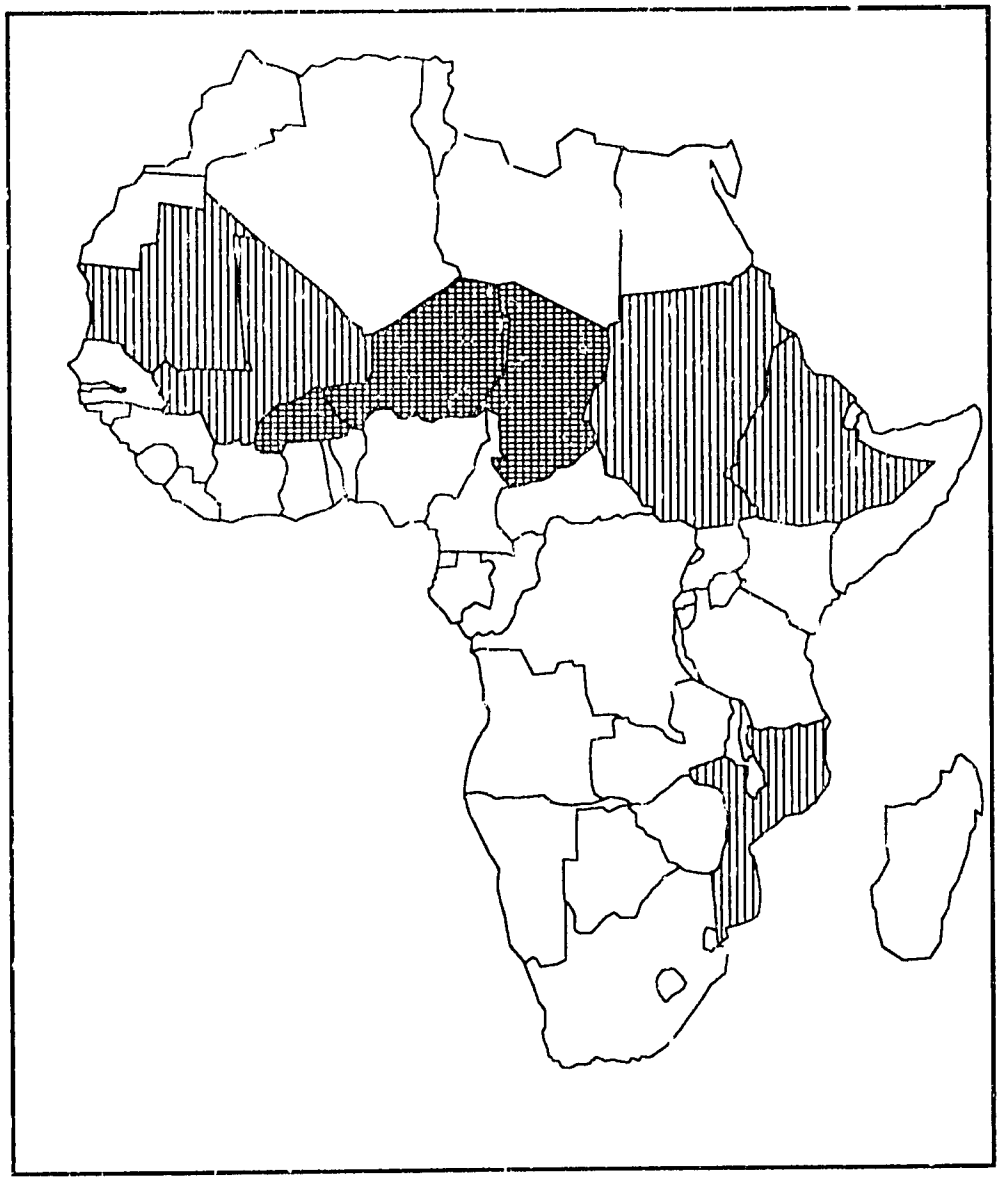
PN-AAW-374

Report Number 8
January 1987

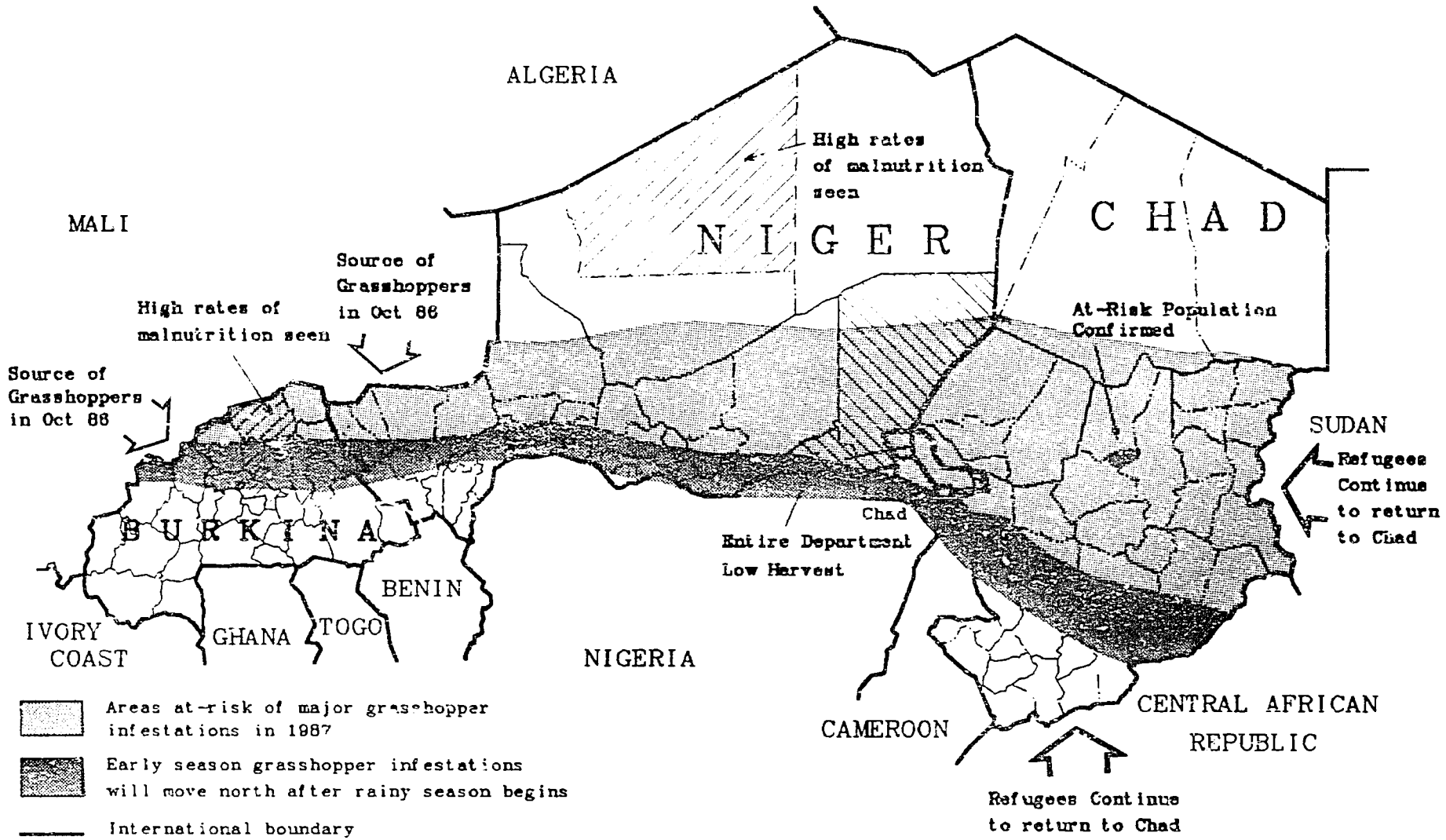
FEWS Country Report

BURKINA, CHAD, NIGER



Africa Bureau
U.S. Agency
for International
Development

Summary Map



MAP 1: BURKINA, CHAD, and NIGER

Famine Early Warning System Country Report

BURKINA
CHAD
NIGER

A Time For Planning

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

Prepared by
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January 1987

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INTRODUCTION

This is the eighth of a series of monthly country reports issued by the Famine Early Warning System (FEWS). Starting this month, Burkina, Chad and Niger will be combined in one report until the crop cycle begins again in the spring. This report 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. The sources of information are referred to in the text. Information has, whenever possible, been presented in the form of quantified data. When quantified data do not exist, qualitative data are used.

Use of the term "at-risk" to identify vulnerable populations is problematical 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 process underlying the deteriorating situation is highlighted by the FEWS effort, 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 medical, transport, storage, economic development policy change, etc.

Where possible, food needs estimates 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.

upon when in the disaster process identification is made and the extent of its 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 food needs estimates presented periodically in FEWS reports should not be interpreted to mean food aid needs, e.g., as under PL480 or other donor programs.

FEWS does not collect primary data. Rather, it receives information from various domestic U.S. and international agencies and private voluntary organizations, and from government agencies in the countries under study via in-country FEWS Public Health Advisors. The information is then examined, compiled and analyzed for its predictive potential. Without the ongoing cooperation of all these organizations, FEWS could not function.

In particular, this report owes a debt to various offices of the US Agency for International Development (AID), USAID/Ouagadougou, USAID/N'Djamena, USAID/Niamey; various ministries of the Government of Burkina (GOB), Government of Chad (GOC), and Government of Niger (GON) Ministries of Agriculture and Health; the UN Food and Agricultural Organization (FAO); the Permanent Interstate Committee for Drought Control in the Sahel (CILSS); the European Agency for Development and Health (AEDES); AGRHYMET; the Catholic Relief Service (CRS, or CATHWELL), CARITAS, and the International League of Red Cross and Red Crescent Societies (LICROSS).

FEWS is operated by AID's Office of Technical Resources in the Bureau for Africa in cooperation with numerous USG and other organizations.

SUMMARY

For Burkina, Chad, and Niger 1986 has been an excellent harvest year. Even so, each country contains small pockets of people whose crops failed, and who have no other source of income with which to buy food. In Burkina, several provinces show more than 10% of young children as being quite malnourished, but other at-risk information is scanty. In Chad, 13,000 people in one area have been confirmed to be at-risk; and several other areas have been identified for more thorough investigation. The total population of these areas is 150,000, but it is unlikely that the majority of these peoples will suffer undue hardship. Refugees, who will need some assistance while they re-establish themselves, continue to return to Chad in small numbers from Sudan and the Central African Republic. Recent agricultural production and populations at-risk estimates from the Government of Niger Ministry of Agriculture indicate that some 714,600 people, just over 10% of the total population, are expected to be at-risk in 1987. The Government of Niger is planning to hand out a small amount of food-aid to a total of 868,100 people, allowing for in-migration of pastoralists from neighboring countries. Grasshoppers and locusts are expected to be a significant problem in the coming growing season. National governments and the donor agencies are currently working together to devise strategies for preventing a second year of grasshopper emergencies.

Issues

- Distribution strategies must be developed for moving excess grains in surplus areas to deficit areas.

Key January Events

- Grasshopper and locust egg pod surveys are underway in at least Chad and Niger, and will provide data for forecasting grasshopper and locust outbreaks.

FOOD FLOWS/ NEEDS

Although Burkina, Chad, and Niger are each experiencing near record breaking harvests, only Niger expects the 1986 harvest to meet national food needs (Appendix I: Table 3). In Burkina, current grain stocks will make up the bulk of the difference, with some 29,700 MT in food-aid expected (Appendix I: Table 1). Chad is planning to utilize 38,300 MT in food-aid to make up the gap between food needs and the sum of net harvest, current stock and expected imports (Appendix I: Table 2).

