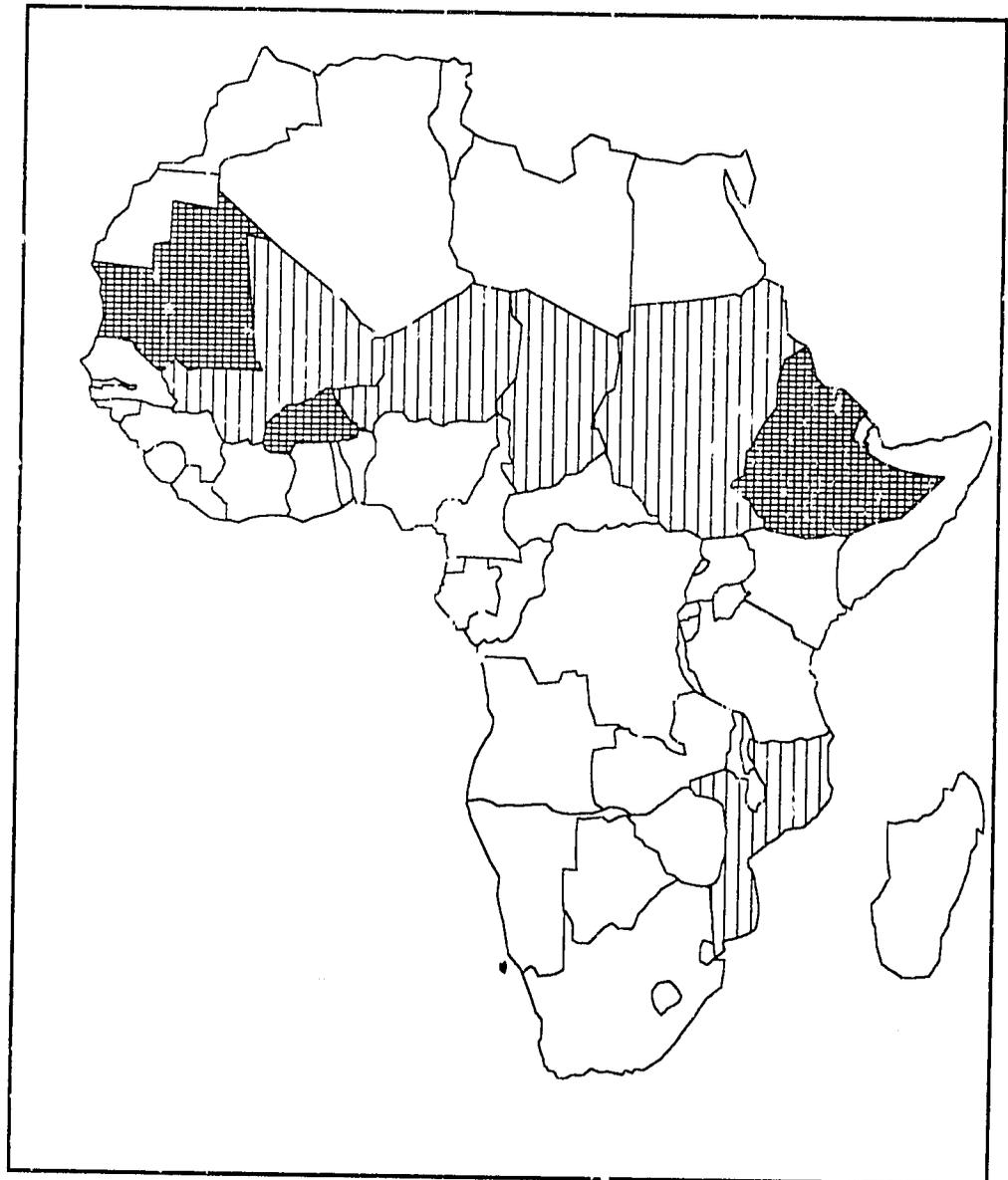


Report Number 18  
December 1987

# FEWS Country Reports

## BURKINA, ETHIOPIA, and MAURITANIA



Africa Bureau  
U.S. Agency  
for International  
Development

## FAMINE EARLY WARNING SYSTEM

This is the eighteenth in a series of monthly reports on Burkina, Ethiopia, and Mauritania issued by the Famine Early Warning System (FEWS). It is designed to provide decisionmakers with current information and analysis on existing and potential nutrition emergency situations. Each situation identified is described in terms of geographical extent and the number of people involved, or at-risk, and the proximate causes insofar as they have been discerned.

Use of the term "at-risk" to identify vulnerable populations is problematic since no generally agreed upon definition exists. Yet, it is necessary to identify or "target" populations in-need or "at-risk" in order to determine appropriate forms and levels of intervention. Thus for the present, until a better usage can be found, FEWS reports will employ the term "at-risk" to mean...

...those persons lacking sufficient food, or resources to acquire sufficient food, to avert a nutritional crisis (i.e., a progressive deterioration in their health or nutritional condition below the status quo), and who, as a result, require specific intervention to avoid a life-threatening situation.

Perhaps of most importance to decisionmakers, the FEWS effort highlights the process underlying the deteriorating situation, hopefully with enough specificity and forewarning to permit alternative intervention strategies to be examined and implemented. Food assistance strategies are key to famine avoidance. However, other types of intervention can be of major importance both in the short-term and in the long run, including medicine, transport, storage, economic development policy change, etc.

Where possible, estimates of food needs are included in the FEWS reports. It is important to understand, however, that no direct relation exists between numbers of persons at-risk and the quantity of food assistance needed. This is because famines are the culmination of slow-onset disaster processes which can be complex in the extreme.

The food needs of individual populations at-risk depend upon when in the disaster process identification is made and the extent of the cumulative impact on the individuals concerned. Further, the amount of food assistance required, whether from internal or external sources, depends upon a host of considerations. Thus the estimates of food needs presented periodically in FEWS reports should not be interpreted to mean food aid needs, e.g., as under PL480 or other donor programs.

FEWS depends on a variety of US Government agencies, private voluntary organizations (PVO's), international relief agencies, foreign press and host government reports as sources of information used in the country reports. In particular, a debt of gratitude is owed to many individuals within various offices of the U.S. Agency for International Development (USAID) who routinely provide valuable information: the offices of Food for Peace and Voluntary Assistance (FFP/FVA) and the Office of Foreign Disaster Assistance (OFDA). Additional useful information is also provided by the Centre Agrhymet in Niamey, the National Oceanic and Atmospheric Administration's National Environmental Satellite, Data, and Information Service (NOAA/NESDIS), the Cooperative Institute for Applied Meteorology at the University of Missouri (CIAM), the National Aeronautic and Space Administration (NASA), the UN Food and Agriculture Organization (FAO) Global Information and Early Warning System (GIEWS), the World Food Program, and other UN agencies.

-----  
FEWS is operated by AID's Office of Technical Resources in the Bureau for Africa (AFR/TR) in cooperation with numerous U.S. Government and other organizations. The FEWS Country Reports are working documents of AFR/TR and should not be construed as official pronouncements of the U.S. Agency for International Development.

Famine Early Warning System Country Reports

---

Burkina

Ethiopia

Mauritania

---

Prepared for the  
Africa Bureau of the  
U.S. Agency for  
International Development

Prepared by  
Price, Williams & Associates, Inc.  
December 1987

Contents

Page	
1	Summary
2	Burkina
8	Ethiopia
15	Mauritania

## List of Figures

<u>Page</u>			
3	Table 1	Burkina:	Cereal Requirements Met By Local Production - Yatenga
4	Map 1	Burkina:	Vulnerability in North-Central Provinces
5	Map 2	Burkina:	Needs Met By Local Production in Yatenga
6	Table 2	Burkina:	Production and Requirements in Northern Provinces
7	Map 3	Burkina:	Needs Met Locally in North
9	Map 4	Ethiopia:	Regional Administrative Boundaries
10	Map 5	Ethiopia:	Importance of Belg to Local Food Supply
11	Map 6	Ethiopia:	Importance of Belg Rains to Meher
12	Map 7	Ethiopia:	Greatest Stress on Food Supply
13	Map 8	Ethiopia:	Food Short Belg Crop Areas
14	Map 9	Ethiopia:	Food Short Areas Without Belg
16	Map 10	Mauritania:	Needs Met By Local Production
18	Table 3	Mauritania:	Nutrition Surveys in Trarza Region
19	Map 11	Mauritania:	Nutrition Survey, Hodh el Gharbi Region
19	Map 12	Mauritania:	Malnutrition in Trarza Region
20	Map 13	Mauritania:	Vegetation Increase & Desert Locust Sightings
Appendix			
21	Table A1	Burkina:	Preliminary Cereal Balance Estimates
22	Table A2	Mauritania:	Needs Met By Local Production
23	Table A3	Mauritania:	FEWS Preliminary Cereal Balance
24	Map A1	Burkina:	Administrative Units
25	Map A2	Ethiopia:	Administrative Units
26	Map A3	Mauritania:	Administrative Units

## OVERVIEW

Burkina's estimated 1987 national cereal production plus existing stocks, imports and programmed food aid result in a 197,000 metric ton (MT) surplus over grain requirements. Nevertheless, local food deficits in the northern regions of Oudalan, Bam, Namentenga, Seno, Yatenga, Sanmatenga and (eastern) Soum may remain unfilled if farmers and traders do not have sufficient incentive to market grain from surplus areas to these chronically deficit areas. In Ethiopia, the Ethiopian Relief and Rehabilitation Commission's official estimate of people at risk of serious food supply shortages is likely to rise soon by as much as a million people (see FEWS Report 17 for a discussion of this figure). Donor agreement with this increase is likely. This would drastically raise the estimate of 1988 emergency food needs. The relief supply pipeline, already stretched beyond what many consider to be its maximum capacity, would be hard pressed to meet greater demands for emergency food supplies. The dimensions of this acute problem could be significantly increased if there is a poor "Belg" harvest (occurring between May and July). Emergency food need estimates for 1988 assume an "average" Belg harvest. Should this not occur, there would be serious local and national consequences. There will be enough cereal in Mauritania to meet the total 1988 need once current stocks, pledged food aid, and expected imports are included in the equation. Recent nutrition surveys indicate that there are at least pockets of extraordinary food needs (where more than 20% of the children measured were malnourished). Only minimal control measures will be taken against Desert locust swarms in the northwest (where there has been significant green-up since mid-November), because of proximity to the conflict between Western Sahara and Morocco.

### Issues and Indicators

- The Government of Burkina's Ministry of Agriculture reports that unusually high numbers of livestock are up for sale and livestock prices are declining in the north (where cereal deficits are severe), suggesting that on-farm cereal stocks there may be low or nearly exhausted.
- In Ethiopia, monthly emergency relief food requirements in early 1988 exceed the highest amounts that were ever delivered at the height of the 1984/1985 famine. Even if imports of food assistance rise to meet the projected needs, it is unlikely that such quantities of food could be entirely distributed to those who need it.
- There is substantial child malnutrition in Mauritania in spite of the positive national cereal balance since 1985. Donors are discussing the possibility of changing the targeting and/or the mix of food stuffs distributed to the indigent, based on the results of several nutrition surveys.

## BURKINA

### Summary

Although Burkina's estimated 1987 national cereal production plus existing stocks, imports, and food aid provide a 194,000 metric ton (MT) surplus (see Appendix 1), USAID/Burkina cautions that regional deficits could remain unfilled. Farmers in the traditionally surplus areas are believed to hold most of the estimated 300,000 MT of on-farm stocks. These farmers, according to USAID/Burkina, will probably retain much of those stocks as a buffer against future food emergencies, thus precluding redistribution to the deficit areas of the north. Furthermore, traders are unlikely to carry large quantities of grain to the north where limited purchasing power and traditional obligations could force them to sell on credit despite the risk of default. Burkina could, therefore, require additional cereals to feed people in the northern provinces of Oudalan, Seno, Yatenga, Bam, Namentenga, and Sanmatenga, where the 1987 harvest met less than 55% of cereal requirements.

In many areas throughout these provinces, on-farm stocks are low or near exhaustion and purchasing power is weak, according to the November report of the Government of Burkina, Ministry of Agriculture (GOB MINAG). Cereal prices in these areas rose (rather than fell as normal) during the harvest, suggesting that the post-harvest outlook was pessimistic and further limiting the ability of some people to buy food. This analysis is supported by observations of unusually large numbers of animals offered for sale at local markets, declining livestock prices, and of people migrating earlier than normal in search of employment. A continuation of this trend may reflect acute and widespread cereal shortages in the northern provinces, and would be cause for serious concern given the limited resources noted above.

