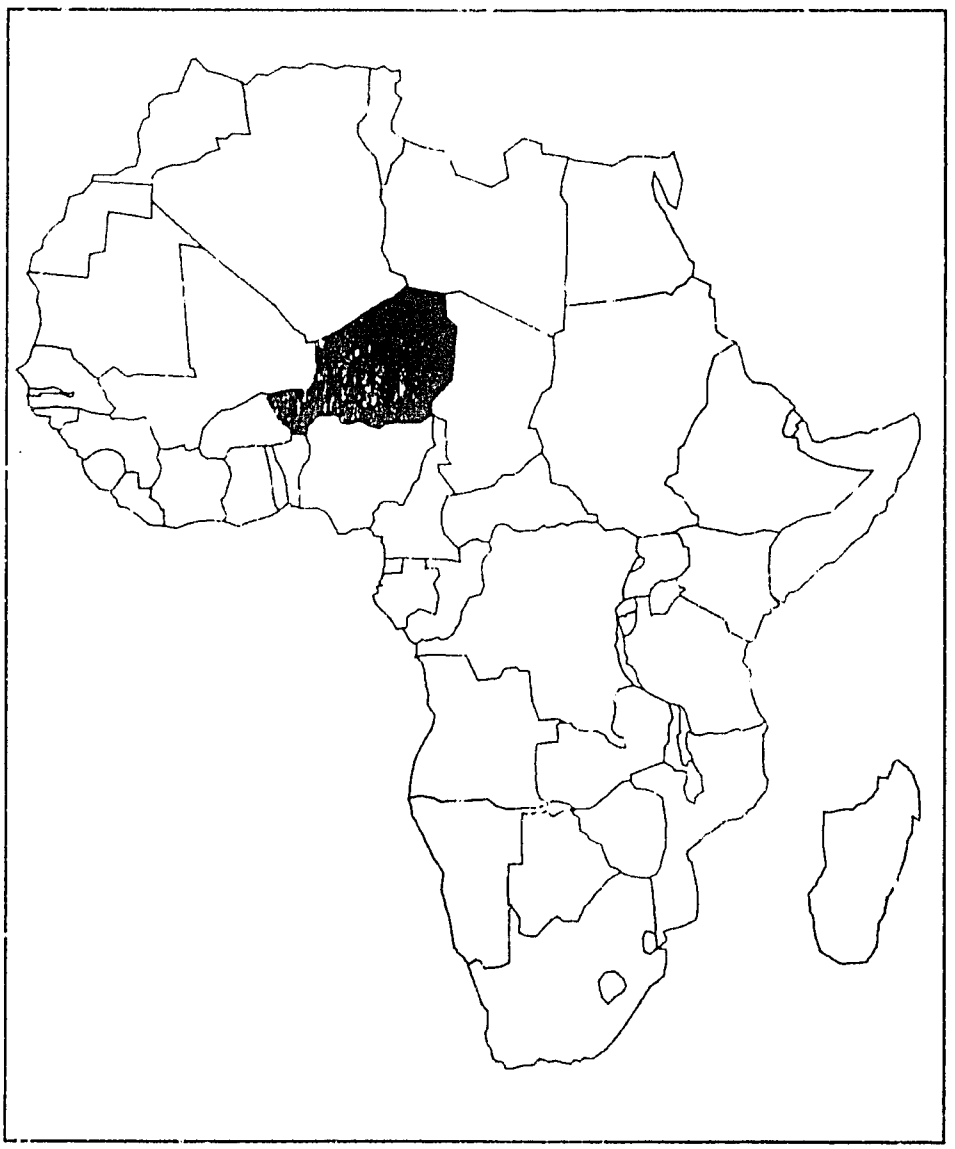
NIGER

Record-Shattering Harvest

FAMINE EARLY WARNING SYSTEM



Produced by the Office of Technical Resources - Africa Bureau - USAID

FAMINE EARLY WARNING SYSTEM

The Famine Early Warning System (FEWS) is an Agency-wide effort coordinated by the Africa Bureau of the U.S. Agency for International Development (AID). Its mission is to assemble, analyze and report on the complex conditions which may lead to famine in any one of the following drought-prone countries in Africa:

- **Burkina**
- **Chad**
- **Ethiopia**
- **Mali**
- **Mauritania**
- **Niger**
- **Sudan**

FEWS reflects the Africa Bureau's commitment to providing reliable and timely information to decision-makers within the Agency, within the seven countries, and among the broader donor community, so that they can take appropriate actions to avert a famine.