AGRICULTURE

The final harvest of recessional and irrigated cereals crops has been completed throughout the Sahel. While we have for Niger early January harvest estimates by crop

and arrondissement (akin to the US county*), similar information for Burkina is available only from the end of September, and for Chad is available only as a national summary (Appendix II). Rough estimates of total grain production by Chadian prefecture have been made for the purpose of analysis (Appendix II), but any specific prefecture figure should be used with extreme caution.

Map 2 presents the most recent estimates of the 1986 grains harvest (net of seed reserves and waste) by administrative unit for Burkina (provinces), Chad (prefectures), and Niger (arrondissements) both in absolute metric tons (MT) and in metric ton per capita (MT/cap). The upper picture, of net grain production per administrative unit, shows the relative production capacity of the three countries. Factors which affect this include amount of rainfall experienced, types of soils, and local farming practices. The lower picture, of per capita grains production in each administrative unit, shows how well the land in the various regions of the countries is able to support the density of the population living on it. Thus, while absolute production is middling along Niger's border with Burkina, the amount of food produced per person in this area is among the highest in the region.

The dietary customs of the people using the land also affect how well a harvest meets food-needs in an area. In Burkina each person will require 192 kg of grain to get through a year. In Chad, the customary requirement is 142 kg per person per year, while in Niger custom splits the grain requirement into 175 kg per person per year for agropastoralists and 205 kg per person per year for urban dwellers and strict pastoralists. Map 3 shows how much of expected 1987 food needs in each country have been met by the local harvest. Any shortfalls will have to be made up through inter-regional trade, imports (either commercial or donor), and food substitution (traditional coping methods such as the use of roots and wild grains in the place of domestic grains).

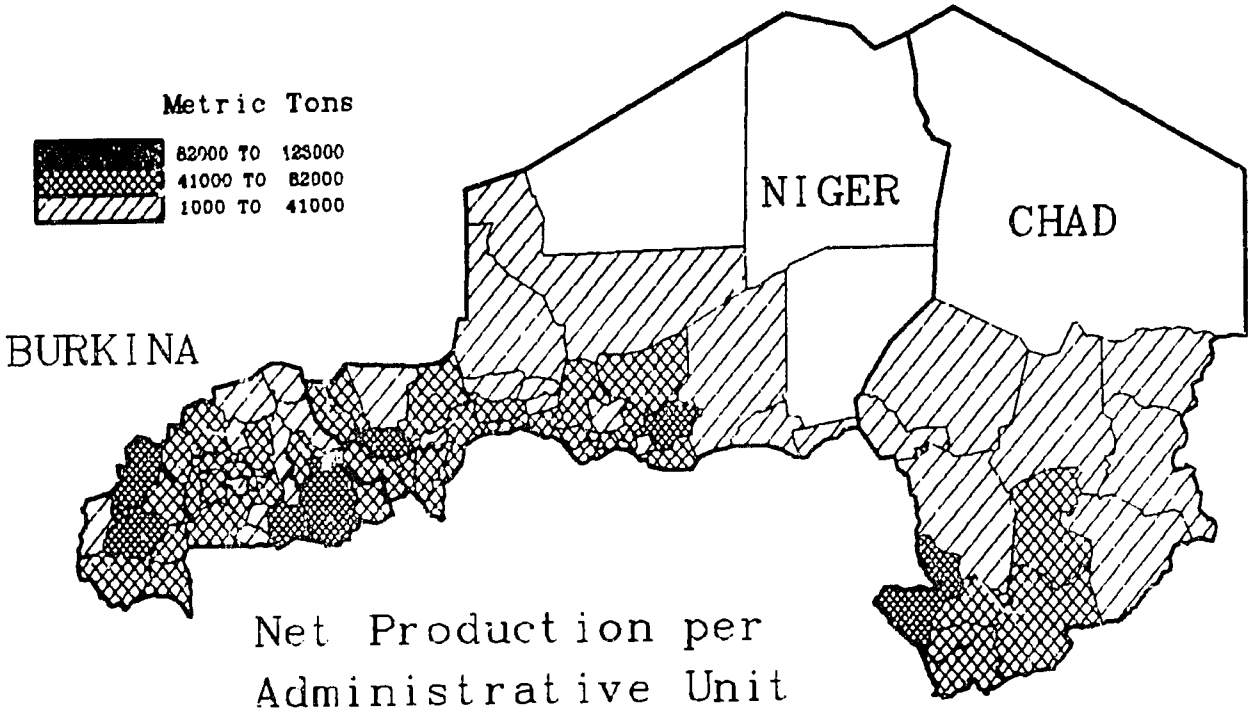
Burkina

The Burkina Ministry of Agriculture released a September 30 assessment of the 1986 cereal harvest which forecast

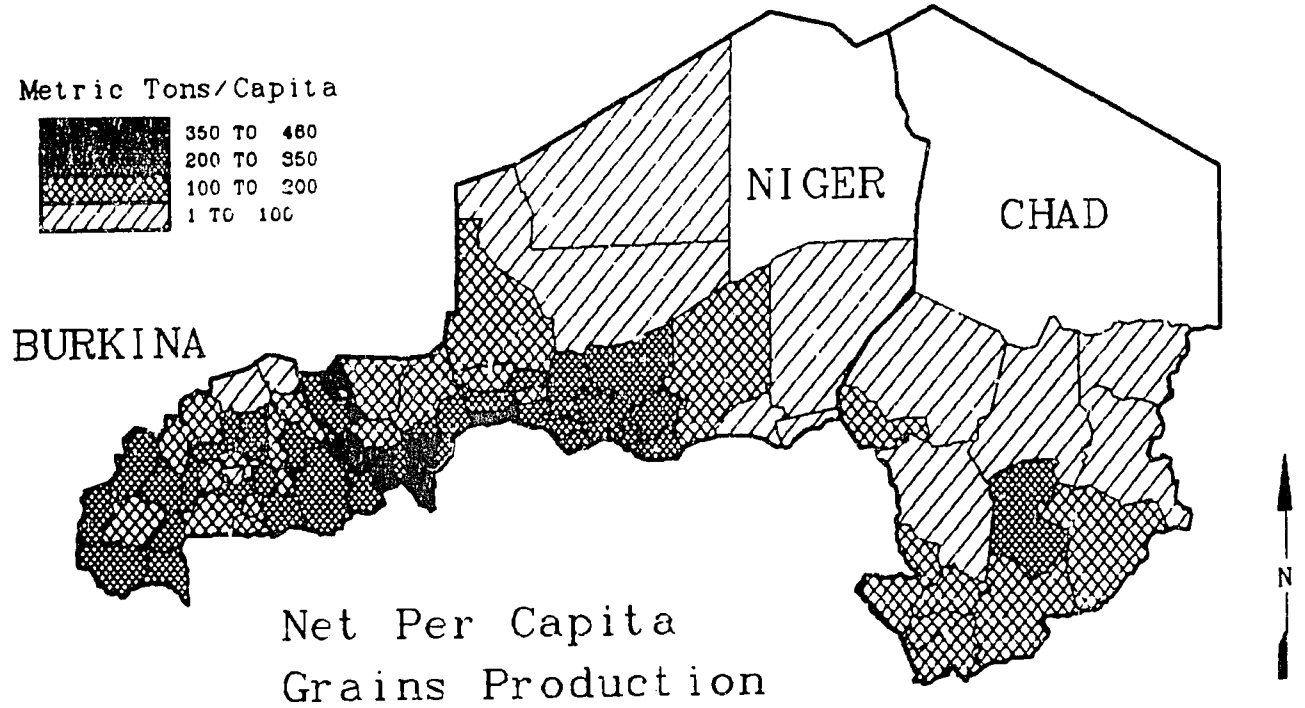
* The administrative units in Niger are Departments and Arrondissements; in Burkina, Provinces, Departments, and Arrondissements; and in Chad, Prefectures, Sub-prefectures and Cantons. See Appendix IV for reference maps which name the administrative units for each country.

Map 2: BURKINA, CHAD, and NIGER

Net 1986 Production



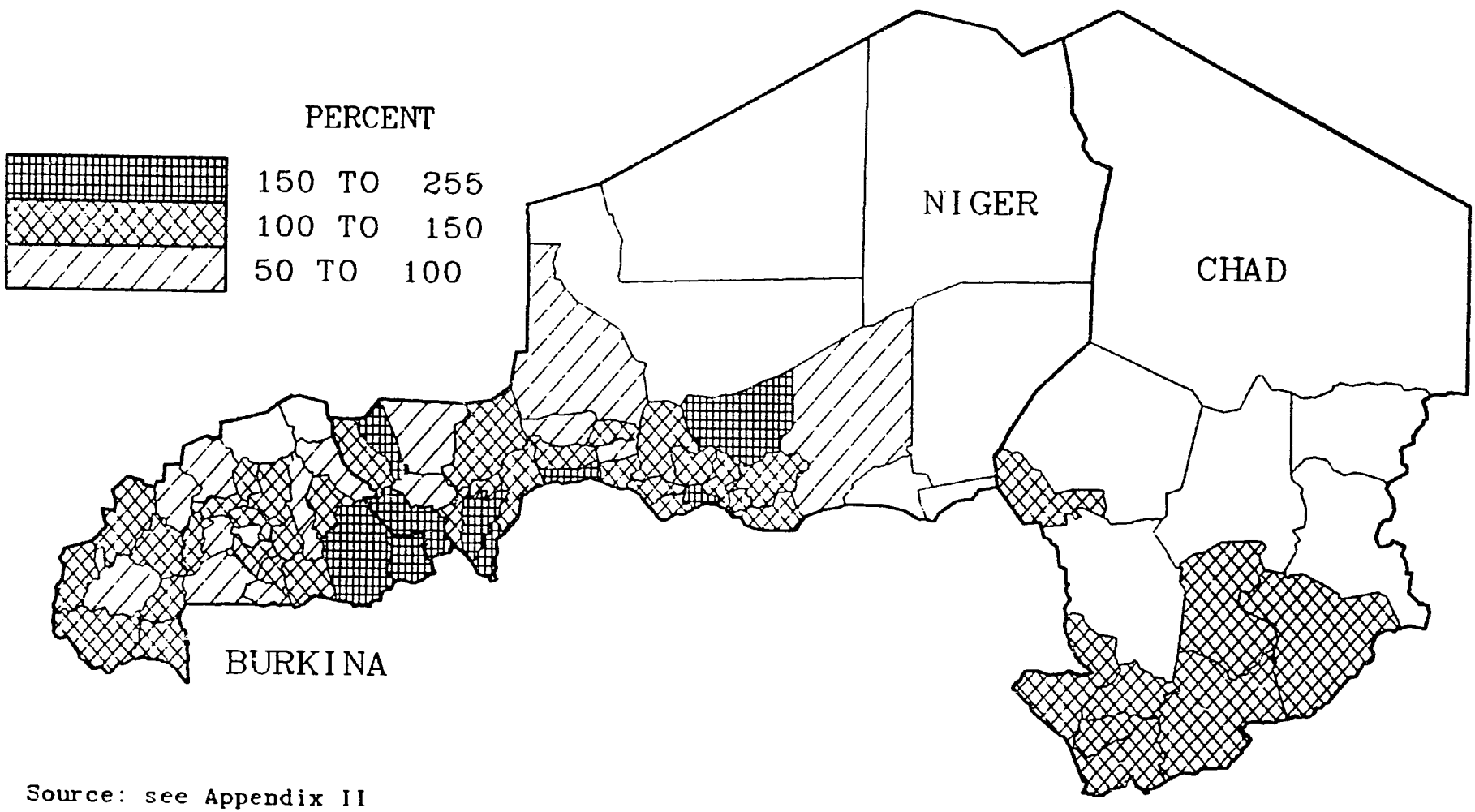
Net Production per Administrative Unit



Net Per Capita Grains Production

Source: See Appendix II
FEWS/PWA, January 1987

Percent of 1987 Food Needs Met by Local Production



Source: see Appendix II
FEWS/PWA, January 1987

Map 5: BURKINA, CHAD, and NIGER

a total of 1,887,081 gross metric tons of cereals for the 1986 agricultural campaign. This expected harvest is the largest in the last eleven years, and is 19.7% larger than that of 1985 and 73% larger than that of 1984 (Table 1). These sizable increases in production are attributable in good part to large increases in areas under cultivation over the last two years. The rice harvest is the only crop expected to decrease from 1985. This is also due to a change in crop area.