### Cereal Production and Stocks

While net national cereal production (estimated at 1.39 million MT) and stocks are expected to meet over 100% of cereal requirements, regional cereal resources vary dramatically. This year, the five provinces with the highest per capita cereal production (Kossi, Sissili, Tapoa, Gnagna, and Comoe) met an average of 176% of local cereal requirements, while the five with the lowest per capita production<sup>1</sup> (Oudalan, Bam, Namentenga, Seno, and Yatenga) met only 28% of cereal requirements. USAID/Burkina estimates that Burkina has 300,000 MT of on-farm stocks, but, these stocks are not in those provinces where they are most needed. In Oudalan, Bam, Namentenga, Seno, and Yatenga Provinces, cereal production has met only 51% of requirements over the last four years, suggesting that on-farm stocks in these areas are low.

<sup>1</sup> This does not include Kadiogo Province, where local production met only 3% of cereal requirements. Over 95% of the people in Kadiogo province reside in Ouagadougou, the national capital, where agriculture is not a primary source of income. However, cereal production this year was the lowest on record (1984-1987), suggesting that Ouagadougou may attract more cereal trade than in the past, possibly leaving less available for other provinces.

## Provinces At-Risk

**Bam, Sanmatenga, and Namentenga Provinces:** This year's grain harvest in Bam, Namentenga, and Sanmatenga Provinces met 35%, 39%, and 53% of cereal requirements, respectively. According to the GOB MINAG, cereal availability in the local markets is threatened because much of the 1987 harvest is being exported outside of the region, principally to Ouagadougou, the nation's capital. Cereal availability at local markets was already low in the Departments of northern Sanmatenga Province (Pensa, Dablo, Namissiguima, and Barsologo) and near Pissila (see Map 1). The GOB MINAG reports that assistance is necessary in these areas to avoid population displacement. In the extreme north of these three provinces, pasturage is already in short supply and water sources are likely to dry up as well. As the harvest began, cereal prices throughout the three provinces were reportedly increasing, and the price of livestock was falling.

**Yatenga Province:** This year's grain harvest met approximately 46% of cereal requirements in Yatenga Province. According to the GOB MINAG, on-farm stocks in Yatenga are nearly exhausted, and there has been a considerable decline in local cereal bank stocks. Cereal prices continued to increase as the harvest began, and an unusually high number of animals were being sold on the local markets. While some areas within Yatenga Province may be able to weather this poor harvest, other areas are likely to require assistance.

As shown in Map 2, local production within the Province met less than 50% of cereal requirements (except for in the northwest and in a few other Departments). Cereal deficits are especially severe in Kalsaka, Banh, Ouindigui, Titao, and Oula Departments, where grain production met less than 35% of cereal requirements (see Table 1). The populations in Kalsaka and Oula Departments may benefit slightly from the harvests in adjacent Tougo and Bassi Departments, where higher yields and larger areas under cultivation resulted in cereal surpluses. Nevertheless, this impact is unlikely to be extensive. The estimated cereal surplus in Tougo and Bassi totals only 2,700 MT, while the deficit in the four surrounding Departments is approximately 25,000 MT.

**Table 1: Cereal Requirements Met by Local Production in the Lowest Cereal Producing Departments of Yatenga Province**

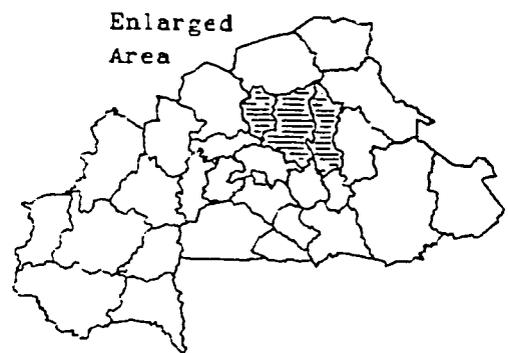
Department	Population	Cereal Deficit	Percent of Cereal Needs Met
Kalsaka	36,171	6,394	8
Banh	15,873	2,085	27
Ouindigui	40,941	5,701	27
Titao	39,229	7,531	31
Oula	27,301	5,242	35
Total	159,515	26,953	29

Source: GOB MINAG, November 1987

# Areas Of Vulnerability In The North-Central Provinces



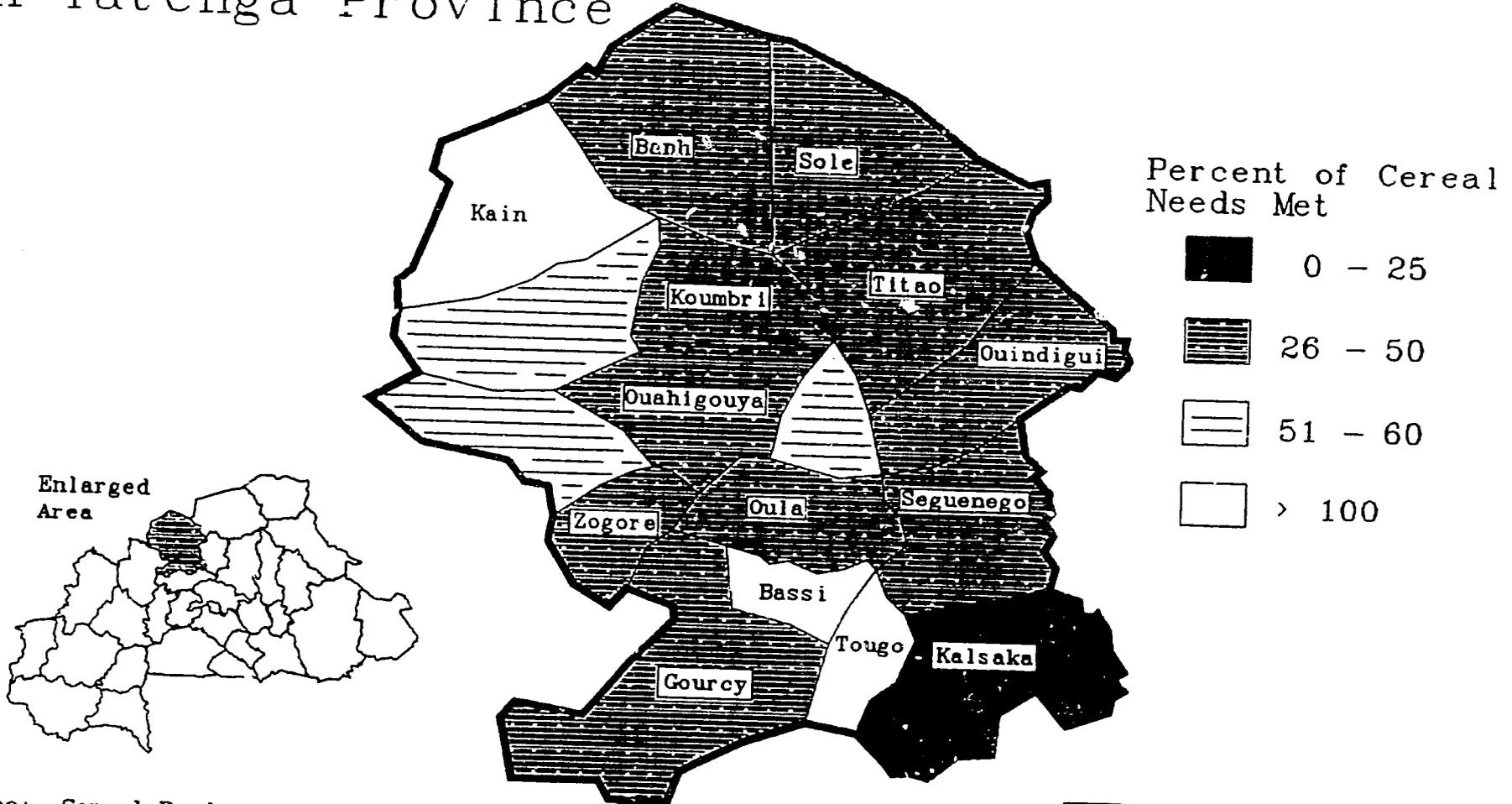
-  Low cereal levels in local markets
-  Pasturage poor and water sources drying up



Source: GOB MINAG, November 1987

FEWS/PWA, December 1987

# Cereal Requirements Met By Local Production In Yatenga Province



Source: Cereal Production - GOB MINAG, November 1987;  
 Population - GOB INSD, December 1985 census pro-rated to March 1988.  
 FEWS/PWA, December 1987

— Provincial Boundary  
 — District Boundary

**The Northernmost Provinces:** Cereal production in Oudalan, Soum, and Seno met approximately 21%, 43%, and 78% of local requirements. The GOB MINAG reports that food is generally available at local markets, but the increasingly high prices of grain, combined with low purchasing power, prevent many in this area from buying food. On-farm stocks in some areas are nearly exhausted, and, as in Yatenga Province, an unprecedented number of animals are being sold in the local markets.

Map 3 shows that relative (per capita) cereal deficits are most severe in southern Oudalan Province, where local production met less than 25% of cereal requirements. In Salmossi, Gorom, and Tasmakat Zones, this year's harvest met only 1%, 4%, and 8% of cereal requirements (see Table 2). After the 1984 drought, cereal production in Oudalan met only 4% of cereal requirements and food aid was necessary. Given that the relative cereal deficit in southern Oudalan this year is only slightly less severe than in 1984, this year's drought may have a similarly severe impact on resident populations.

National Cereal Office (OFNACER) stocks may alleviate some cereal needs. When OFNACER stocks are added, the percentage of cereal requirements met by local production throughout the three provinces increases from 35% to 40%. In Gorom Zone, the portion of requirements met increases from 4% to 28%. However, four of the five Zones with the greatest relative need do not currently have any OFNACER stocks.

**Table 2: Cereal Production and Requirements in the Northernmost Provinces**

Province	Zone/Sector	(1)	(2)	(3)	(4)	(5)	(6)	
		Population	Cereal Needs	Net Cereal Production	Cereal Deficit	% Cereal Needs Met	OFNACER Stocks	% Cereal Needs Met
			(MT)	(MT)	(MT)		(MT)	
Oudalan	Salmossi	9,003	1,729	14	1,715	1		1
	Gorom	17,137	3,290	138	3,152	4	788	28
	Tasmakat	17,427	3,348	202	3,084	8		8
	Saouga	9,885	1,898	318	1,580	17		17
	Korizena	8,324	1,598	288	1,330	17		17
	Markoye	19,882	3,817	1,188	2,629	31	278	38
	Tin-Akoff	9,258	1,777	670	1,107	38	88	43
	Oursi	9,528	1,829	879	950	48	13	49
	Deou	13,931	2,675	2,158	519	81	34	82
Soum	Aribinda	65,441	12,665	5,283	7,282	42	1,243	62
	Djibo	141,473	27,163	19,832	7,331	73	951	77
Seno	Dori	164,784	31,639	8,640	22,999	27	2,398	35
	Sebba	85,135	16,348	11,672	4,674	71	834	77
Total		527,639	101,307	60,906	60,401	35	5,835	40

1) Source: SAP using GOB National Institute of Statistics and Demography estimates.

2) USAID/Burkina estimates per capita cereal requirements at 192 kg/year.

