-organized and political agitation intensified in the area. The recent deployment of the eighty cadres, from Dessie, to the affected awrajas in order to fully implement, among other things, the Proclamation is welcomed and its intensification should be encouraged.

13) The possibility of resettling some of the farmers in Awsa and Raya and Kobo, the two eastern awrajas in Wello, should be explored and appropriate actions taken accordingly.

14) The food shortages existing in the awrajas have made the inhabitants much more susceptible to various diseases. To curtail the spread of diseases, at least, temporary clinics should be opened in the remote areas of the affected awrajas.

15) A multi-discipline epidemiological investigation should be conducted in the ergot affected areas. Responsive decisions should then be taken without undue delay. It is recommended that the study team should also include a surgeon, nutritionist and an agricultural expert.

16) The Health Centers at Tenta and Wegel Tenna which were partially destroyed late 1975 should be repaired, equipped and staffed so as to cater the urgently needed health services to the people. Tenta Health Center is partially operating but the buildings of the other one are being used by shoats, cattle and donkeys as shelters and are deteriorating. In repairing the Wegel Tenna Health Center, consideration should also be given to the planned rural hospital for the town.

Annex I

Site Selection

The site selection was done at a woreda level. The sample frames were established on a farmers associations level since it was believed that the associations included every household in every village. Ten percent of the farmers associations with a probability proportional to their population size were randomly selected in each woreda.

Because of the availability of helicopter service the teams were able to reach twenty three sites out of the twenty four sites selected. One site was located on an altitude too high for the helicopter to fly and had to be replaced by an adjacent site after the local people assured the survey team of the similarity of the situation in both sites.

Annex II

Methodology

A direct interview method by two teams was used for collecting the information. Three types of questionnaires were used:

a) Collective Information Questionnaire:- A questionnaire was completed in every site visited at a farmer's association level. The questionnaire was filled by interviewing four to five village elders or representatives of farmer's assocations. The questionnaire dealt with the following components:

population
crop performance
livestock
market flows and prices and other supplementary facts.

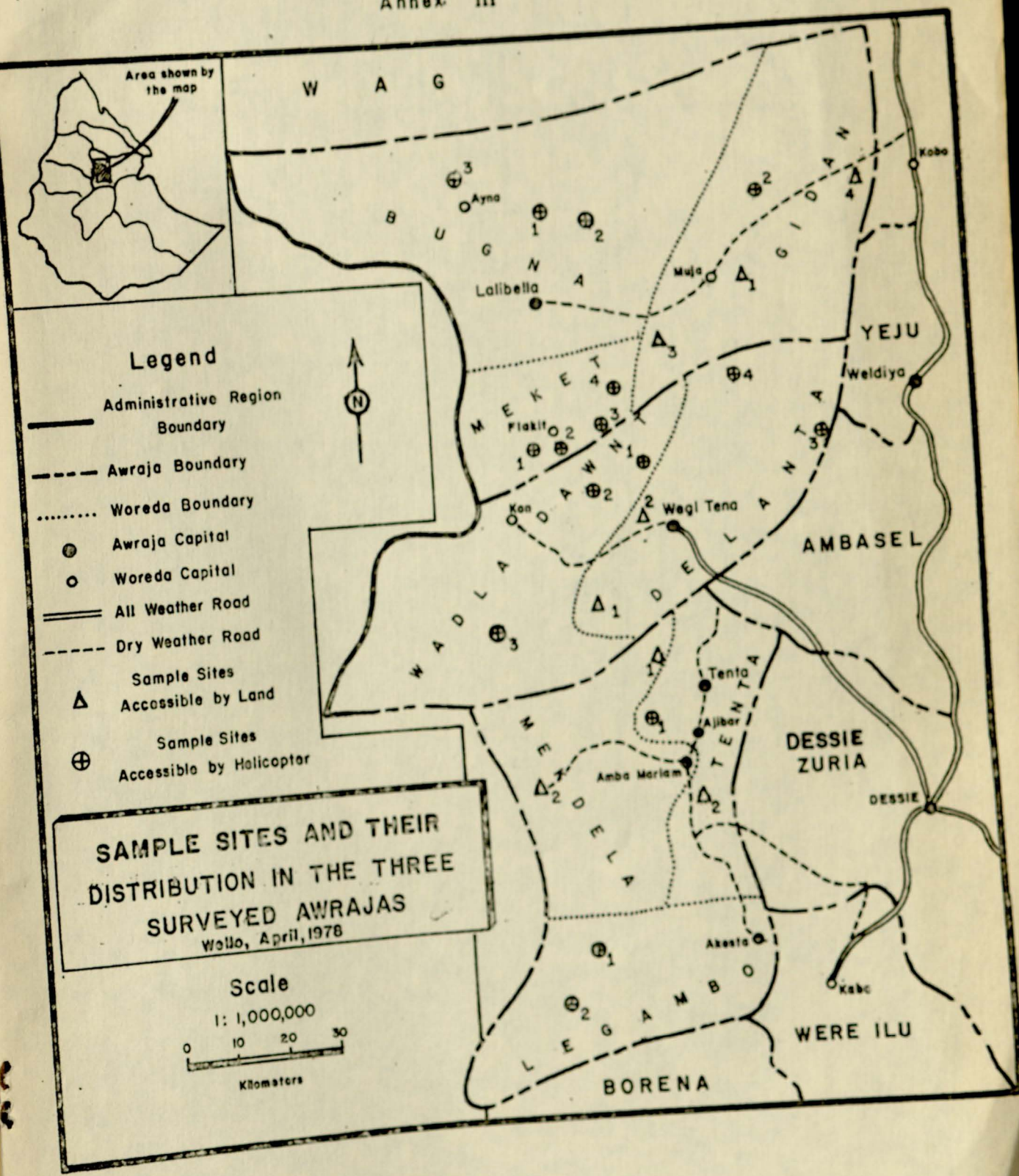
b) Household Information Questionnaire:- Twenty households were selected from each of the farmer's associations in the sample. The households selection depended on the rationality of each enumerator. As much as possible the enumerators do attempt to select households that would be representative of all households in each of the selected sites. To improve the randomness of the household selection a pilot study on household listing methodology was done in Delanta Woreda.

A questionnaire was filled for each household selected. The enumerators interviewed the heads of the households in completing the questionnaire. The questionnaire dealt with the following components:

population
crop performance
livestock
assistance and supplementary facts.

c) Nutritional Information Study:- Anthropomentric measurements, weight and height, of about twenty children of both sexes whose ages were below ten years were considered in the selected sites visited.

Annex III


Area shown by the map
W A G
B U G N A
Ayna
Lalibella
Muja
Kobo
YEJU
Weldiya
MEKET
Flakit
Kon
Wegi Tena
AMBASEL
WADLA DELANTA
Tenta
Ajibar
Amba Mariam
DESSIE ZURIA
DESSIE
MEHAL DELA
TENTA
Akesta
Kabe
WERE ILU
LEGAMBO
BORENA
Legend
Administrative Region Boundary
Awraja Boundary
Woreda Boundary
Awraja Capital
Woreda Capital
All Weather Road
Dry Weather Road
Sample Sites Accessible by Land
Sample Sites Accessible by Helicopter
N
SAMPLE SITES AND THEIR DISTRIBUTION IN THE THREE SURVEYED AWRAJAS
Wello, April, 1978
Scale
1: 1,000,000
0 10 20 30
Kilometers