Table 1: Burkina, Gross Cereal Production (000 MT)

Crop	1984	1985	Est. 1986	% Of 1984	% Of 1985
Sorghum	597.9	796.5	1,011.5	169.2	127.0
Millet	416.8	586.6	687.5	165.0	117.2
Maize	62.2	142.6	159.7	256.8	112.0
Rice	16.1	50.9	28.4	176.4	55.8
Total	1,093.0	1,576.6	1,887.1	172.7	119.7

Source: "Report on the Situation of the 1986-1987 Agricultural Campaign as of September 30", GOB Ministry of Agriculture.

Chad*

Chad is also expecting the 1986 harvest will be close to a record high. The most recent AEDES (European Agency for Development and Health) report indicates that the prospects are as good for flood recessional fields as they have been for rainfed crops, especially in Massenya and Massakory Sub-prefectures of Chari-Baguirmi Prefecture. The official Government of Chad (GOC) estimate, as reported by the AID Mission in November, is 685,000 MT of cereals after pest damage and 582,250 MT after accounting for waste and seed reserves. Reports of the October FAO crop assessment received to date include a total gross harvest estimate of 753,600 MT and a breakdown of the harvest by crop type. The FAO estimate is 9.1% higher than that of the GOC as reported by the Mission. Reasons for this difference may include: differing estimates of crop loss to pests before the harvest; or differing

* Please note that in Chad Country Report 7, Salamat Prefecture was incorrectly assumed to fall within the Sudanian climate zone, when in fact it is considered to be Sahelian. This lead FEWS to erroneously report a population shift from Sudanian to Sahelian areas between 1985 and 1987. There is no evidence that such a shift has occurred.

assessments of crop yield for some or all crops, or for some or all of the prefectures. Table 2 shows the FAO figures and a breakdown of the GOC total based on the FAO numbers.

Table 2: Chad, Gross 1986 Cereal Production (000 MT)

Crop	FAO Estimate	GOC Based Estimate*
White Sorghum	354.0	321.8
Red Sorghum (Berbere)	48.4	44.0
Rice	24.7	22.5
Wheat	4.2	3.8
Maize	52.6	47.8
Millet	269.7	245.1
Total	753.6	685.0

Source: "Joint FAO/Donor Review of the 1986 Grasshopper Campaign in Chad," Nov. 1986; Mission Cable

* The GOC breakdown was calculated by multiplying the GOC total figure by the ratio of FAO crop type figures to the FAO total production figure.

Niger

The most recent crop estimates from the Government of Niger (GON) show a gross national grain harvest of 1,761,500 MT and a net national harvest of 1,537,300 MT. While 1986 was an outstanding crop year for Niger, several areas experienced significant drops in cereal production over 1985 (Appendix II: Table 4). Two arrondissements more than doubled their 1985 grain production (Tillaberi of Niamey Department, up 112%; Tchin-Tabaraden of Tahoua Department, up 213%).

Filingue Arrondissement of Niamey Department experienced a 24% drop in grain production, due mostly to low rainfall, although there was an almost seven-fold increase in the production of cowpeas (the cultivation of which is a standard coping mechanism for drought in Niger). Mayahi Arrondissement of Maradi Department experienced a 35% drop in grain production and a five-fold increase in cowpea production over 1985. Areas which are under even greater stress are Goure Arrondissement of Zinder Department (36% decrease in grains, 33% increase in cowpeas) and all of Diffa Department (an overall 54% decrease in grain production with only a 109% increase in cowpeas, rather than the higher productions in other grain deficit areas).

Pests

Burkina, Chad, and Niger each experienced significant pest damage during 1986 from grasshoppers, rodents, birds, etc. The pests which provoked the most organized control efforts were locusts and grasshoppers. A special report on the 1986 grasshopper campaign and expectations regarding grasshoppers in 1987 across the Sahel, Sudan, and Ethiopia are under preparation by FEWS, and should be available by the end of February.

In both Niger and Burkina, national authorities felt the situation was under control in the spring and early summer of 1986, as few grasshoppers were seen at that time. Weather conditions in 1986 were excellent for grasshoppers, however, so that the few grasshoppers of the spring and early summer were quite fruitful. By late summer the grasshopper populations had mushroomed and emergencies were declared. At that point, the donor community in each country provided materiel and funding to allow for massive aerial control campaigns. The campaigns in both Burkina and Niger were effective in preventing major crop damage, but too late to prevent egg laying throughout the infested regions. The 1986 generations of grasshoppers were much larger than those of 1985, especially along the northern edge of the customary grasshopper infestation regions, and it is expected that the 1987 generations will be larger still.

The situation in Chad was different, in that there were no pesticides and little application equipment in-country at the time the initial grasshopper and locust infestations were identified. Although an emergency situation was recognized early in Chad, supplies and airplanes were slow to arrive, delaying both aerial and ground treatment of areas until late September near the capital (N'Djamena), and well into October in areas distant from the capital. Thus, little crop damage was prevented by the control measures, and there was little pesticide control of grasshopper reproduction. Grasshoppers will be a serious problem in Chad in 1987.

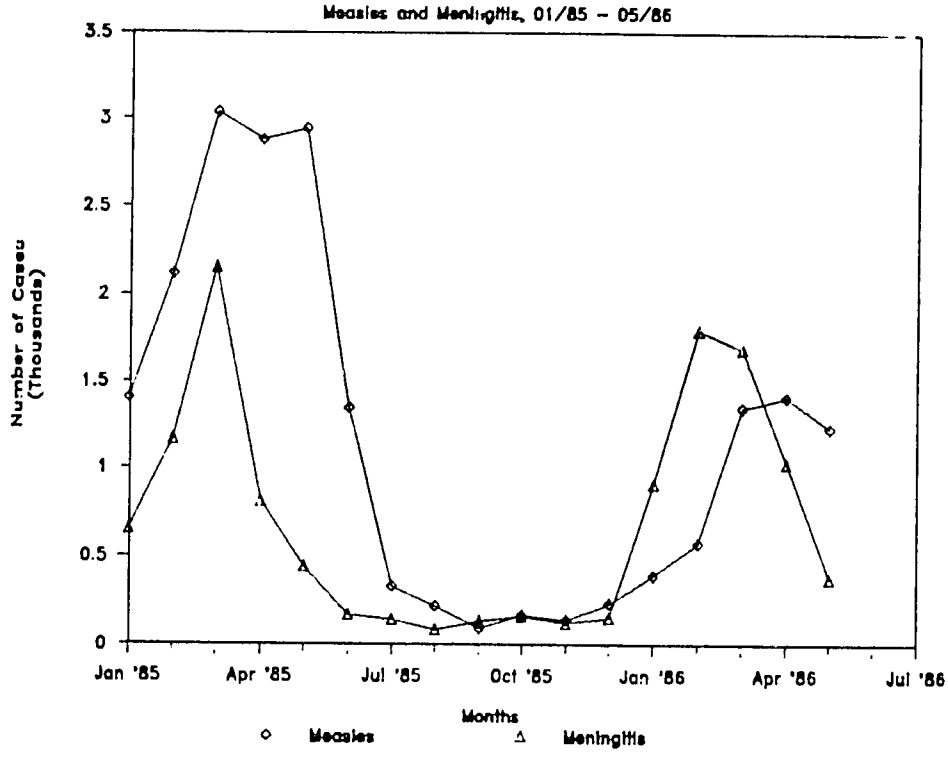
The grasshopper threat for 1987 is well recognized by the national governments and the donor community. Extensive planning for the 1987 campaign across the region and within each country has been ongoing since late fall, 1986. With the aid of donor agency experts, national crop protection services are surveying for grasshopper and locust egg pod densities, so that early forecasts of outbreaks can be developed as rainfall patterns become clear, and an intervention calendar can be prepared. (Grasshoppers and locusts require a specific range of

moisture in order for eggs to hatch and larvae to thrive.) The areas where egg pods are most likely to be found based on 1986 infestations are shown in the lower left quadrant of Map 4.

HEALTH AND NUTRITION
Burkina

December and January are the start of the Sahel's annual measles and meningitis season. An upsurge in measles and meningitis cases reported in Burkina should therefore be expected during the month of January. This pattern is confirmed by Burkina disease statistics from January 1985 through May 1986 (Figure 1).

Figure 1: Disease Incidence in Burkina



Two recent sets of information on child malnutrition are available from Burkina. One set is from International League of Red Cross and Red Crescent Societies (LICROSS) surveys in Soum Province, and the other is from the Catholic Relief Service (CRS) child feeding center records in 24 provinces other than Soum. Neither set of information uses the standard nutrition survey child-cohort definition of "children under the age of five years." LICROSS defined its survey population as all children under 115 cm in height. CRS collected information on children enrolled in its program who were under

three years of age. The most recent LICROSS survey (carried out from October to December 1986, and covering all of the children in Soum Province under 115 cm in height), showed that 12% of the children surveyed were severely malnourished (Table 3).

Table 3: LICROSS Nutrition Survey, Soum Province, Burkina Percentage of Children Less Than 80 Percent of the Standard Weight for their Height

Department	Villages	Est. Pop. Dec. 1986	Number * Measured	< 80% Fall 86 Survey
Aribinda	35	55,457	7,397	13%
Baraboule	18	17,709	2,389	13%
Diguel	7	6,588	.611	11%
Djibo	17	32,905	3,206	12%
Koutougou	13	10,763	,900	10%
Nassoumbou	13	15,166	1,568	11%
Pobe-Mengao	10	12,627	2,429	9%
Tongomayel	44	53,451	7,782	11%
Total	157	202,666	26,282	12%

* Number measured includes all children less than 115 centimeters in height.

Source: LICROSS survey data as reported by FEWS/Burkina; Village Population from GOB Ministry of Planning and People's Development

Between January and June of 1986, CRS operated 184 centers in 24 provinces, serving monthly an average of 72,294 children under the age of three. The CRS feeding center records represent the nutritional status of already thin children, so it is not possible to generalize from the percent of severely malnourished children at a feeding center to the province level. The actual number of children participating in the CRS program and found to be malnourished by CRS is shown in Appendix III. In Bam and Oubritenga Provinces, the monthly average number of malnourished children at CRS feeding centers are already 11% and 10% of the province's under-five population, respectively.

Chad

There have been three nutrition surveys completed in Chad since October in areas thought to contain people at risk of nutritional crises. Two of the surveys were carried out by AEDES/Chad (Am Doback Canton of N'Gouri Sub-

prefecture, Lake Prefecture and Ouled Rachid Canton of Djedaa Sub-prefecture, Batha Prefecture), and the third was completed by LICROSS in Am Doback. The LICROSS survey was the earliest, and determined that 17% of the children in Am Doback were severely malnourished. Next came the AEDES survey in Am Doback, which showed less than 3% of the children to be malnourished. Finally, the recently completed AEDES survey in Ouled Rachid showed 4.1% of the children to be malnourished.

As the study designs of these three surveys are not known by FEWS/Washington, it is not possible to explain why the AEDES survey in Am Doback showed such a lower malnutrition rate among children than the LICROSS survey. It could be that the two teams used a different definition for malnourishment, or the LICROSS survey concentrated on villages containing a higher percentage of malnourished people, or that many families with malnourished children left the Am Doback area after October. It is probable, but not certain, that the two AEDES surveys were completed using the same methodology. Further information is needed to fully assess the import of the three surveys.