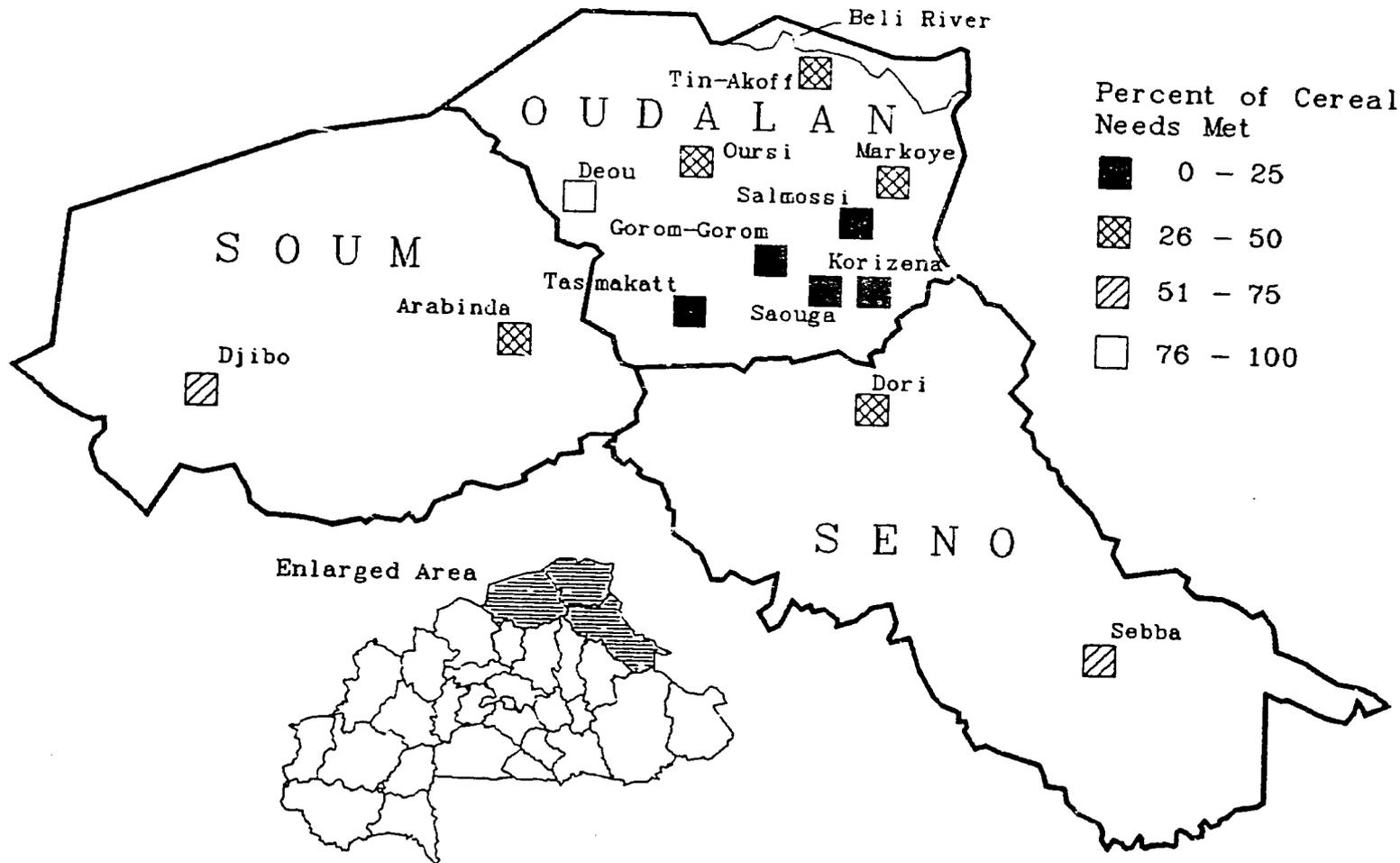
3) Source: SAP; Assumes 15% loss from seed, feed, milling, and waste.

4) Cereal requirements met by local production only.

5) Source: SAP.

6) Cereal requirements met by local production and OFNACER stocks.

# Cereal Requirements Met By Local Production In The Northernmost Provinces



Box placement is the approximate location of the major town within a zone or sector. Aggregated zonal/sectoral cereal production is equal to total cereal production within the enlarged area. Zonal/sectoral boundaries are unavailable.

Source: Systeme d'Alerte Precoce, October 1987  
FEWS/PWA, December 1987

## ETHIOPIA

### Summary

Emergency food needs for Ethiopia in 1988 have very likely already surpassed the delivery capabilities of the present relief pipeline, yet the number of people requiring emergency assistance in Tigray Region may soon be raised by as much as a million more people. Nevertheless, an additional factor could intervene to either improve or worsen this grim picture in the next few months. The Belg season rains (from February through April or May) and the two harvests associated with these rains could have an appreciable impact on regional and national emergency food needs. The contribution of the 1988 Belg harvest to the Ethiopian cereal balance is currently projected to be an "average" 280,000 metric tons gross production. A shortfall, or increase, from this amount would have important consequences for many Ethiopians, and for on-going relief activities. As the Belg harvest does not occur in all parts of the country, the consequences of its outcome will vary by location. This report compares the geographic locations of expected Belg harvests with those areas requiring emergency food assistance during 1988.

### A Secondary Harvest of Primary Importance

While the "Belg" season (February to May) harvest is of relatively minor importance nationally (normally contributing 5% of national grain production), it is extremely important to many highland farming zones in Wello, northeastern Shewa, and other scattered areas. Farmers in these areas cannot grow enough food during the "Meher" (main) season to meet their needs, and the Belg harvest sometimes satisfies 50% to 60% or more of their annual cereal requirements. An "average" Belg harvest could supply a year's worth of cereals to over a million and a half people.

Although the Belg *harvest* is more important regionally than nationally, the Belg *rains* have a great national impact. A high percentage of the national maize and sorghum crops depend upon Belg rains for soil preparation, seed germination and early growth, yet these long-maturing crops are not harvested until late in the Meher season (and are thus considered part of the Meher harvest). A general failure of the Belg rains would therefore also significantly affect the larger Meher harvest.

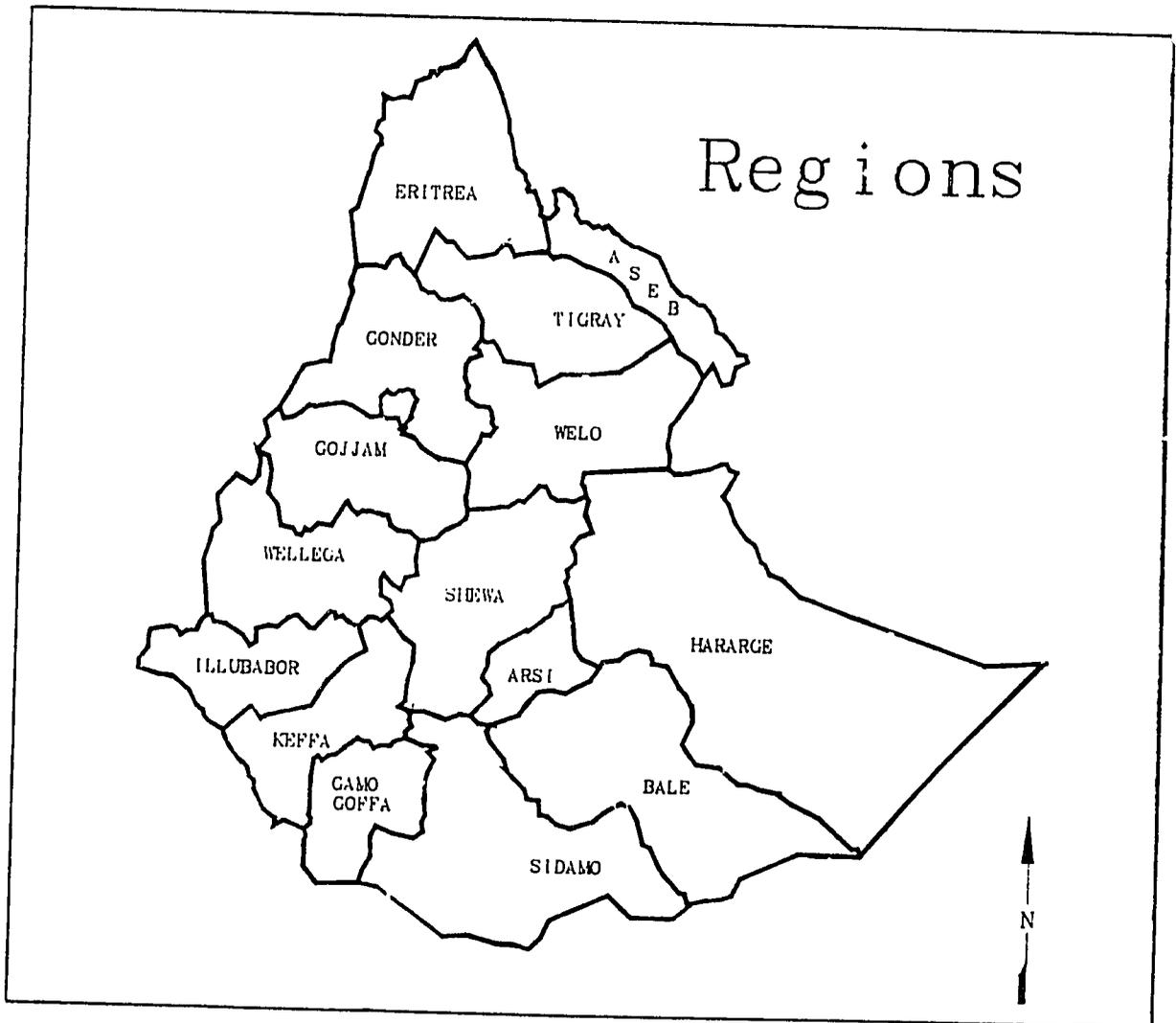
While a host of factors outside of the quantity and spacing of the rains can affect the success of the Belg harvest, none may be so pivotal this year as the already precarious food supply in some Belg areas. If people must leave their homes to seek food, they will not be able to put their energies into Belg season farming. The probability of this scenario coming to pass is stronger in Wello than in the other Belg areas. This is just one more consideration among many that reinforce the importance of making whatever efforts possible to allow people to remain in their villages.

The impact of the Belg harvest, whether good or bad, will be distributed unevenly over the country. It is unfortunate that in the most severely affected northern regions, Eritrea and Tigray, there is no significant Belg harvest, and the impact

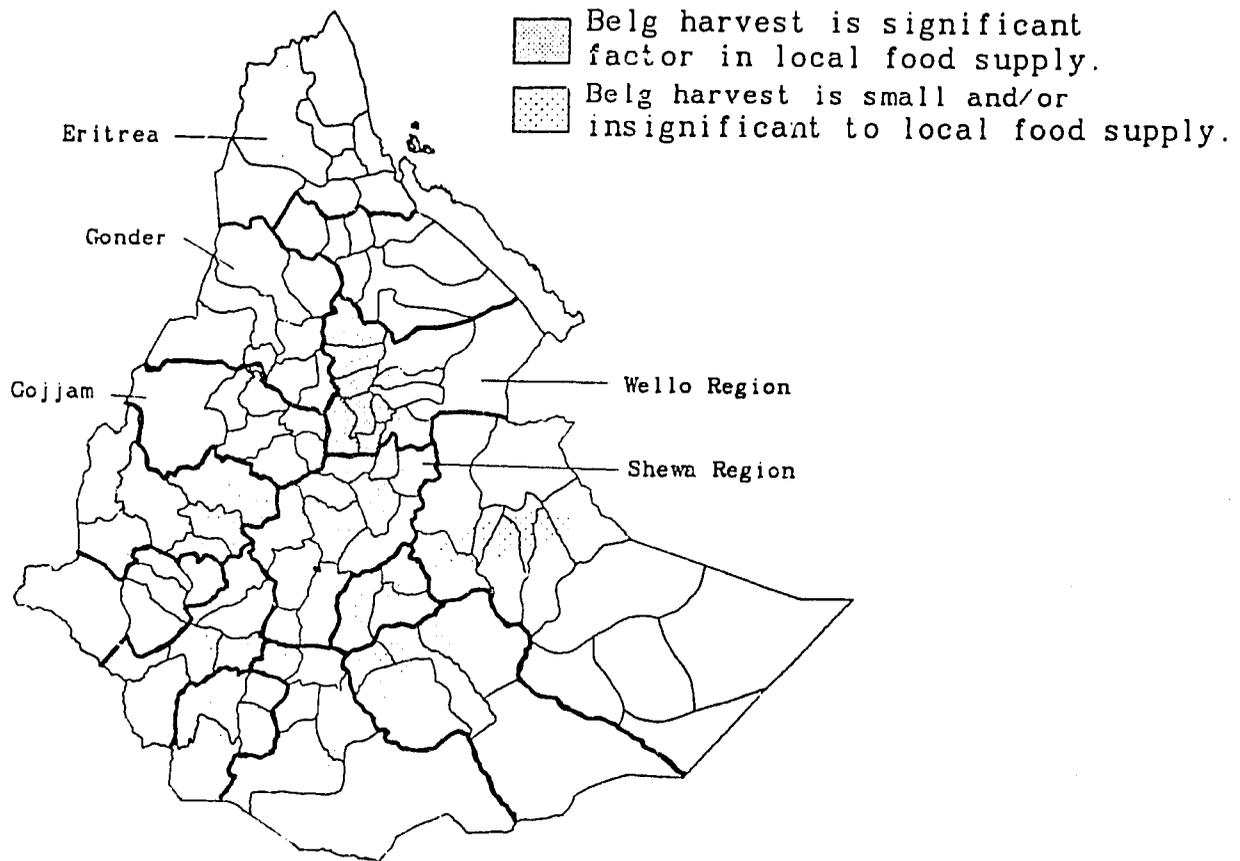
of the Belg season will therefore be small to nil. To the south of these areas, in Wello and northeastern Shewa, the main Belg areas, the fortunes of the Belg crop will be important in determining how severe the food supply situation there will be in 1988. A good Belg harvest may yield enough to keep many families in these two areas at home and ready to farm during the main season. A bad harvest may be the final straw for some families, putting them in need of emergency food assistance later in 1988, or increasing the amount of food aid that they will require. With an emergency pipeline already struggling to meet demands, the impact of adding even more people to those requiring food assistance could be extremely serious.