FEWS relies on information it obtains from a wide variety of sources including: USAID Missions, host governments, private voluntary organizations, international donor and relief agencies, and the remote sensing and academic communities. In addition, the FEWS system obtains information directly from FEWS Field Representatives currently assigned to six USAID Missions.

FEWS analyzes the information it collects, cross-checks and analyzes the data, and systematically disseminates its findings through several types of publications. In addition, FEWS serves the AID staff by:

- preparing **FEWS Alert Memoranda** for distribution to top AID decision-makers when dictated by fast-breaking events;
- preparing **Special Reports, maps, briefings, analyses, etc.** upon request; and
- responding to **special inquiries.**

Please note that this is the last monthly Country Report that will be published in this format. A new reporting schedule and format are being prepared.

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December 1988

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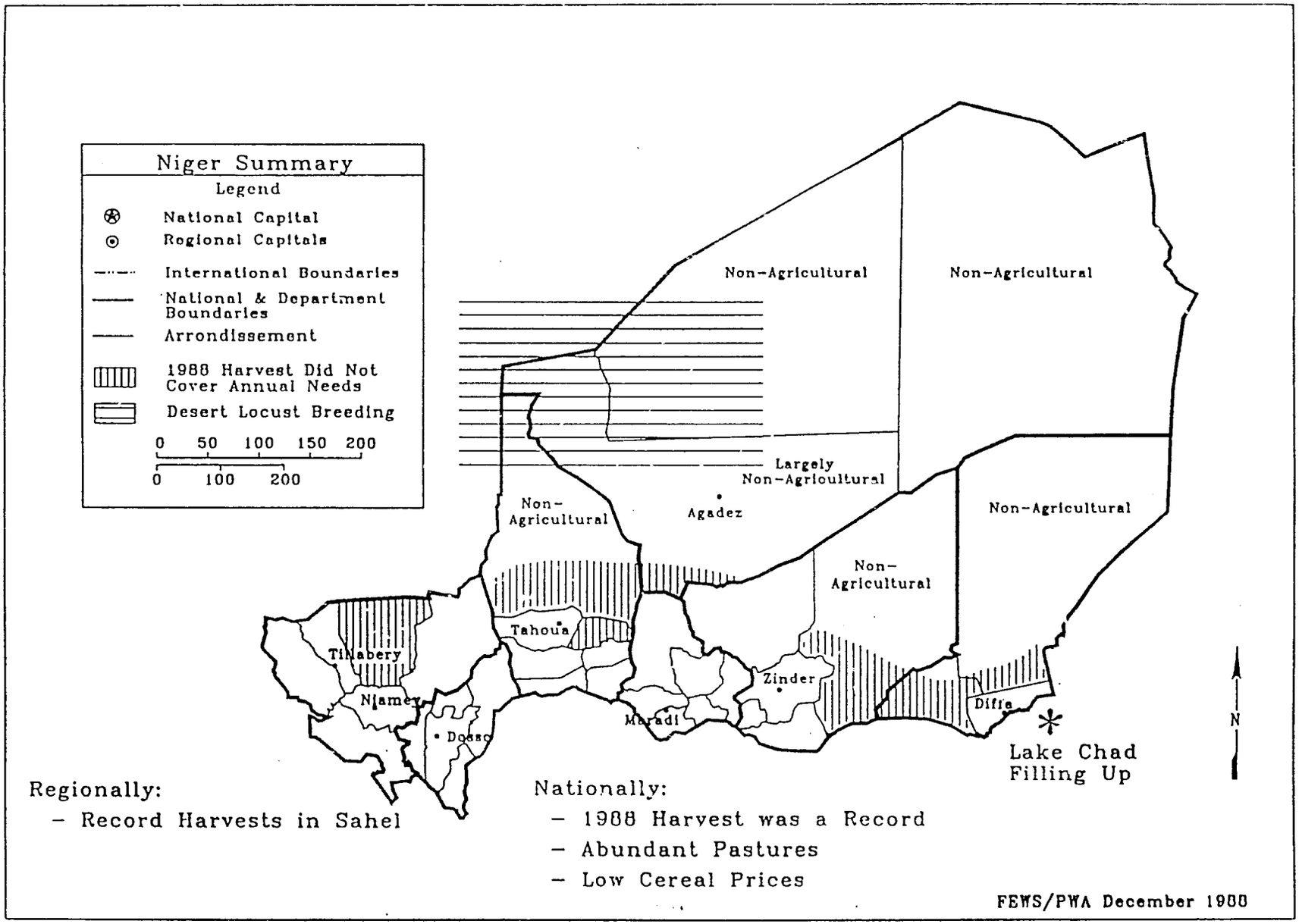
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NIGER