Niger

The number of meningitis cases increased sharply during December from the November reporting period (165 cases in December versus 89 in November, an 85% increase). A similar increase in measles cases was seen (437 in December versus 263 in November, up 66%), while the number of cases of whooping cough dropped (457 in December versus 624 in November). It is no surprise that the number of measles and meningitis cases reported is increasing -- late winter is the start of the measles and meningitis season in Niger. The degree of change is worrisome, however, especially for measles, as the rate of measles vaccination is declining.

The most recent nutrition survey, undertaken in December by CARITAS and the GON Cellule de Planification in Agadez Department, showed that 16% of the children under five years of age, living within 15 km of the health centers in Arlit Arrondissement, weighed less than 80% of the standard weight for their height. This percentage is rather higher than the standard background malnutrition rate, generally assumed to be 10%. By comparison, the same survey found that only 5 to 6% of the children under five years of age in the rest of Agadez Department health center catchment areas fell under the 80% of weight for height cut-off. This is much better than would be expected. Arlit Arrondissement is the only highly mountainous region of Niger, so it is not possible to

generalize from the Arlit survey to the rest of the country.

POPULATIONS AT-RISK

Two indicators that are useful for identifying at-risk populations are high rates of malnutrition, and anticipated food needs greater than expected cereal production in an area. A third factor present for 1987 is an expectation of intense grasshopper infestations. These three indicators have been mapped as geographic overlays, so that the areas which have two of these indicators present are pinpointed. Areas meeting this criterion should be closely monitored to ensure adequate food supplies are available for the people living there. From current information, the areas to watch in Burkina are Bam, Oudalan and Soum Provinces; in Chad are all of the Sahelian Prefectures except Lake Prefecture; and in Niger are Arlit Arrondissement of Agadez Department and all of Diffa Department (Map 4).

Burkina

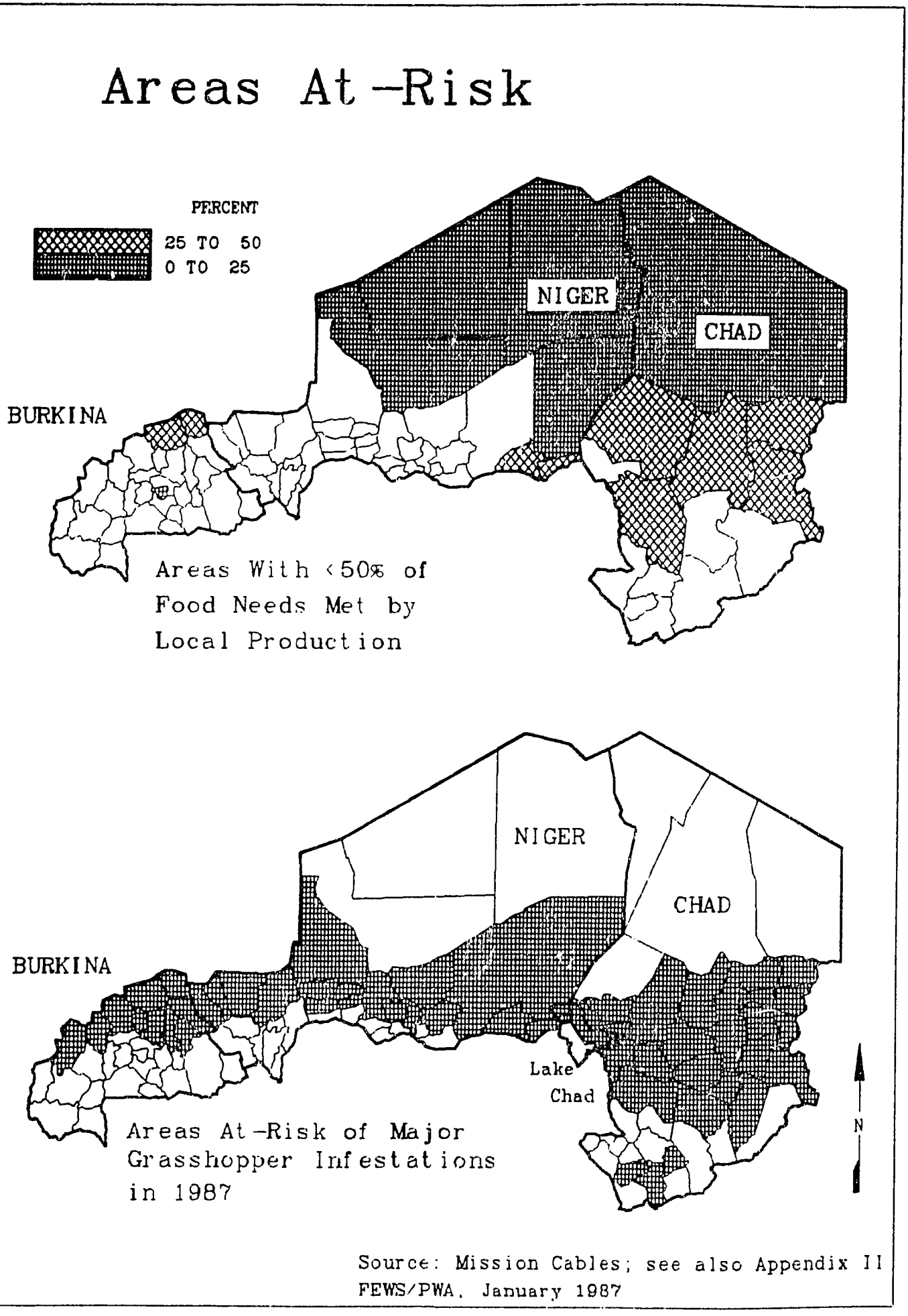
There are few national or provincial level estimates of the number of people at-risk of nutritional crises in Burkina. In September 1986, the UN Office of Emergency Operations in Africa (UN/OEOA) identified 105,000 rural farmers and pastoralists as "affected" populations in the northeastern and Sahelian regions of Burkina. Of these affected people, 15,000 were termed "displaced" people, but the cause of displacement was not identified. The provinces which contain the affected population were not identified.

Chad

Assessments of Chad's populations at-risk of nutritional stress have been more qualitative than quantitative. During the 1986/87 post-harvest period, AEDES is returning to previously designated at-risk areas to better determine the degree of risk in each area. So far, AEDES has surveyed Am Doback Canton of N'Gouri Sub-prefecture, Lake Prefecture and Ouled Rachid Canton of Djedaa Sub-prefecture, Batha Prefecture. Other areas which are still considered to contain at-risk populations are: the southern parts of Mao Sub-prefecture, Kanem Prefecture; Canton Mimi of Biltine Sub-prefecture, Iriba and Arada Sub-prefectures, and the Am Zoer area, Biltine Prefecture; and Guergne Canton, Adre Sub-prefecture, and the rural areas of Abeche Sub-prefecture, Ouaddai Prefecture (Map 5).

In Am Doback, population about 15,000, AEDES found a whole system of income producing strategies used to cope with the loss of food crops, including small scale animal