The following maps show the geographic relationships between areas in which the food supply is currently under great stress, and those areas that may be affected (either positively or negatively) by the outcome of the Belg season, both its harvest and its rains. A reference map containing awraja administrative boundaries is found in the appendix to this report.

**Map 4: Regional Administrative Boundaries**

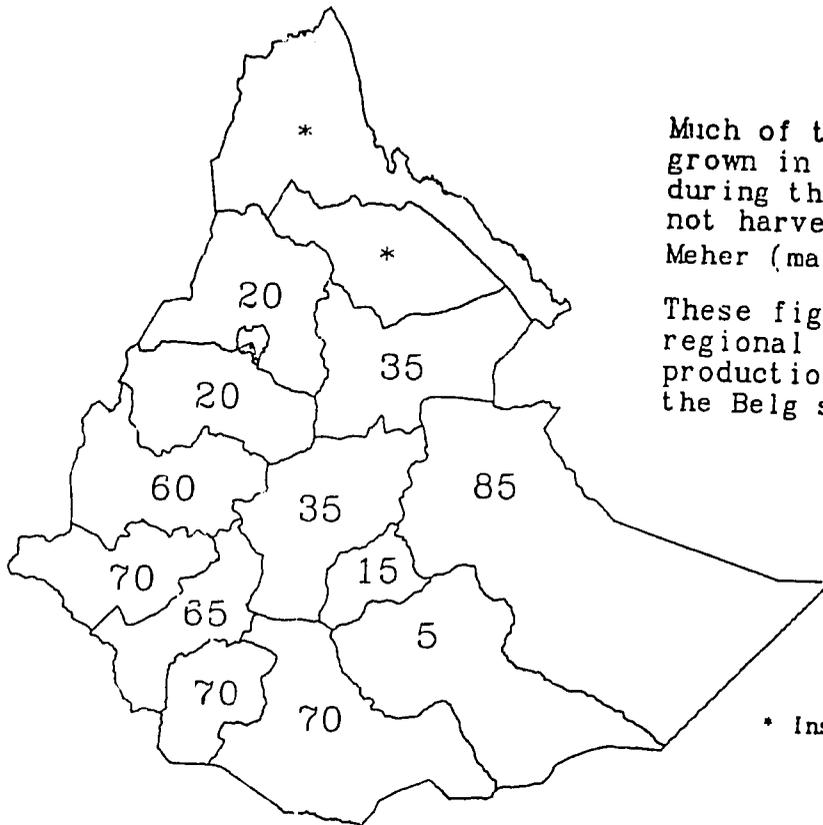


## Importance of Belg Harvest to Local Food Harvest



Although the Belg season harvest is responsible for only 5% of national cereal production, or roughly 275,000 MT (the emergency food shortage for 1988 in Ethiopia is generally considered to be above 1,000,000 MT), it frequently accounts for more than 50% of the year's grain harvest in many parts of Wello, in northeastern Shewa, and in areas scattered through other highland zones in Ethiopia. In these areas, a failure of the Belg harvest is a calamity of major consequence. In other areas, while there may be a Belg harvest, the amount of food it supplies to individual families and to the region is much less important. There is no significant Belg harvest in Eritrea, most of Tigray, Gonder, or Gojjam.

# Importance of Belg Rains to Regional Maize and Sorghum Production



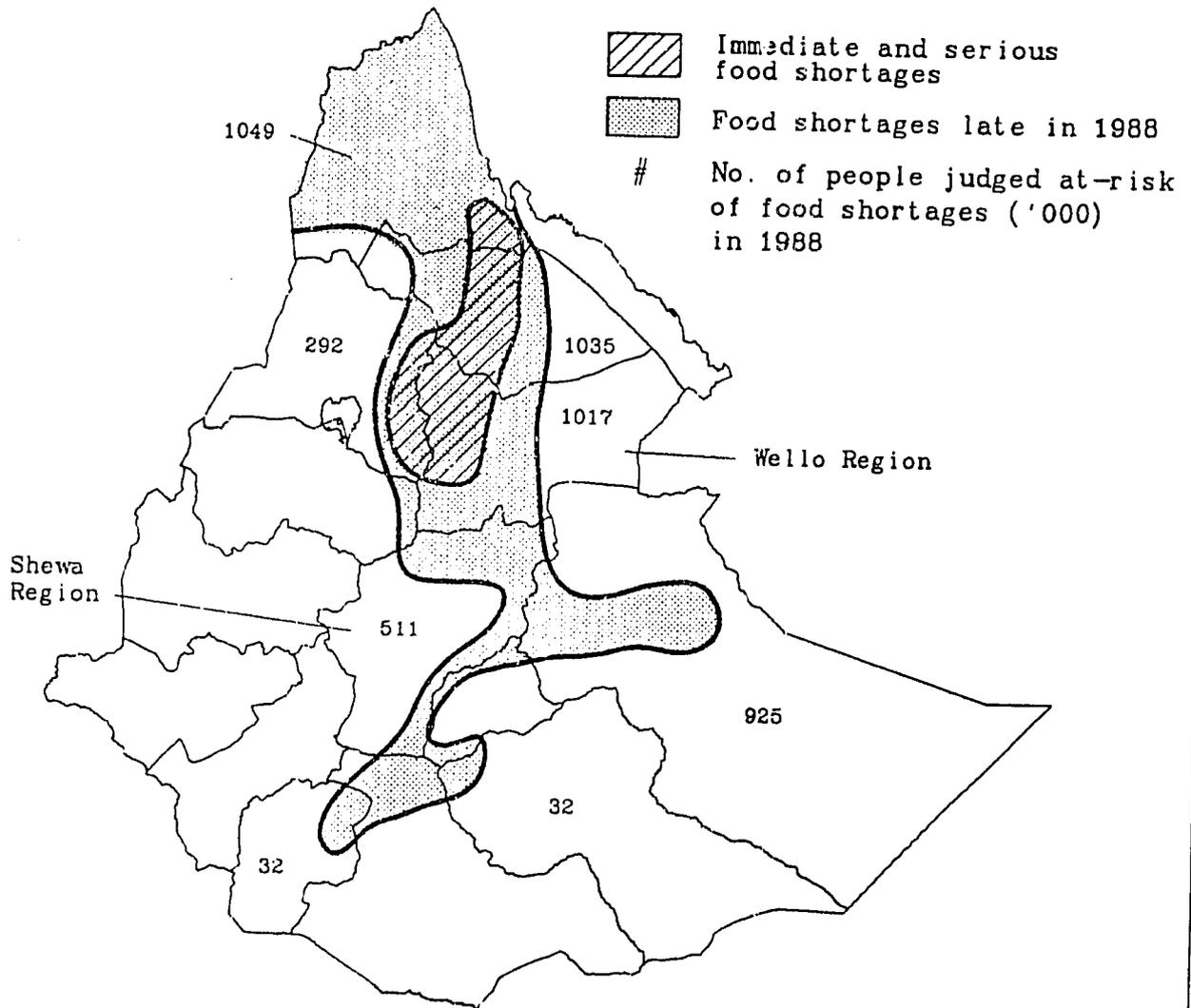
Much of the maize and sorghum grown in Ethiopia is planted during the Belg season, and is not harvested until late in the Meher (main) season.

These figures show percentage of regional maize and sorghum production that is planted during the Belg season rains.

\* Insufficient data

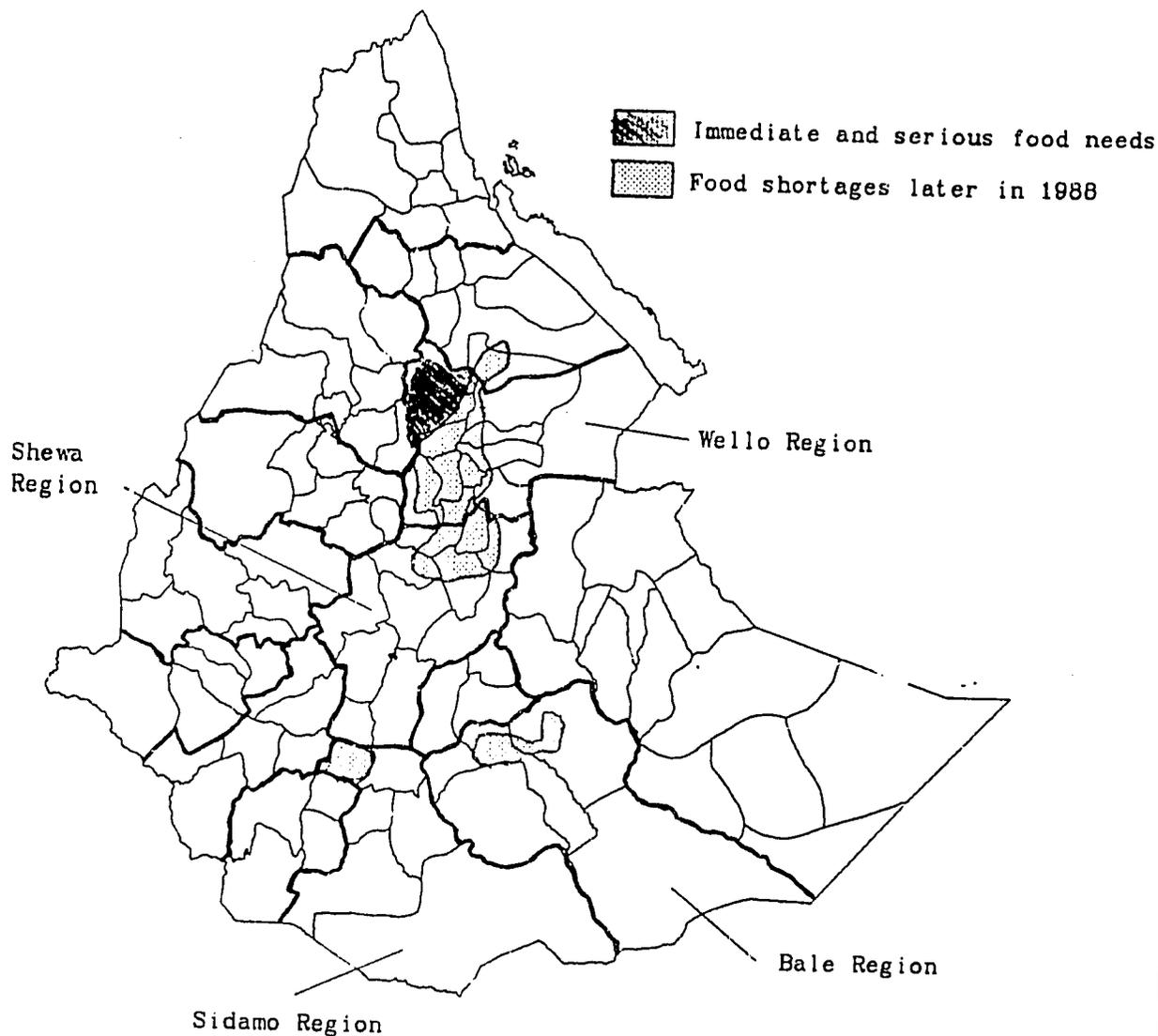
A general failure of the Belg season rains would have an impact far outside of those relatively small areas that are significantly dependent upon a Belg harvest. As can be seen in this map, a large percentage of national cereal production (especially maize and sorghum) is dependent upon Belg season rains for the planting of cereals that will be harvested with other Meher season crops (from September to December).