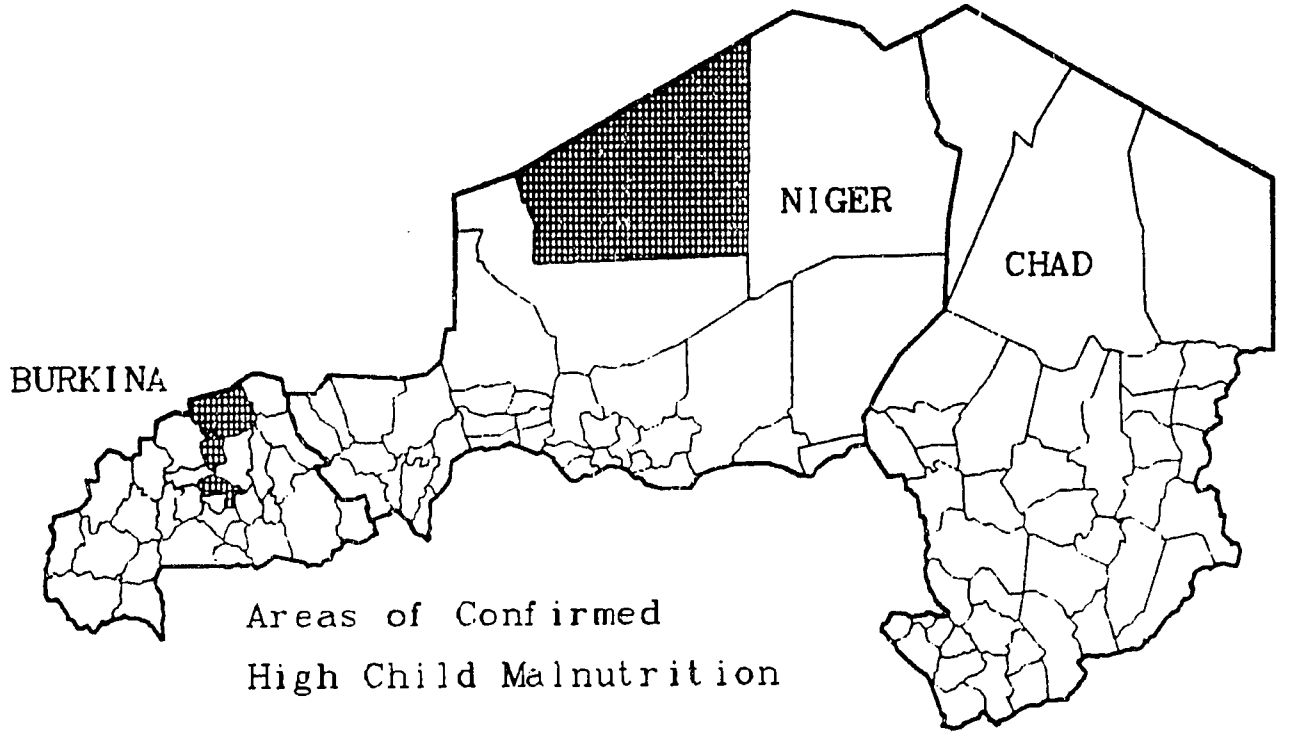
Map 4a: BURKINA, CHAD, and NIGER

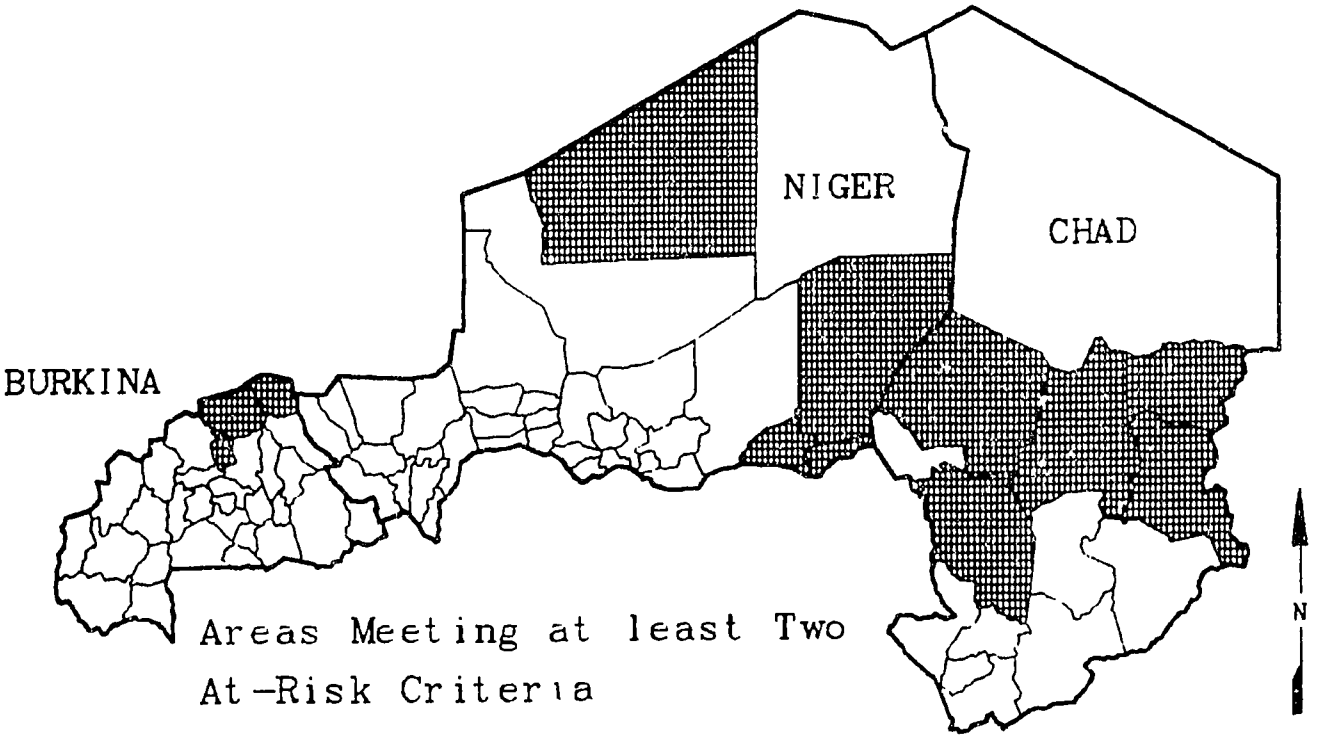


Source: Mission Cables; see also Appendix II
FEWS/PWA, January 1987

Map 4b: BURKINA, CHAD, and NIGER

Areas At-Risk





Source: GON; CARITAS; CRS; LICROSS
FEWS/PWA, January 1987

husbandry and extensive cottage industries. These strategies have produced sufficient income to purchase needed foods, and there has been sufficient food grains in the Am Doback markets from other areas to meet local demand. Ouled Rachid, population about 13,000, on the other hand, is faring less well. While rains were good in 1986, rats and grasshoppers destroyed the crops before harvest, so that the area is completely dependent on neighboring regions for its cereal supply. The people of Ouled Rachid do have diverse sources of income, but these sources are of minimal value and purchasing power in the area is low. The AEDES report concludes that Ouled Rachid Canton is facing a pre-famine situation.

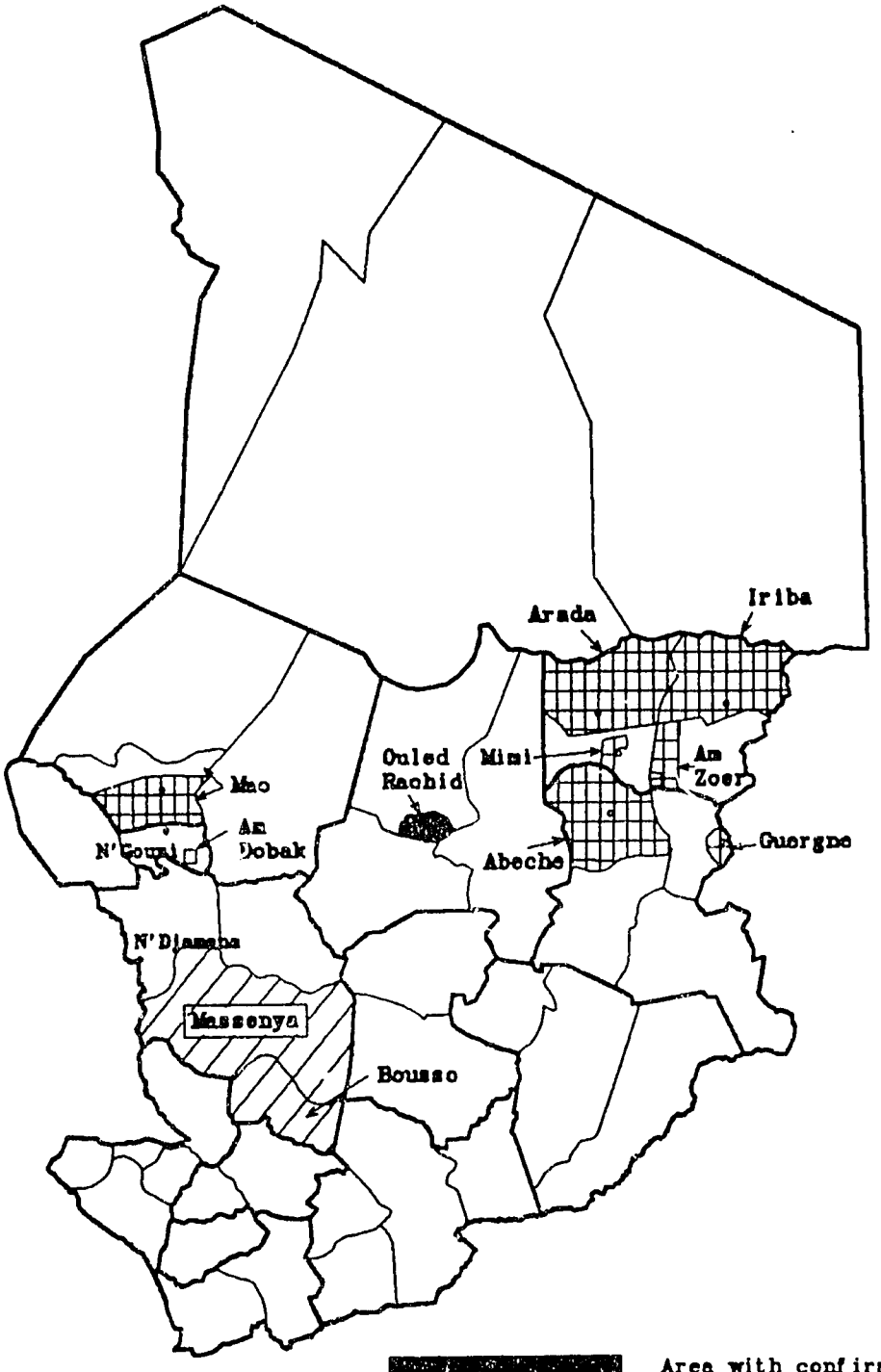
There are reports of population movements within Massenj and Bousso Sub-prefectures, Chari-Baguirmi Prefecture, due to the drying-up or loss of wells. Refugees continue to return from Sudan and the Central African Republic at the rate of several hundred families per month. The areas to which they are returning are in Biltine, Ouaddai, and Chari-Baguirmi Prefectures.

Niger

The Government of Niger defines a population at-risk as the people of a village in which the sorghum and millet production is less than 30% of the grain consumption needs for the coming year, or those nomadic or displaced people having insufficient animal or other resources with which to acquire an adequate food supply. Using this definition, 714,577 people will be at-risk in Niger in 1987. At the same time, local government officials determine the number of people in their area who are to receive food-aid (at approximately 53 kg per person). The current total for 1987 is 868,134 people, and includes leeway for expected in-migration of needy pastoralists or other displaced people. Map 6 shows the location of both sets of people. As can be seen, not all at-risk people will be receiving food aid. It is probable that "at-risk" people in the arrondissements not receiving food-aid distributions have other sources of income with which to purchase food.

MAP 5: CHAD

Populations At-Risk



Area with confirmed At-Risk Population

Area deemed likely to be At-Risk but not yet confirmed

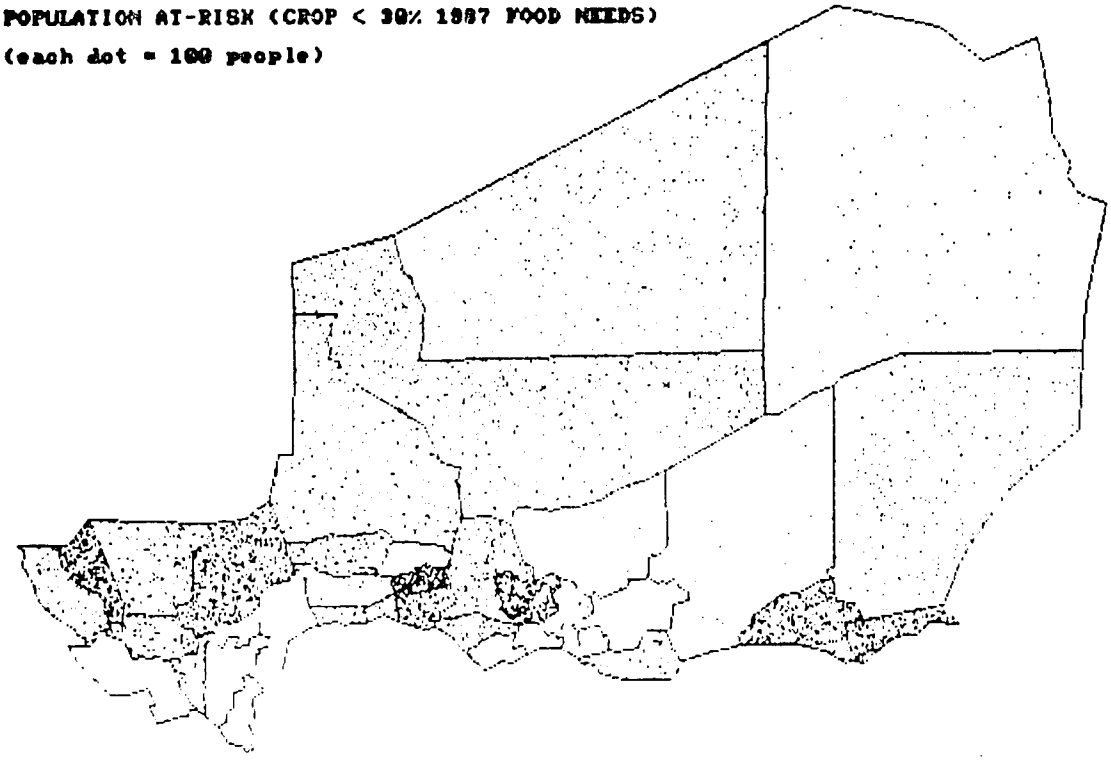
Areas where wells have dried, causing people to move

Source: AEDES; Mission Cables; FEWS/Chad
FEWS/PWA, January 1987

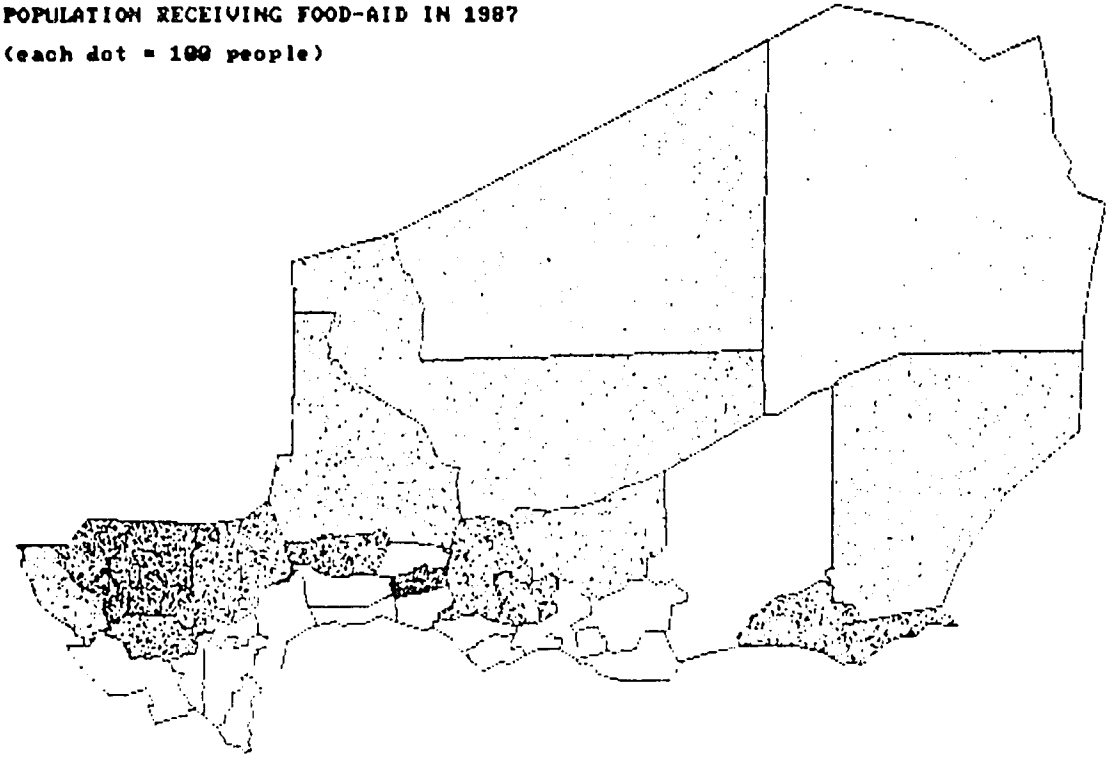
MAP 6: NIGER

Populations At-Risk

POPULATION AT-RISK (CROP < 30% 1987 FOOD NEEDS)
(each dot = 100 people)



POPULATION RECEIVING FOOD-AID IN 1987
(each dot = 100 people)



Source: GON Ministry of Agriculture: FEWS/Niger
FEWS/PWA, January 1987

Appendix 1

Table 1: Burkina, Cereals Available for Estimated 1987 Population of 8,558,038

Estimated Net Production		1,594,100 MT
Stocks		
GOB, Security	45,563 MT	
GOB, Stabilization	45,984 MT	
Private	30,000 MT	
Donor	10,000 MT	
On-Farm	300,000 MT	
Subtotal		431,547 MT
Imports		
GOB Wheat	30,000 MT	
GOB Rice	20,000 MT	
Private Donor	19,700 MT	
Subtotal		69,700 MT
Total Estimated Supply		2,095,347 MT
Cereal Needs @		
Avg 192 kg/person		1,621,500 MT
Estimated Cereal Surplus		473,847 MT

Source: Production from GOB Ministry of Agriculture Stock estimates from USAID and GOB/OFNACER

Table 2: Chad, Cereals Available for Estimated 1987 Population of 4,617,086

Estimated Net Production		582,250 MT
Stocks		
GOC	25,000 MT	
Donor	5,800 MT	
Subtotal	30,800 MT	
Food aid pipeline		
Emergency PL480	10,000 MT	
Italian Rice	10,000 MT	
PL480, FFW	2,500 MT	
WFP	10,000 MT	
Subtotal		32,500 MT
Unofficial Imports	75,000 MT	
Unofficial Exports	60,000 MT	
Subtotal		15,000 MT
Total Estimated Supply		660,550 MT
Cereal Needs @		
Avg 142 kg/person		655,600 MT
Estimated Cereal Surplus		4,950 MT

Source: Mission Cables, as of November 28, 1986

Table 3: Niger, Cereals Available for Estimated 1987 Population of 6,965,600

Estimated Net Production		1,537,300 MT
Stocks		
GON	162 MT	
On-Farm	10 MT	
Subtotal		172 MT
Imports		
GON/OPVN	0 MT	
Commercial	15 MT	
Subtotal		15 MT
Total Estimated Supply		1,537,487 MT
Cereals Needs @ Avg 175 kg/urbanite or pastoralist & 205 kg/agropastoralist		1,349,500 MT
Estimated Cereal Surplus		187,987 MT

Source: Production data from GON Ministry of Agriculture; Population estimate from FEWS/Niger

Appendix II

Table 1: Burkina, 1986 Estimated Crop Production (MT)

PROVINCE	Millet	Sorghum	Maize	Rice	Gross Total	Net Total
Bam	19,426	22,751	1,450	445	44,072	37,305
Bazega	37,225	53,234	2,987	286	93,732	79,572
Bougouriba	18,738	31,114	8,620	1,242	59,714	50,322
Boulgou	61,252	42,618	5,341	4,300	113,511	94,979
Bulkiemde	26,560	47,170	2,137	274	76,141	64,624
Comoe	15,334	21,850	30,630	12,061	79,875	63,672
Ganzourgou	15,593	50,028	561	324	66,506	56,417
Gnagna	26,810	30,456	2,416	340	60,022	50,900
Gourma	45,559	56,236	4,967	494	107,256	90,995
Houet	17,597	75,573	29,528	878	123,576	104,732
Kadiogo	3,647	5,895	133	24	9,699	8,236
Kenedougou	6,039	21,299	16,611	561	44,510	37,637
Kossi	37,885	55,983	9,452	467	103,787	88,056
Kouritenga	16,422	17,209	2,555	429	36,615	30,973
Mou Houn	19,550	62,461	6,436	216	88,663	75,288
Nahouri	10,165	8,436	1,042	233	19,876	16,813
Namentenga	17,173	19,957	1,118	125	38,373	32,573
Oobritenga	32,702	37,010	1,676	191	71,579	60,775
Oudalan	11,295	757		12,052	10,244	
Passore	27,719	45,691	3,076	138	76,624	65,082
Poni	16,478	32,036	11,921	720	61,155	51,730
Sanguie	18,633	36,765	750	203	56,351	47,827
Sanmatenga	34,429	56,036	3,798	1,601	95,864	80,924
Seno	23,380	14,923	156	4	38,463	32,692
Sissili	13,346	28,863	6,367	483	49,059	41,531
Soum	16,855	6,057	65	88	23,065	19,574
Sourou	29,274	32,289	553	129	62,245	52,863
Tapoa	16,146	43,706	3,042	484	63,378	53,702
Yatenga	39,400	32,300	1,354	585	73,639	62,388
Zoundweogo	12,831	22,810	943	1,095	37,679	31,644
Totals	687,463	1,011,513	159,685	28,420	1,887,081	1,594,072

Source: GOB Ministry of Agriculture

To arrive at a Chad climate zone product for 1986/7, the climate zone yield figures given for 1985/6 were each divided by the overall cereals yield for 1985/6 to derive climate zone yield ratios. The overall cereals yield for 1986/7 was calculated from the given total area and total product. This figure was multiplied by the above ratios to arrive at climate zone yields for 1986. These yields were then multiplied times the given climate zone acreage for 1986/7 to derive gross climate zone products. These figures are shown in Table 2.

Table 2: Breakout of Sahelian and Sudanian Zone 1986/7 Product Based on 1985/6 Figures

Crop Year	Climate Zone	Area (ha)	Prod (MT)	Yield	Ratio, Sahel Yield to Overall Yield
1985/6	Sahelian	452,988	220,668	487	
	Sudanian	561,392	426,413	760	
	Total Chad	1,014,380	647,081	638	0.764
1986/7	Sahelian	562,705	237,773	423	
	Sudanian	675,245	447,227	662	
	Total Chad	1,237,950	685,000	553	0.764

Source: 1985/6 Data -- FAO Estimates from GOC Sources; 1986/7 Totals from GOC; 1986/7 Area Planted from Joint FAO/Donor Review the 1986 Grasshopper Campaign

A similar procedure was followed in order to derive gross and then net prefecture crop production for 1986/7. For each Sahelian prefecture, the 1985/6 acreage was divided by the total Sahelian acreage, and this ratio was then multiplied by the 1986/7 FAO/GOC Sahelian acreage figure to produce a 1986/7 prefecture acreage. Similarly, each 1985/6 Sudanian acreage was divided by the total 1985/6 Sudanian zone acreage, and the resulting ratio was multiplied by the given 1986/7 Sudanian zone acreage. Each of the calculated 1986/7 prefecture acreages was multiplied by the appropriate yield figure from Table 2 to arrive at 1986/7 prefecture gross product. These numbers were then reduced by the FAO standard 15% to account for seed reserves and probable post-harvest waste.

Table 3: Chad, Estimated Grain Production for 1986

Prefecture	Climate Zone	1985/6 Total Area (ha)	1986/7 Total Area (ha)	1986/7 Gross Prod (mt)	1986/7 Net Prod (mt)
B.E.T.	Saharan	0	0	0	0
Batha	Sahelian	62,500	77,638	25,833	21,958
Biltine	Sahelian	32,808	40,754	12,524	10,645
Chari-Baguirmi	Sahelian	53,398	66,331	33,559	28,525
Guera	Sahelian	98,430	122,270	55,093	46,829
Kanem	Sahelian	53,983	67,058	18,855	16,027
Lake	Sahelian	49,008	60,878	34,315	29,167
Ouaddai	Sahelian	71,023	88,225	31,268	26,578
Salamat	Sahelian	31,838	39,549	26,325	22,376
Logone Occidental	Sudanian	77,146	92,792	60,535	51,455
Logone Oriental	Sudanian	98,189	118,102	77,185	65,607
Mayo-Kebbi	Sudanian	180,423	217,014	143,588	122,049
Moyen-Chari	Sudanian	113,150	136,097	88,984	75,637
Tandjile	Sudanian	92,484	111,240	76,935	65,394
Total		1,014,380	1,237,950	685,000	582,250

Source: 1985/6 Acreage -- FAO Estimates from GOC Sources; 1986/7 Totals from GOC

Table 4: 1986 Production Data for Niger as of January 1987

Department/ Arrondissement	Millet (MT)	Sorghum (MT)	Cowpeas (MT)	Rice (MT)	Maize (MT)	Gross Grain Product (MT)	Net Grain Product (MT)	% Difference 1986 vs 1985 Cowpeas	% Difference 1986 vs 1985 Grains
Niamey									
Kollo	72,927	1,387	5,882	23,712		98,026	83,322	330.3%	-10.9%
Say	51,162	14,066	4,362	5,043		70,271	59,730	288.4%	42.1%
Tera	74,101	6,098	7,876	370		81,169	68,994	954.4%	13.2%
Tillaberi	38,486	6,023	752	41,633		86,142	73,221	82.5%	112.7%
Ouallam	33,566	491	855			34,057	28,948	-41.8%	2.4%
Filingue	58,675	2,444	22,573			61,119	51,951	664.2%	-24.4%
Dosso									
Dosso	66,358	14,061	18,355	1,348	2,736	84,503	71,828	255.6%	14.2%
Birn N'Gaoure	56,618	1,698	16,381	15		58,331	49,581	509.0%	9.8%
Loga	22,496	1,698	16,708			24,194	20,565	2694.0%	-23.9%
DogonDutchi	76,711	1,698	16,708			78,409	66,648	2694.0%	-20.2%
Gaya	42,416	20,978	5,317	1,108		64,502	54,827	174.6%	22.8%
Tahoua									
Tahoua	36,208	10,834	1,483			47,042	39,986		35.7%
Illela	41,350	7,586	4,074			48,936	41,596	258.6%	63.9%
Keita	29,144	9,774	4,795			38,918	33,080	240.3%	35.2%
Bouza	23,715	12,539	5,002			36,254	30,816	203.7%	-11.8%
Madaoua	31,865	23,307	5,242			55,172	46,896	39.2%	0.9%
Birni N'Konni	52,206	30,147	5,000			82,353	70,000	80.9%	-2.7%
TchinTabaraden	8,095	11,123	112			19,218	16,335		212.9%
Maradi									
Madarounfa	52,132	19,290	6,700			71,422	60,709	343.4%	-4.3%
Guidan Roumdji	48,819	8,367	5,875			57,186	48,608	621.7%	-5.5%
Dakoro	51,061	7,542	5,929			58,603	49,813	524.1%	-9.3%
Mayahi	31,755	14,483	8,853			46,238	39,302	529.7%	-35.0%
Aguie	45,402	17,351	5,824			62,753	53,340	578.0%	18.8%
Tessaoua	63,260	12,592	5,879			75,852	64,474	356.8%	13.1%
Zinder									
Mirria	94,369	24,433	21,171			118,802	100,982	20.7%	-10.0%
Magaria	64,711	31,673	29,947			96,384	81,926	4.3%	-6.6%
Matameye	25,254	15,344	9,816			40,598	34,508	5.6%	-6.2%
Tanout	61,534	9,441	2,682			70,975	60,329	18.9%	19.6%
Goure	16,712	10,581	11,017			27,293	23,199	33.6%	-36.0%
Diffa									
Diffa	5,300	801	3,573			6,101	5,186	132.3%	-54.6%
N'Guigmi	280					280	238	-100.0%	-73.2%
Maine-Soroa	5,004	408	7,991			5,412	4,600	100.5%	-52.6%
Agadez									
Tchirozerine	1,472	26	118		160	1,658	1,409		73.8%
Arlit	231	9			104	344	292		7.8%
Bilma									
Total	1,383,395	348,893	266,852	73,229	3,000	1,808,517	1,537,239	146.6%	2.0%