## Areas of Greatest stress on the Food Supply in 1988



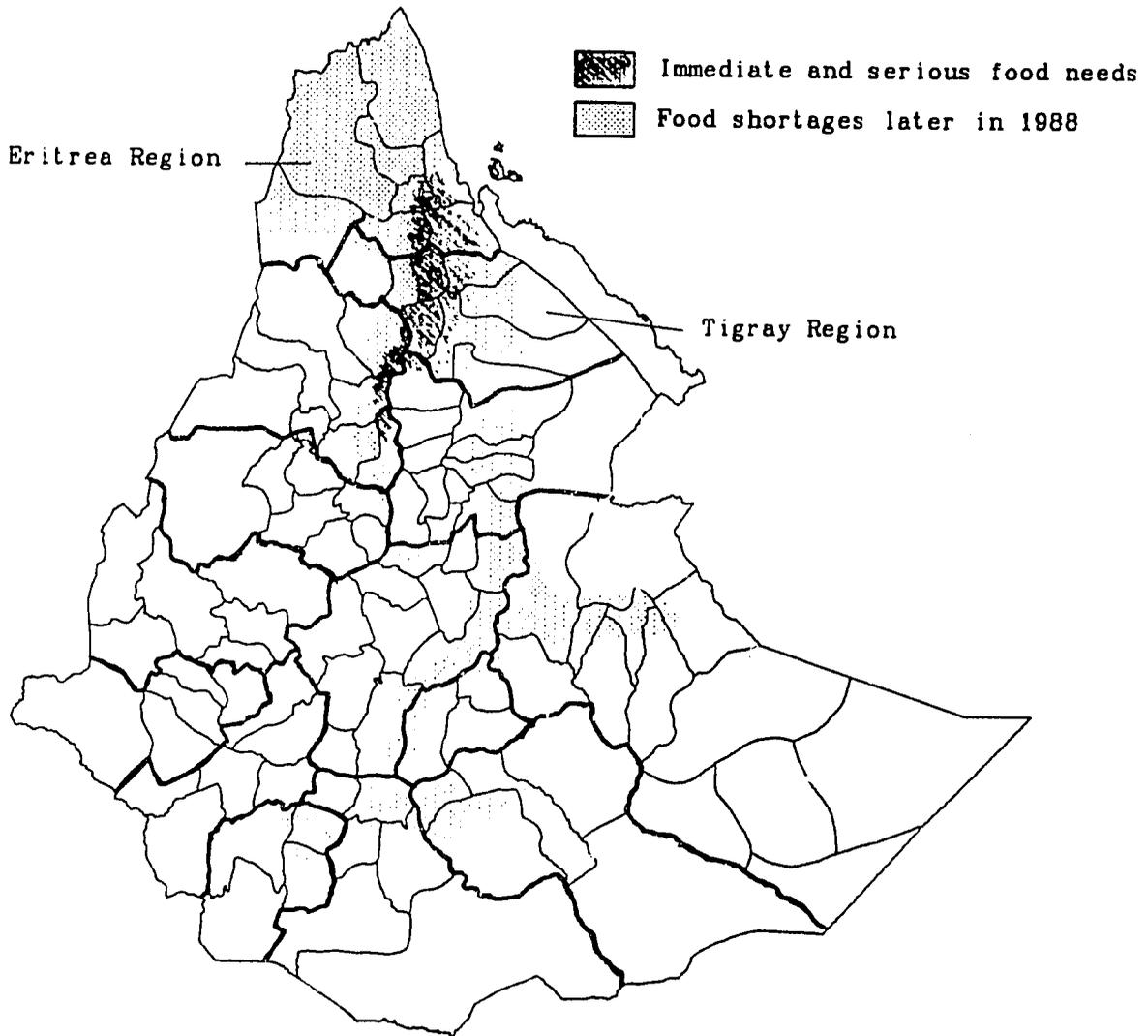
Contrary, perhaps, to public perceptions, the 1987 Meher (main) season harvest was relatively good in most parts of the country (1987 net production was nearly 87% of the good 1986 harvest). Nevertheless, many of the areas that were the most affected by the drought and famine of 1984, and still have not completely recovered, were again hit hard in 1987 by the mid-season halt of the rains. The harvests in these areas have been disastrous this year, with regional losses ranging from 30% to 100%. A significant difference between 1984 and 1987 in these affected areas is that in 1984, the drought began during the Belg season and continued throughout most of the year. In 1987, the Belg rains in Wello, northeastern Shewa, and other Belg crop areas were relatively good, and have provided some cushion against the poor main season harvest.

## Belg Harvest Could Significantly Help These Food-short Areas



In some areas where Belg harvests are normally important in meeting much of the annual food requirement, the difference between people leaving their homes, or being able to stay, may be good Belg season rains and an average or above average Belg harvest in May or June. Particularly in central and western Wello Region, where the immediate emergency food needs are among the greatest, a Belg harvest would supplement the emergency food that will be required throughout much of the year. Elsewhere, particularly in northeastern Shewa, and in the Belg areas of Sidamo and Bale Regions, a good Belg harvest could help a great many agro-pastoralists meet a good portion of their late-season food needs. Conversely, a failure of the Belg rains would put much greater pressure on the food supply in these areas, and might greatly increase the number of people requiring food assistance, especially in northeastern Shewa.

# Food-Short Areas Without a Belg Harvest



In many areas that currently require emergency food assistance, a Belg harvest either does not occur, or does not provide a significant amount of food to the regional supply. As noted on this map, these are some of the most severely food-short areas in Ethiopia: Eritrea and most of Tigray Regions.

## MAURITANIA

### Summary

As is usual, Mauritania's domestic 1987/88 grain production will in no way meet the country's food needs. However, when combined with hold over stock from 1987, food aid pledged for 1988 and expected 1988 imports, the total amount of grains available during the 1988 food aid year (November 1987 through October 1988) should be sufficient (regardless of which of several population, consumption rate, and net production estimates are used in the calculation). In spite of this surplus (which repeats Mauritania's grain supply experience of 1986 and 1987), there is substantial malnutrition among children in various parts of Mauritania, the most recent reports of which are from August, September and October. There is discussion among the donor agencies of the possible need to supplement the customary cereal food aid with more nutritious food stuffs. During November and December, many sightings of Desert locust swarms (gregarious adults) and bands (wingless juveniles) have been confirmed along the border between Tiris Zemmour Region and Western Sahara. The modest green-up in western Tiris Zemmour Region mirrors a more robust greening situation in nearby Western Sahara. Control efforts against the locusts will be minimal, because of the close proximity of the Western Sahara - Morocco conflict.

### Issue

- The main difference between the preliminary cereal production estimate by the Government of the Islamic Republic of Mauritania (GIRM)/Ministry of Rural Development (MRD) and that by the UN Food and Agriculture Organization (FAO)/Committee Against the Drought in the Sahel (CILSS) is in the number of hectares of rice and lowland sorghum that will be harvested<sup>1</sup>. While the question of rice acreage should be fairly easy to resolve, that of lowland sorghum acreage may have to wait for the final production assessment, which for the 1986/87 harvest took place in May of 1987.

### Food Security

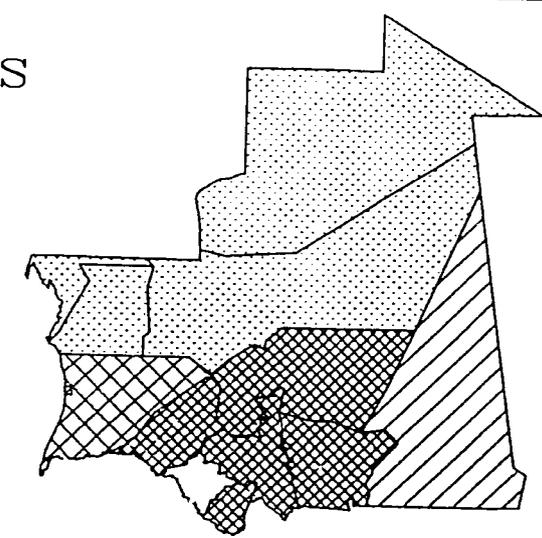
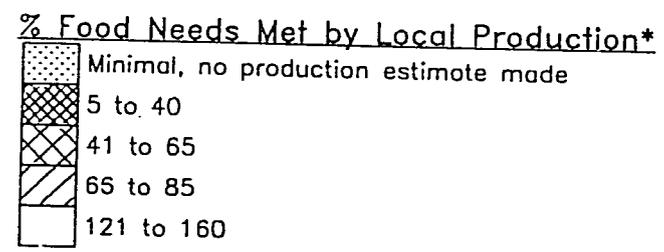
The estimated 1987/88 cereal harvest of 107,000 MT will satisfy from 32% to 46% of Mauritania's 1988 food needs, depending upon the annual cereal consumption rate and population estimates used in the calculation<sup>2</sup>. Map 10 and Table A2 (in the Appendix) present details of regional production balances under two sets of population and consumption assumptions<sup>3</sup>. Local cereal production is minimal in

<sup>1</sup>Irrigated and recessional crops, planted in September and October, are harvested from late December to February.

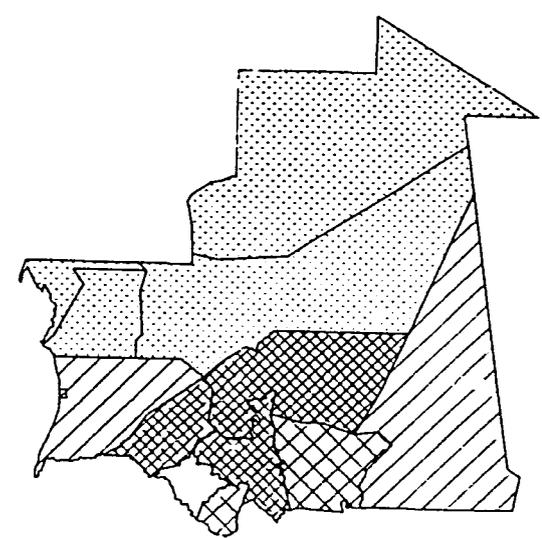
<sup>2</sup>The 107,000 MT figure is from the UN Food and Agriculture Organization (FAO)/Committee for Drought Control in the Sahel (CILSS) October 1987 production estimate. The Government of the Islamic Republic of Mauritania's (GIRM) October 1987 estimate of the net 1987/88 harvest is 98,000 MT, an amount that meets 30% to 42% of 1988 needs under the same population and consumption rate assumptions.

<sup>3</sup>The GIRM and donor community are currently considering a consumption rate of 165 kg per person per year and a population figure of 2,000,000 people. An historical set of consumption rates and a population figure based on the 1987 USAID estimate are also considered in the analysis.

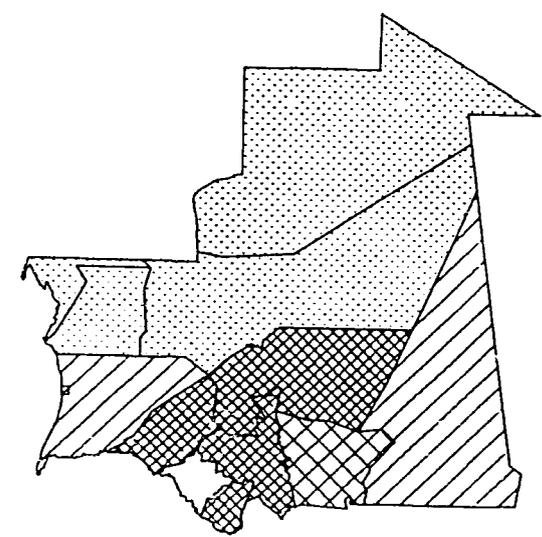
# Percent of Local Food Needs Met by 1987-88 Production



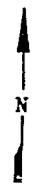
Scenario assuming 185 kg consumption rate and population of 2 million



Scenario assuming historical consumption rates and population of 1.877 million



Scenario assuming 165 kg consumption rate and population of 1.877 million



\*see Table A2 for details

Source: FAO/CILSS GIRM/MRD; USAID/RAMS; FEWS/Mauritania FEWS/PWA, December 1987

Adrar, Dakhlet Nouadhibou, Inchiri, and Tiris Zemmour Regions<sup>1</sup>. The people of these Regions depend on pastoralism, mining, and trade (especially in the case of Dakhlet Nouadhibou, which contains a major port) for their livelihoods. Most grains are obtained through trade or food aid. Local cereal production meets less than 20% of local food needs in Assaba, Brakna, and Tagant Regions, where the estimated two-thirds decline over last year's production is attributable to a decrease in lowland/wadi recession farming and the failure of the annual Senegal River flood in Brakna Region. Hodh ech Chargui, Hodh el Gharbi, and Trarza Regions have fared better this year than last, owing to improved rains in the two Hodhs and to increased irrigation along the Senegal River in Trarza. In Mauritania, local cereal production meets local food needs in Gorgol Region alone (Map 10 and Table A2), the one Region in this arid country where all agricultural strategies common to Mauritania are broadly employed<sup>2</sup>.