Source: GON Ministry of Agriculture; FEWS/Niger

Table 5: Burkina, 1987 Food Needs

Province	Estimated Population July 1987	1987 Cereal Needs (000 MT)	Net 1986 Product (000 MT)	% 1987 Needs Met by Product	Province Stocks (000 MT)	% 1987 Needs Met by Prod + Stock
Bam	170,421	32.7	37.3	114.0	0.0	114.0
Bazega	324,578	62.3	79.6	127.7	0.0	127.7
Bougouriba	233,041	44.7	50.3	112.5	3.0	119.2
Boulgou	424,953	81.6	95.0	116.4	2.6	119.6
Bulkiemde	376,796	72.3	64.6	89.3	2.4	92.6
Comoe	265,431	51.0	63.7	124.9	1.9	128.7
Ganzourgou	207,456	39.8	56.4	141.6	0.0	141.6
Gnagna	243,463	46.7	50.9	108.9	0.0	108.9
Gourma	312,923	60.1	91.0	151.5	5.7	160.9
Houet	633,560	121.6	104.7	86.1	11.9	95.9
Kadiogo	515,552	99.0	8.2	8.3	32.4	41.1
Kenedougou	147,271	28.3	37.6	133.1	0.0	133.1
Kossi	352,401	67.7	88.1	130.1	0.0	130.1
Kouritenga	207,257	39.8	31.0	77.8	3.1	85.6
Mou Houn	307,715	59.1	75.3	127.4	11.5	146.9
Nahouri	110,892	21.3	16.8	79.0	1.3	85.1
Namentenga	206,166	39.6	32.6	82.3	0.0	82.3
Oubritenga	314,563	60.4	60.8	100.6	0.0	100.6
Oudalan	112,819	21.7	10.2	47.3	0.0	47.3
Passore	231,691	44.5	65.1	146.3	0.0	146.3
Poni	244,648	47.0	51.7	110.1	4.5	119.7
Sanguie	225,628	43.3	47.8	110.4	0.0	110.4
Sanmatenga	385,822	74.1	80.9	109.2	3.0	113.3
Seno	246,362	47.3	32.7	69.1	5.4	80.5
Sissili	265,577	51.0	41.5	81.4	0.0	81.4
Soum	205,503	39.5	19.6	49.6	0.0	49.6
Sourou	285,299	54.8	52.9	96.5	0.0	96.5
Tapoa	169,134	32.5	53.7	165.4	0.0	165.4
Yatenga	554,140	106.4	62.4	58.6	7.4	65.6
Zoundweogo	164,059	31.5	31.6	100.5	0.0	100.5
Total	8,445,122	1,621.5	1,594.1	98.3	96.1	104.2

Source:
(1) Population figures from GOB Ministry of Planning and People's Development; brought forward to July, 1987, by FEWS
(2) Estimated production and stocks by province from GOB Ministry of Agriculture

Table 6: Chad, Estimated 1987 Food Needs

Region	Est Gross 1986 Prod (mt)	Est Net 1986 Prod (mt)	Est 1987 Pop (000s)	Est Food Needs @ 142 kg/capita	Est % Food Needs Met
B.E.T.			34	4,828	0.0
Batha	25,833	21,958	415	58,883	37.3
Biltine	12,524	10,645	193	27,469	38.8
Chari-Baguirmi	33,559	28,525	617	87,556	32.6
Guera	55,093	46,829	231	32,780	142.9
Kanem	18,855	16,027	236	33,843	47.4
Lake	34,315	29,167	157	22,309	130.7
Ouaddai(Abeche)	31,268	26,578	419	59,490	44.7
Salamat	26,325	22,376	118	16,694	134.0
Logone Occidental	60,535	51,455	307	43,605	118.0
Logone Oriental	77,185	65,607	349	49,518	132.5
Mayo-Kebbi	143,588	122,049	679	96,375	126.6
Moyen-Chari	88,984	75,637	520	73,907	102.3
Tandjile	76,935	65,394	340	48,335	135.3
Totals	685,000	582,250	4,617	655,600	88.8

Source: Totals from GOC via Mission Cables

Table 7: Niger, 1987 Food Needs

Arrondissement	Est 1987 Pop (000s)	Net 1986 Prod (mt)	Est 1987 Food Needs (mt)	Est % 1987 Food Needs Met
Tera	281	68,994	50,620	136.3
Tillaberi	185	73,221	33,298	219.9
Ouallam	206	28,948	37,020	78.2
Filingue	279	51,951	50,237	103.4
Kollo	749	83,322	134,663	61.9
Say	131	59,730	23,489	254.3
Birni-N'Gaoure	173	49,581	35,046	141.5
Dosso	194	71,828	39,152	183.5
Loga	71	20,565	14,306	143.8
Gaya	129	54,827	26,074	210.3
Dogondoutchi	327	66,648	66,023	100.9
Tahoua	211	39,986	41,998	95.2
Illela	159	41,596	31,565	131.8
Birni-N'Konni	187	70,000	37,216	188.1
Madaoua	168	46,896	33,418	140.3
Bouza	171	30,816	34,037	90.5
Keita	154	33,080	30,534	108.3
Tchin-Tabaraden	124	16,335	24,719	66.1
Dakoro	228	49,813	45,826	108.7
Guidan Roumdji	181	48,608	36,347	133.7
Mayahi	192	39,302	38,587	101.9
Tessaoua	251	64,474	50,271	128.3
Aguie	160	53,340	32,187	165.7
Madarounfa	270	60,709	54,221	112.0
Matameye	146	34,508	28,969	119.1
Magaria	405	81,954	80,591	101.7
Mirria	490	100,982	97,593	103.5
Tanout	189	60,329	37,628	160.3
Goure	145	23,199	28,871	80.4
Maine-Soroa	91	4,600	17,604	26.1
N'Guigmi	38	238	7,393	3.2
Diffa	68	5,186	13,070	39.7
Tchirozerine	159	1,409	27,776	5.1
Bilma	10	0	1,663	0.0
Arlit	43	292	7,520	3.9
Total	6,966	1,537,268	1,349,531	113.9

Source: GON Ministry of Agriculture; FEWS/Niger

Appendix III

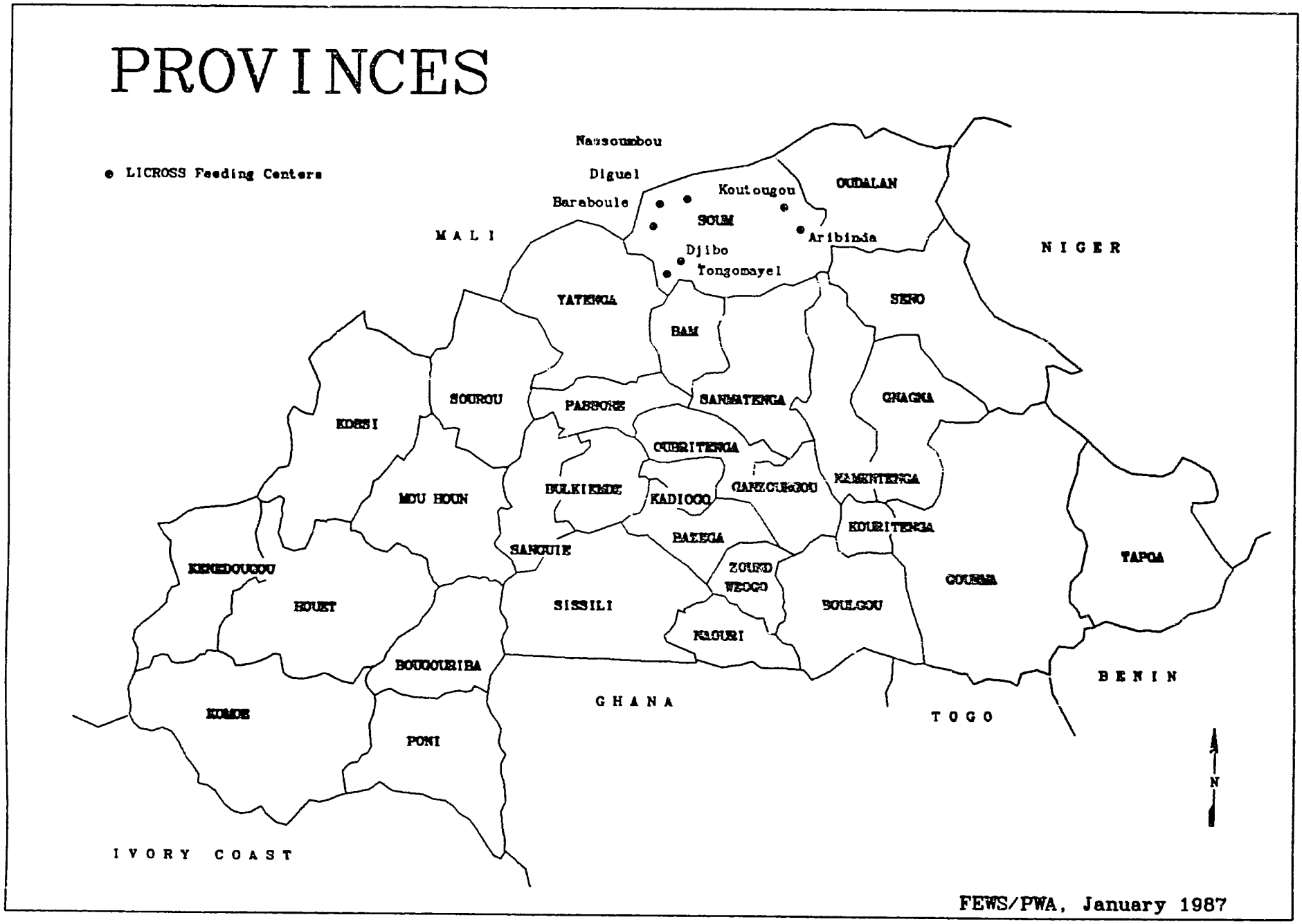
Table 1: Burkina, Malnutrition at CRS Feeding Centers, January through June, 1986

Province	Dec. 1986 Province Population	# Children < Five Years (18.16%*)	CRS Participants (All Under 3 Years) Avg #/Mo	% of Prov < 5 Yr Pop	CRS Malnourished (All Under 3 Years Avg #/Mo	% of Prov < 5 Yr Pop
Bam	169,405	30,761	8,795	28.6%	3,478	11.3%
Bazega	320,255	58,153	11,973	20.6%	4,060	7.0%
Bougouriba	230,962	41,939	831	2.0%	341	0.8%
Boulgou	419,293	76,136	752	1.0%	361	0.5%
Bulkiemde	374,177	67,944	853	1.3%	444	0.7%
Comoe	261,251	47,439	1,043	2.2%	364	0.8%
Ganzourgou	204,895	37,205	1,792	4.8%	666	1.8%
Gnagna	239,629	43,512	2,625	6.0%	1,289	3.0%
Gourma	307,995	55,926	0	0.0%	0	0.0%
Houet	621,137	112,788	4,611	4.1%	1,453	1.3%
Kadiogo	498,600	90,537	3,674	4.1%	1,796	2.0%
Kenedougou	145,309	26,386	111	0.4%	44	0.2%
Kossi	347,364	63,075	1,240	2.0%	500	0.8%
Kouritenga	204,693	37,170	1,154	3.1%	268	0.7%
Mou Houn	303,317	55,077	2,400	4.4%	780	1.4%
Namentenga	109,469	19,878	1,658	8.3%	1,037	5.2%
Naouri	204,733	37,176	0	0.0%	0	0.0%
Oubritenga	312,376	56,722	11,515	20.3%	6,100	10.8%
Oudalan	111,261	20,203	0	0.0%	0	0.0%
Passore	230,768	41,903	917	2.2%	442	1.1%
Poni	242,466	44,028	0	0.0%	0	0.0%
Sanguie	224,060	40,685	767	1.9%	252	0.6%
Sanmatenga	382,381	69,434	3,623	5.2%	1,813	2.6%
Seno	242,961	44,117	339	0.8%	255	0.6%
Sissili	260,881	47,371	1,638	3.5%	833	1.8%
Soum	202,666	36,801	0	0.0%	0	0.0%
Sourou	281,221	51,065	7,679	15.0%	2,962	5.8%
Tapoa	166,470	30,228	0	0.0%	0	0.0%
Yatenga	551,932	100,221	1,802	1.8%	900	0.9%
Zoundweogo	162,274	29,466	502	1.7%	300	1.0%
Total	8,334,207	1,513,345	72,294	4.8%	30,737	2.0%

Source: GOB Ministry of Planning and People's Development; CRS; FEWS/Burkina

* Ratio from 1985 UN census figures for all of Burkina

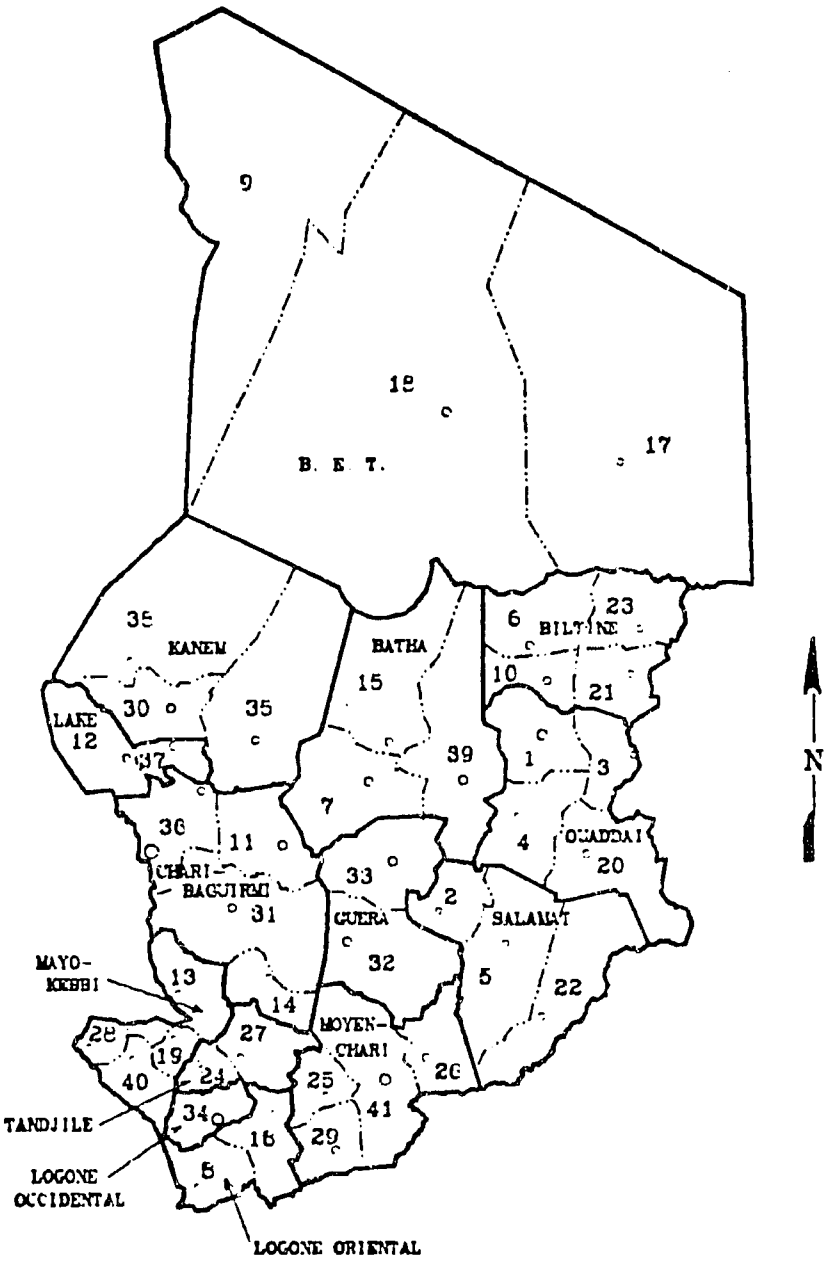
MAP 1: BURKINA



MAP 2: CHAD

Sub-prefectures

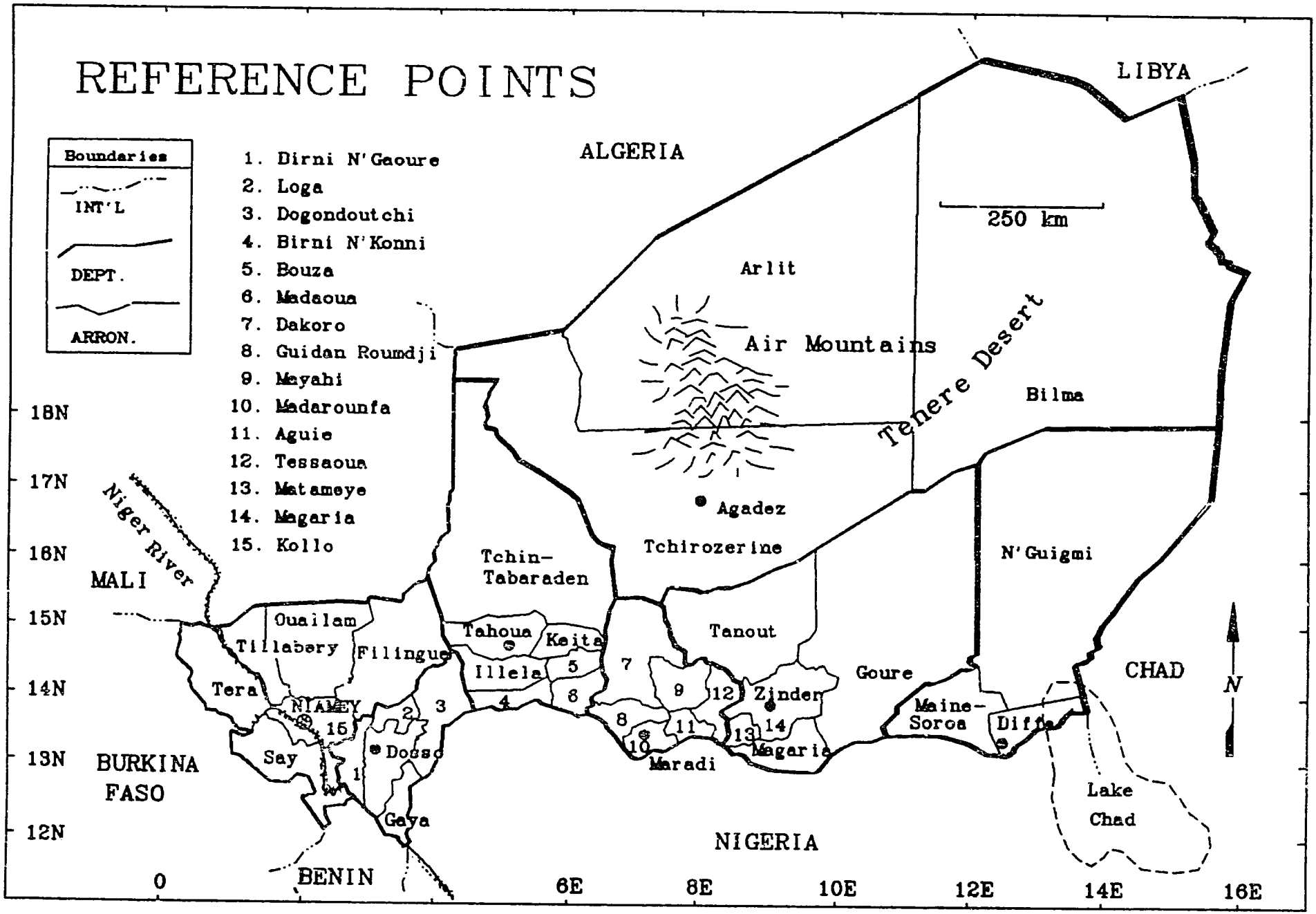
Sub-prf		PRF
1.	Abeche	OUA
2.	Abou Dela	SAL
3.	Adre	OUA
4.	Am Dam	OUA
5.	Am Timan	SAL
6.	Arada	BIL
7.	Ati	BAT
8.	Balbokoum	LOr
9.	Bardai	BET
10.	Biltine	BIL
11.	Bokoro	ChB
12.	Bol	LAK
13.	Bongor	MK
14.	Bousso	ChB
15.	Djedaa	BAT
16.	Doba	LOr
17.	Fada	BET
18.	Faya-Largeau	BET
19.	Gounou	MK
20.	Goz Beida	OUA
21.	Guereda	BIL
22.	Haraze	SAL
23.	Iriba	BIL
24.	Kelo	TAN
25.	Koumra	MCh
26.	Kyabe	MCh
27.	Lai	TAN
28.	Lere	MK
29.	Malssala	MCh
30.	Mao	KAN
31.	Massenya	ChB
32.	Melfi	GUE
33.	Mongo	GUE
34.	Moundou	LOc
35.	Moussoro	KAN
36.	N'Djamena/ Massakory	ChB
37.	N'Gouri	LAK
38.	Nokou	KAN
39.	Oum Hadjer	BAT
40.	Pala	MK
41.	Sarh	MCh



o Main Town in Sub-prefecture

Source: 1989 Map in Eng Two Undated Maps in Fr.,
Map Authors Unknown

Fews/PWA, December 1986


REFERENCE POINTS
Boundaries
INT'L
DEPT.
ARRON.
1. Dirni N'Gaoure
2. Loga
3. Dogondoutchi
4. Birni N'Konni
5. Bouza
6. Madaoua
7. Dakoro
8. Guidan Roumdji
9. Mayahi
10. Madarounfa
11. Aguie
12. Tessaoua
13. Matameye
14. Magaria
15. Kollo
LIBYA
ALGERIA
250 km
Arlit
Air Mountains
Tenere Desert
Bilma
Agadez
Tchirozerine
N'Guigmi
Tchin-Tabaraden
Niger River
MALI
Ouallam
Tillabery
Filingue
Tera
NIAMEY
Say
Dosso
Gaya
BENIN
BURKINA FASO
Tahoua
Keita
Illela
Tanout
Goure
Zinder
Maine-Soroa
Diffa
Magaria
Maradi
CHAD
Lake Chad
NIGERIA
N
18N
17N
16N
15N
14N
13N
12N
0
6E
8E
10E
12E
14E
16E

MAP 3: NIGER