The World Bank Living Standards survey, due to begin in January, should provide insight into current consumption patterns within Mauritania's Regions. The issue of national population estimation may be resolved within the next few years, as it appears that a new census will begin with the start of 1988. The difference between the MRD and FAO/CILSS 1987/88 preliminary production estimates (98,000 and 107,000 MT, respectively) lies primarily with the much lower assessment by the MRD of the area under cultivation of rice (34% of the FAO estimate) and lowland/wadi recession sorghum (43% of the FAO estimate). Since irrigated perimeters are necessarily located close to dependable sources of water (such as the Senegal River) and irrigated crops are well buffered from the vagaries of weather, it should be fairly easy to double check the area of rice lands that will be harvested. Lowland and wadi recession farming take advantage of serendipitous rainfall, however, making their location and extent difficult to assess. The issue of area under cultivation for these crops may only be clarified with the final production estimate, to be made following the harvest (January to March).

When current stocks, expected imports, and pledged food aid are added to the calculation, the national cereal balance will be positive under any combination of several net production, population, and consumption rate estimates (Table A3, in the Appendix). The GIRM/Food Security Commission (CSA) wishes to maintain on-farm, commercial, and security stocks for use next year, but when the customary programming consumption rate of 165 kg is used in the calculation, this appears difficult without further imports or food aid. Neither the choice of population estimate nor that of net production has as strong an effect as the consumption rate.

<sup>1</sup>Last year, cereal production in Inchiri Region was estimated at 500 MT.

<sup>2</sup>The several agricultural strategies utilized in Mauritania center around water: rainfed (dieri) agriculture, in which the only moisture plants receive is from direct rainfall; lowland recession (bas fonds) agriculture, which makes use of temporary ponds created in low lying areas by runoff and a raised water table; wadi recession (barrage) agriculture, in which wadis are dammed temporarily to catch any runoff from the upper portions of the watershed; flood recession (walo) agriculture, in which crops are planted on flood plains (of the Senegal and other rivers) as the annual floods recede; and irrigated agriculture.

## Nutrition

The GIRM Ministry of Health and Social Affairs (MHSA)/Bureau of Hygiene and Sanitation (BHS) has released the results from an August 1987 nutrition survey of Ayoun Department, Hodh el Gharbi Region. Of the 460 children measured in ten villages (of which the locations of seven are known, Map 11), 10% were severely malnourished (weighed less than 80% of the standard for children of the same height). This finding contrasts with that of an earlier (March 1987) private voluntary organization (PVO) *Medicins Sans Frontieres* (MSF) survey in neighboring Djigueni Department, Hodh ech C'airgui Region, which found only 5.5% of the 1,798 children measured to be malnourished. The difference may lie, in part, with the timing of the two surveys, as the earlier survey took place within four months of the local harvest, when food should still have been relatively plentiful.

Nutrition surveys carried out in Trarza Region by the GIRM/CSA in September and by the PVO *Terre des Hommes* (TDH) in October show substantial malnutrition in every Department except Rosso<sup>1</sup> (Table 3). While the precise locations of the villages surveyed are not certain, the general direction and approximate distance from the Department center are known. This information presents a picture of high rates of malnutrition across the center of Trarza Region, and extreme malnutrition in the four villages measured in Keur Massene Department and northeastern Mederdra Department (Map 12). A May 1987 nutrition survey of 1,168 children in 24 villages of neighboring Boghe Department (Brakna Region) showed 17% of the children to be severely malnourished, complementing the current pre-harvest information. As a result of the CSA mission, emergency allocations of 1,600 MT of cereals (along with 236 MT of other food stuffs) were distributed within Trarza Region during October.

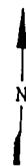
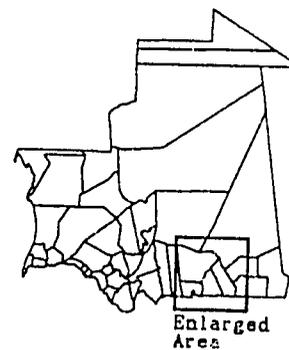
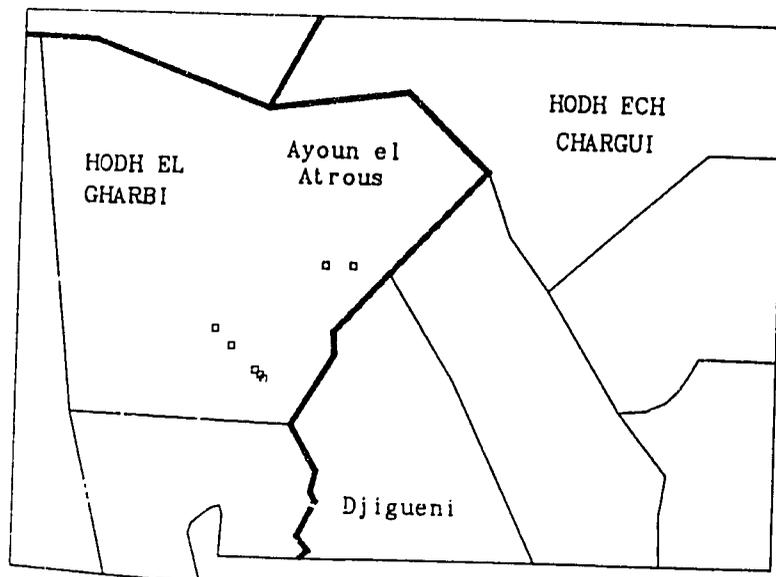
Table 3: Mauritania. Nutrition Surveys in Trarza Region, September and October, 1987

Department/ Surveyor	Month	# Children Included	# Villages Included	Avg % Malnour.	# Villages Not Located	Avg % Malnour.
<u>CSA</u>						
Boutilimit	Sep	1,095	21	25.8	4	31.9
Keur Massene	Sep	116	3	56.9	1	57.6
Mederdra	Sep	227	7	44.1	3	43.3
Ouad Naga	Sep	185	4	16.8	1	16.7
R'Kiz	Sep	410	9	16.1	-	-
Rosso	Sep	106	4	5.7	2	8.0
<u>TDH</u>						
Boutilimit	Oct	425	7	29.9	-	-
<b>Total</b>		<b>2,564</b>	<b>56</b>	<b>25.6</b>	<b>12</b>	<b>35.4</b>

Source: FEWS/Mauritania; GIRM/CSA; TDH

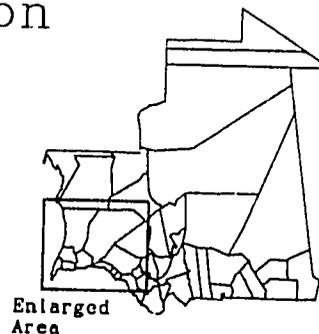
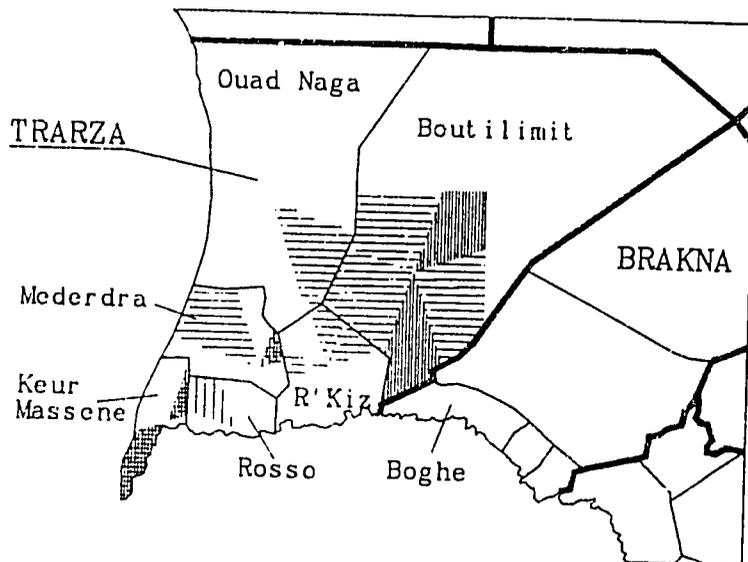
<sup>1</sup>For the TDH survey, which used a weight for standard height measure of malnutrition, severe malnutrition is defined as weighing less than 80% of the standard weight for a given height. While the methodology and definition of malnutrition were not elaborated for the CSA survey, the similarity of the results in Boutilimit Department leads FEWS to presume that the CSA finding of "malnutrition" corresponds to the TDH definition of weighing less than 80% of the standard.

# Nutrition Survey Sites Hodh el Gharbi Region August 1987



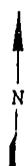
Source: FEWS/Mauritania; GIRM/MHSA  
FEWS/PWA, December 1987

# Malnutrition in Trarza Region September and October, 1987



⊗ Children Malnourished\*

[Dense horizontal lines]	50 to 70
[Medium horizontal lines]	30 to 49
[Sparse horizontal lines]	10 to 29
[Vertical lines]	3 to 9
[White box]	No Data
[White box]	No



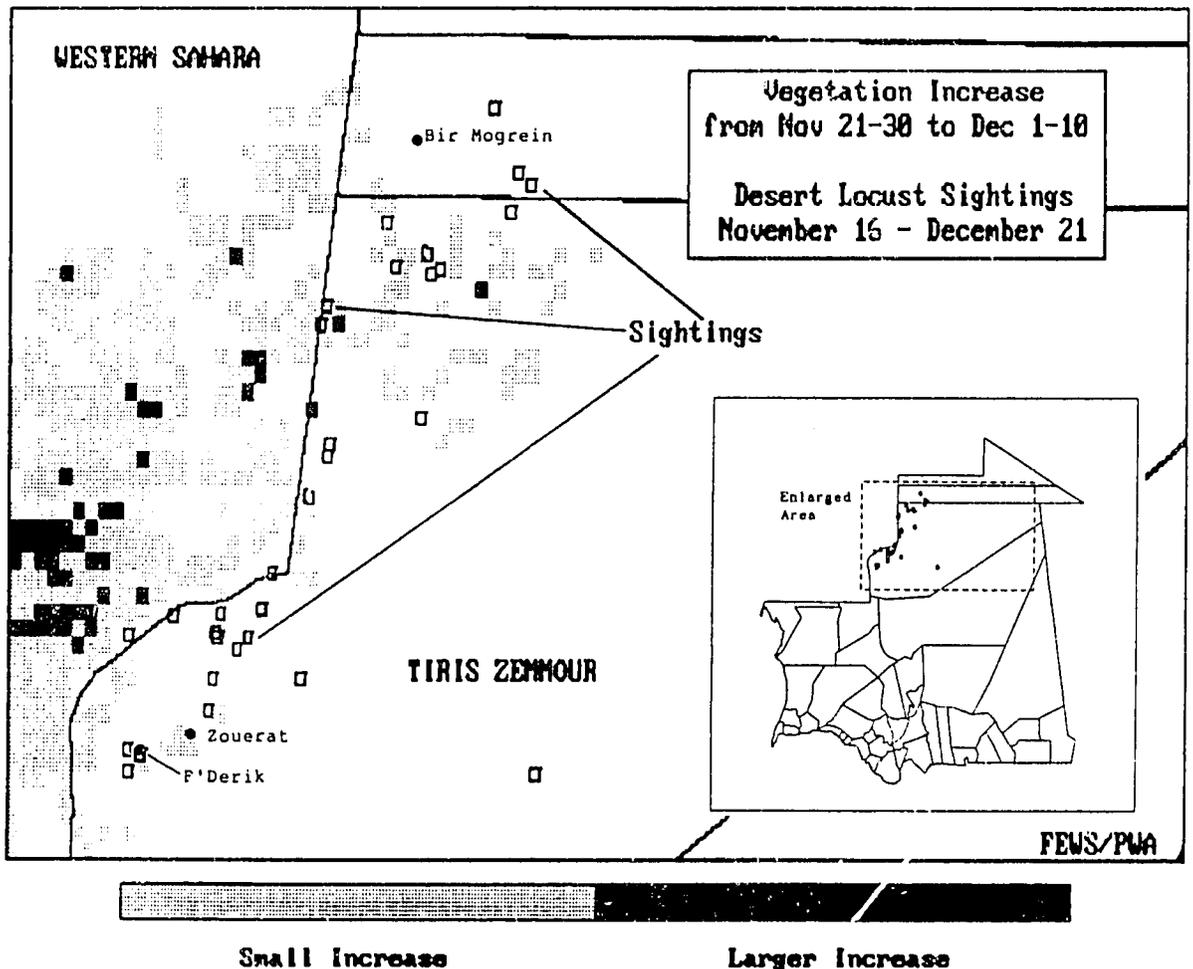
\*Data for 12 villages not included on map.  
See Table 3 for details.

Source: FEWS/Mauritania; GIRM/CSA; TDH  
FEWS/PWA, December 1987

**Desert Locusts**

During November and December, survey teams located at least 12 swarms (gregarious adults) and 18 recently hatched hopper bands (juveniles) of Desert locusts in 34 locations north of 21°N, near the border with Western Sahara (Map 13). (The remaining four locations were reported to be infested by both adults and juveniles.) The infestations range in size from 0.1 to 900 hectares (ha). Desert locust infestations have been rare in this location at this time of year. Hopper bands were seen during November and December in only one year over the period from 1937 to 1975, and then only in the vicinity of Bir Mogrein. Swarms were recorded in four of the 37 years at Bir Mogrein, and in no more than two years in southwestern Tiris Zemmour Region. The survey teams report abundant green vegetation which will continue to support hatching and development of the locusts. Satellite imagery shows that green-up in northwestern Mauritania is modest compared to changes in vegetation levels in nearby areas of Western Sahara (Map 13). While the insects pose little current threat to agriculture in Mauritania, their increase will likely go unchecked; the proximity of the conflict between Western Sahara and Morocco renders aerial surveys and control measures unsafe, and the three ground control vehicles based at Zouerat will not be able to cover all of the vast distances involved. Especially important, it is highly unlikely that organized control measures will be taken in Western Sahara, which shows the most intensive greening in the area.

**Map 13: MAURITANIA**



Appendix

Table A1: Preliminary Cereal Balance Estimate for 1987-88 (Nov. 13, 1987)

	<u>Cereal Requirements</u>	
	Population	8,447,839 <sup>1</sup>
	Per Cap Requirements (KG/YR)	192
1)	<b>Total Cereal Req. (MT)</b>	<b>1,621,985</b>
	<u>Cereal Production (MT)</u>	
	Gross Cereal Production	1,640,025
	Seed/Feed/Waste/Milling	
	Losses	246,004
2)	<b>Net Cereal Production</b>	<b>1,394,021</b>
	<u>Cereal Stocks (MT)</u>	
	Government	69,471
	Private Commercial	30,000
	On-Farm	300,000
	Donor	0
	Seed/Feed/Waste/Milling	
	Losses	59,921
3)	<b>Total Net Stocks</b>	<b>339,550</b>
4)	<b>Total Domestic Supply</b> (2) + (3)	<b>1,733,571</b>
5)	<b>Imports Required</b> (1) - (4)	<b>(111,586)</b>
	<u>Imports (MT)</u>	
	Official Commercial	60,000 <sup>2</sup>
	Unofficial	0
6)	<b>Total Imports</b>	<b>60,000</b>
7)	<b>Cereal Surplus</b> (6) - (5)	<b>171,586</b>
	<u>Food Aid Commitments (MT)</u>	
	US Government (Title II Reg:)	17,300
	Other Donors	5,000
8)	<b>Total Commitments</b>	<b>22,300</b>
	<b>Overall Food Surplus</b> (8) + (7)	<b>193,886</b>

Source: Stocks, imports, Food Aid Commitments - USAID/Burkina adjusted to account for 15% loss from seed, feed, milling and waste; Population - FEWS/PWA estimate based on GOB 1985 Census and U.S.Census Bureau projections.

<sup>1</sup>March 1988 estimate, as calculated by FEWS/PWA.

<sup>2</sup>Commercial imports will consist of wheat and rice, which satisfy urban demand.

Table A2: Mauritania -- Food Needs Met by Local Production; Several Scenarios

Region	1988 Pop (1)	1988 Pop (2)	Historical Consumption		'88 Food Needs			'88 Food Surplus			'88 Food % Needs			'88 Food Needs			
			Net Prod (MT) (3)	Consumption Rates (4) (kg/yr/cap)	Consumption Rates @ 165 Avg (5) (kg/yr/cap)	Needs (MT) (1,3,4)	Surplus (MT) (1,3,4)	% Needs Met (1,3,4)	Needs (MT) (2,3,4)	Surplus (MT) (2,3,4)	% Needs Met (2,3,4)	Needs (MT) (1,3,5)	Surplus (MT) (1,3,5)	% Needs Met (1,3,5)	Needs (MT) (2,3,5)	Surplus (MT) (2,3,5)	% Needs Met (2,3,5)
Adrar	84,350	89,870		129	152	10,870	{10,870}	0.0	11,580	{11,580}	0.0	12,800	{12,800}	0.0	13,840	{13,840}	0.0
Assaba	205,930	219,410	2,890	149	175	30,680	{27,990}	8.8	32,690	{30,000}	8.2	36,140	{33,450}	7.4	38,500	{35,810}	7.0
Brakna	187,840	200,140	3,580	145	171	27,240	{23,880}	13.1	29,020	{25,480}	12.3	32,080	{28,520}	11.1	34,180	{30,620}	10.4
Dakhlet Nouadhibou	31,340	33,390		115	135	3,600	{3,600}	0.0	3,840	{3,840}	0.0	4,240	{4,240}	0.0	4,520	{4,520}	0.0
Gorgol	135,780	144,870	32,350	153	180	20,770	11,580	155.8	22,130	10,220	148.2	24,470	7,880	132.2	26,070	6,280	124.1
Guidimaka	64,170	68,370	3,160	122	144	7,830	{4,680}	40.2	8,340	{5,190}	37.8	9,220	{6,070}	34.2	9,820	{6,670}	32.1
Hodh ech Chargui	230,210	245,280	31,370	163	192	37,520	{6,150}	83.6	39,980	{8,610}	78.5	44,190	{12,820}	71.0	47,090	{15,720}	68.6
Hodh el Gharbi	158,050	168,260	12,430	163	192	25,440	{13,010}	48.9	27,100	{14,670}	45.9	29,980	{17,530}	41.6	31,920	{19,490}	38.9
Inchiri	14,010	14,930		92	108	1,290	{1,290}	0.0	1,370	{1,370}	0.0	1,520	{1,520}	0.0	1,620	{1,620}	0.0
Nouakchott	353,520	378,680		149	175	52,670	{52,670}	0.0	58,120	{58,120}	0.0	62,040	{62,040}	0.0	66,100	{66,100}	0.0
Tagant	119,710	127,550	1,110	144	170	17,240	{18,130}	6.4	18,370	{17,280}	6.0	20,300	{19,190}	5.5	21,630	{20,520}	5.1
Tiris Zemmour	21,600	23,010		115	135	2,480	{2,480}	0.0	2,650	{2,650}	0.0	2,930	{2,930}	0.0	3,120	{3,120}	0.0
Trarza	272,620	290,480	20,310	93	110	25,350	{5,040}	80.1	27,010	{6,700}	75.2	29,880	{9,550}	68.0	31,810	{11,500}	63.8
Total	1,877,130	2,000,000	108,970	140	165	282,980	{158,010}	40.7	280,200	{173,230}	38.2	309,760	{202,780}	34.5	330,020	{223,050}	32.4

(1) FEWS/Mauritania-USAID-GIRMA 1987 population estimate increased by 2.7%.

(2) Current GIRMA estimate or 2,000,000 distributed according to 1987 population estimate.

(3) Net Production as distributed in FEWS Mauritania Country Report 16/17, using 1988 and 1987 FAO/CILSS production estimates, the final MRD/DSA production estimate for 1988, and NDVI and river level information. Total net production is from the FAO/CILSS Preliminary estimate for 1987/88, made in October 1987.

(4) Nouakchott rate from 1982 GIRMA/MRD study, remaining rates from 1980 USAID/Rural Manpower and Assessment Surveys (RAMS) study. Rates in Brakna, Gorgol, Guidimaka, Hodh ech Chargui, Hodh el Gharbi, Inchiri, Tagant, and Trarza Regions are for rural sedentary people, and are therefore inflated for areas that are predominantly pastoralist. A general pastoralist consumption figure was used for Dakhlet Nouadhibou and Tiris Zemmour Regions. In Adrar Region, the consumption rate for Nouakchott was applied to the known urban population and the average consumption rate for pastoralists was applied to the remaining population.

(5) Inter-regional distribution seen in historical consumption rates applied to the national consumption rate used for programming food aid (165 kg/yr/cap).

Table A3: Mauritania -- Preliminary Cereal Balance for 1988

1988 Population	1,877,000						1988 Population	2,000,000					
	123 kg Scenario		140 kg Scenario		165 kg Scenario			123 kg Scenario		140 kg Scenario		165 kg Scenario	
Net Production	98,000	107,000	98,000	107,000	98,000	107,000	Net Production	98,000	107,000	98,000	107,000	98,000	107,000
Hold-Over Stock from 1987							Hold-Over Stock from 1987						
Food Aid for Sale	37,000	37,000	37,000	37,000	37,000	37,000	Food Aid for Sale	37,000	37,000	37,000	37,000	37,000	37,000
Food Aid for Distribution	14,200	14,200	14,200	14,200	14,200	14,200	Food Aid for Distribution	14,200	14,200	14,200	14,200	14,200	14,200
Commercial Stock	6,000	6,000	6,000	6,000	6,000	6,000	Commercial Stock	6,000	6,000	6,000	6,000	6,000	6,000
(on-farm, SONIMEX, CSA Security)	34,900	34,900	34,900	34,900	34,900	34,900	(on-farm, SONIMEX, CSA Security)	34,900	34,900	34,900	34,900	34,900	34,900
Total Hold-Over Stock	92,100	92,100	92,100	92,100	92,100	92,100	Total Hold-Over Stock	92,100	92,100	92,100	92,100	92,100	92,100
Food Aid Imported or in Pipeline							Food Aid Imported or in Pipeline						
For Distribution	12,675	12,675	12,675	12,675	12,675	12,675	For Distribution	12,675	12,675	12,675	12,675	12,675	12,675
For Sale	49,525	49,525	49,525	49,525	49,525	49,525	For Sale	49,525	49,525	49,525	49,525	49,525	49,525
Total Aid Imported	62,200	62,200	62,200	62,200	62,200	62,200	Total Aid Imported	62,200	62,200	62,200	62,200	62,200	62,200
SONIMEX Imports	53,700	53,700	53,700	53,700	53,700	53,700	SONIMEX Imports	53,700	53,700	53,700	53,700	53,700	53,700
Commercial Imports	40,000	40,000	40,000	40,000	40,000	40,000	Commercial Imports	40,000	40,000	40,000	40,000	40,000	40,000
Preliminary Total Supply Estimate	346,000	355,000	346,000	355,000	346,000	355,000	Preliminary Total Supply Estimate	346,000	355,000	346,000	355,000	346,000	355,000
Projected Consumption	230,900	230,900	282,900	282,800	309,700	309,700	Projected Consumption	246,000	246,000	283,000	280,000	330,000	330,000
Preliminary Balance Estimate	115,100	124,100	63,200	72,200	36,300	45,300	Preliminary Balance Estimate	100,000	109,000	66,000	75,000	16,000	25,000
% Consumption needs met by							% Consumption needs met by						
Preliminary Total Supply Estimate	149.85%	153.75%	131.86%	135.08%	111.72%	114.63%	Preliminary Total Supply Estimate	140.65%	144.31%	123.57%	126.79%	104.85%	107.58%
Proposed Reconstitution Stocks							Proposed Reconstitution Stocks						
On-Farm	10,000	10,000	10,000	10,000	10,000	10,000	On-Farm	10,000	10,000	10,000	10,000	10,000	10,000
Private Commercial	6,000	6,000	6,000	6,000	6,000	6,000	Private Commercial	6,000	6,000	6,000	6,000	6,000	6,000
Security Stock (CSA)	21,900	21,900	21,900	21,900	21,900	21,900	Security Stock (CSA)	21,900	21,900	21,900	21,900	21,900	21,900
Other (SONIMEX)	28,000	28,000	28,000	28,000	28,000	28,000	Other (SONIMEX)	28,000	28,000	28,000	28,000	28,000	28,000
Total Proposed	65,900	65,900	65,900	65,900	65,900	65,900	Total Proposed	65,900	65,900	65,900	65,900	65,900	65,900
Balance After Stocks Reconstituted	49,200	58,200	17,300	26,300	(29,600)	(20,600)	Balance After Stocks Reconstituted	34,100	43,100	100	9,100	(49,900)	(40,900)

- (1) Consumption rates: 123 kg/yr/capita was calculated from 1988 population and consumption figures; 140 kg is the average of historical per Region consumption rates detailed in Table 3; 165 kg/yr/capita is the consumption rate used by the GIRM, FAO, and other donor organizations when programming food aid.
- (2) 1988 Population: 1,877,000 equals the 1987 population estimate used by USAID/Mauritania inflated by 2.7%; 2,000,000 is the 1988 population figure being used by the UNDP and the GIRM.
- (3) Net 1987/88 Production: 98,000 MT is the preliminary GIRM estimate for 1987/88 net production; 107,000 is the FAO/CILSS preliminary estimate for net 1987/88 production.
- (4) Hold over stocks, food aid, and import figures are from the World Food Program (WFP) and the USAID/Mauritania Food for Peace Office, as reported by the GIRM/CSA.
- (5) The plan for reconstitution of stocks was proposed by the GIRM/CSA.

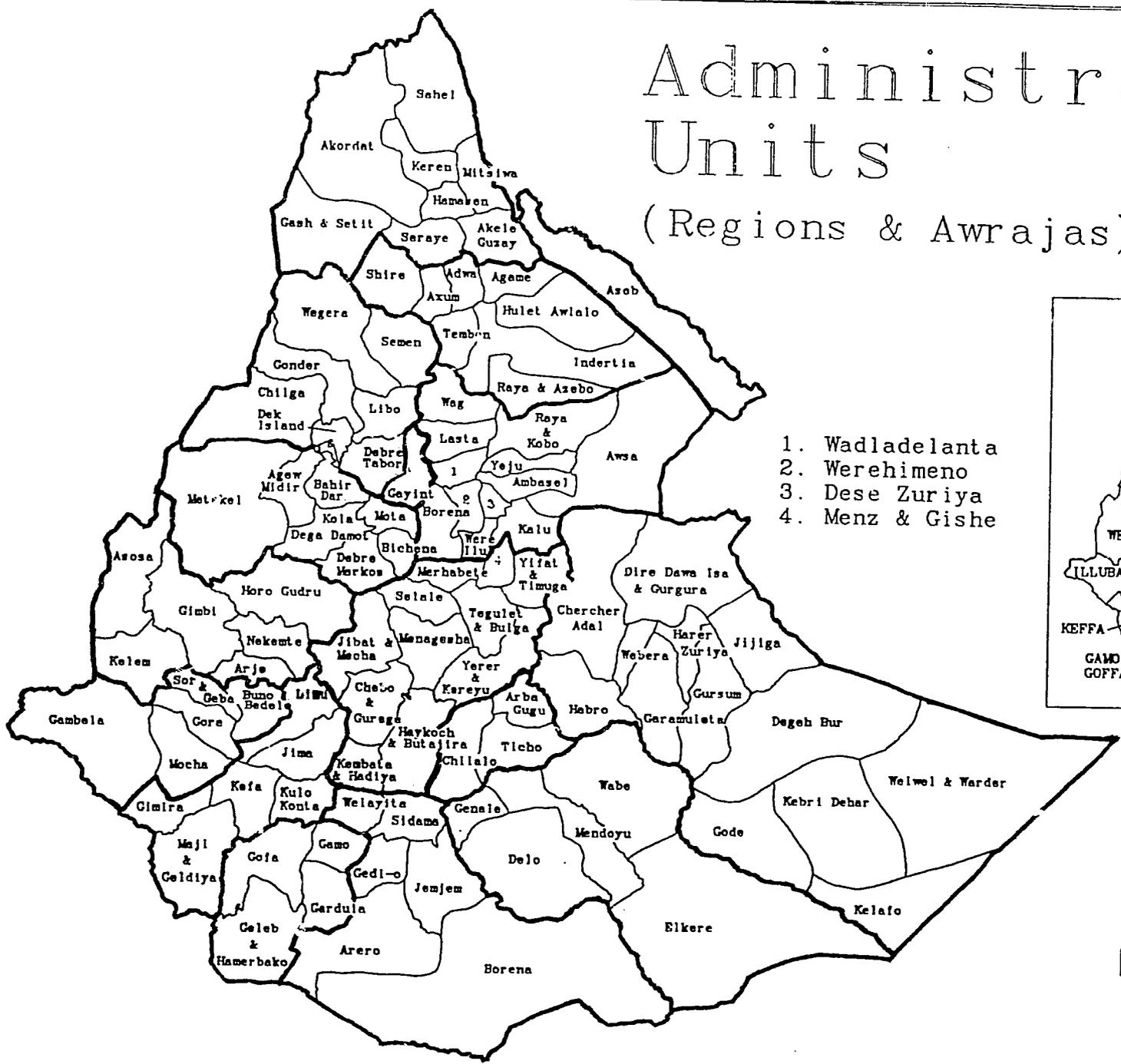
# REFERENCE MAP



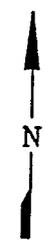
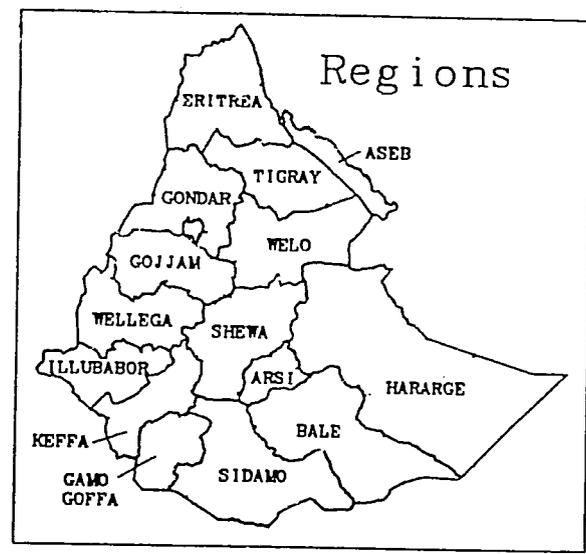
	NATIONAL BOUNDRY		O U A G A D O U G O U
	Provincial Boundry		Provincial Capital

FEWS/PWA, June 1987

# Administrative Units (Regions & Awrajas)

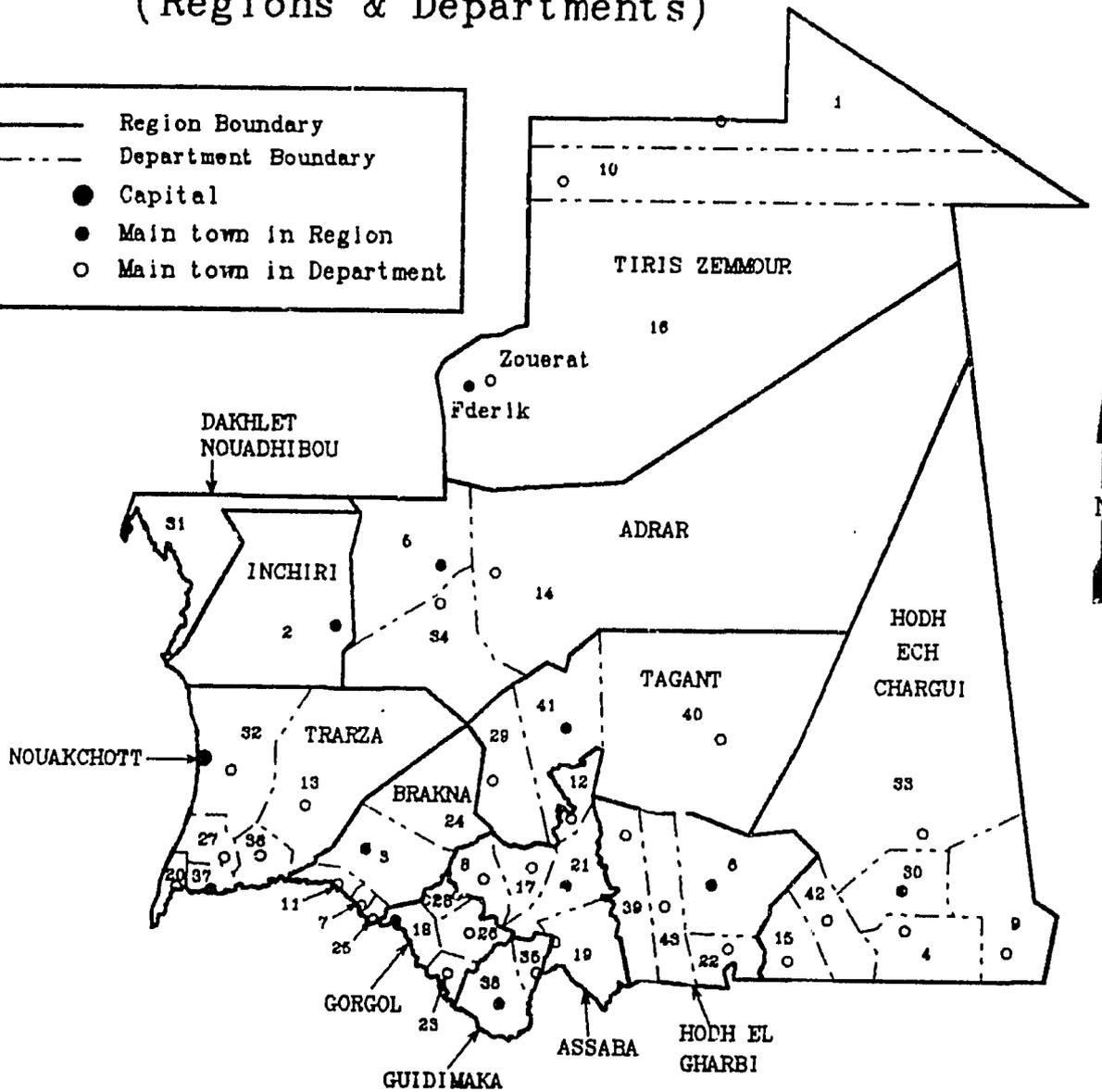
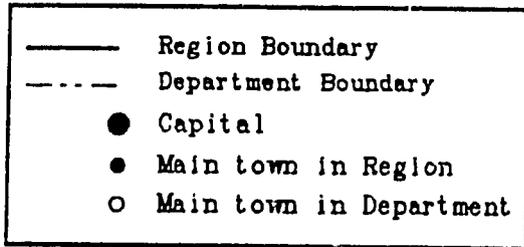


1. Wadladelanta
2. Werehimeno
3. Dese Zuriya
4. Menz & Giske



# Administrative Units

(Regions & Departments)



Departments	RGN	Department	RGN	Department	RGN
1. Ain Ben Tili	TZ	16. Fderik/Zouerat	TZ	30. Nema	HC
2. Akjoujt	IN	17. Gusrou	AS	31. Nouadhibou	DN
3. Aleg	BR	18. Kaedi	GO	32. Ouid Naga	TR
4. Amourj	HC	19. Kankossa	AS	33. Oualata	HC
5. Atar	AD	20. Keur Massene	TR	34. Oujelt	AD
6. Ayoun el Atrous	HC	21. Kliffa	AS	35. Ould Yenge	GU
7. Bababe	BR	22. Kobenni	EG	36. Rkiz	TR
8. Barkewol el Ablod	AS	23. Maghama	GO	37. Rosso	TR
9. Bassikounou	HC	24. Magta Lahjar	ER	38. Selibabi	GU
10. Bir Mogrein	TZ	25. M' Bagne	ER	39. Tamchekket	HG
11. Boghe	BR	26. Mbout	GO	40. Tichit	TA
12. Boumeid	AS	27. Mederdra	TR	41. Tidjikja	TA
13. Boutilimjt	TR	28. Monguel	GO	42. Timbedgha	HC
14. Chinguetti	AD	29. Moudjeria	TA	43. Tintane	HG
15. Djiguani	HC				

Source: FEWS/Mauritania 1986; IGN 1980  
 FEWS/PWA, February 1987