Record-Shattering Harvest

Summary

There has been no better harvest in Niger's recent history, in absolute and per capita terms, than that of 1988. For those people that are primarily dependent upon the harvest to make food available for consumption, and even those that must purchase cereals, conditions are probably as good as can ever reasonably be expected. Cereal prices have plummeted since August when the promise of an excellent harvest became apparent. Cattle prices are rising as livestock owners hurry to restock in order to take advantage of plentiful pasturelands. Desert Locust damage has been minimal, although a threat remains for next year. With such favorable agricultural results and pastoral prospects, only the most chronically food-short areas and those suffering from local catastrophes (floods, hail, etc.) appear to be vulnerable, to any significant degree, to food problems before next year's harvest.

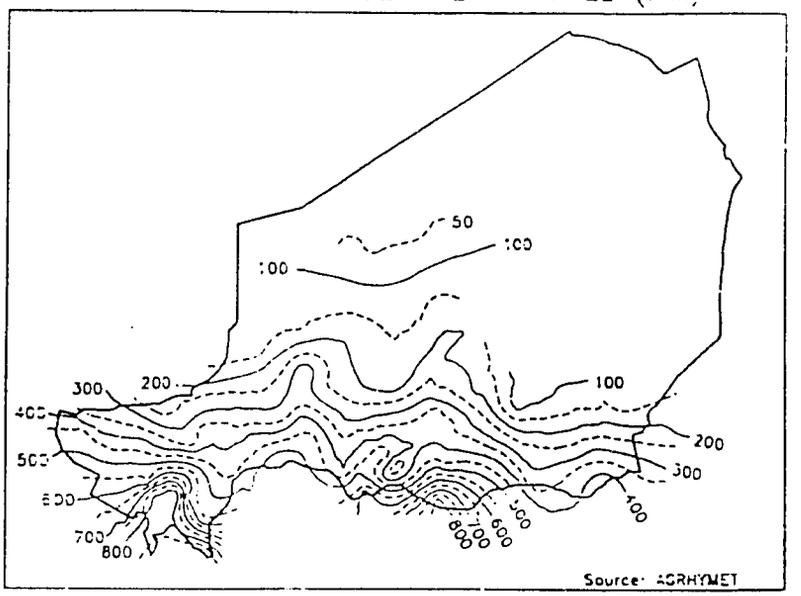
Rainy Season Conditions

The amount and timing of rainfall were generally excellent across most of the country all season long (May to September 30). Cumulative rainfall totals matched or surpassed the recent 20-year average, with few exceptions (see Maps 2, 3, and 4). Even when compared to the 30-year average that includes the wet years of the 50's, 1988 was a very favored year in rainfall. During the course of field surveys on agricultural conditions, farmers volunteered their impression that farming conditions have not been better in at least 30 years. Only in some agricultural zones of Filingué, Tahoua, Aguié, Tessaoua, Gazaoua, and Dioundiou (see Map 4) was rainfall slightly less than average. In general, rains were equally good in both pastoral and agricultural areas. Pasture conditions, particularly in Tchin-Tabaraden, Dakoro, Tanout, Gouré, Mainé-Soroa, and N'Guigmi, are especially good going into the dry season of 1988-89 (see Appendix for locations of arrondissements).

Rains were particularly heavy in some areas that were noted in the June FEWS Vulnerability Report as being vulnerable to food shortages. The impact of last year's (1987) poor rains and disastrous harvests on the relatively prosperous arrondissements of Magaria, Matameye, and Mirria was reversed in 1988 by the sometimes torrential rains of July and August. Magaria received 347 millimeters (mm) of rain more than its 20-year average (172% of average), Mirria 135 mm (140%), and Matameye 88 mm (121%). The eastern arrondissements, always areas of deficit food production, were similarly well-watered: Gouré received 131 mm (152%) more than average, Diffa 200 mm (183%), Mainé-Soroa 67 mm (122%), and N'Guigmi 100 mm (158%) more than average. Lake Chad, long since departed from Niger, was reported late in the season to be filling due to the heavy rains, and was about to again cross inside the national boundaries. Local officials were dispatched to confirm the rise, and people who have settled in the lake basin are reportedly moving out. Extremely heavy downpours and flooding occurred in several areas, as reflected in the rainfall totals of Bankilaré (198 mm more than average),

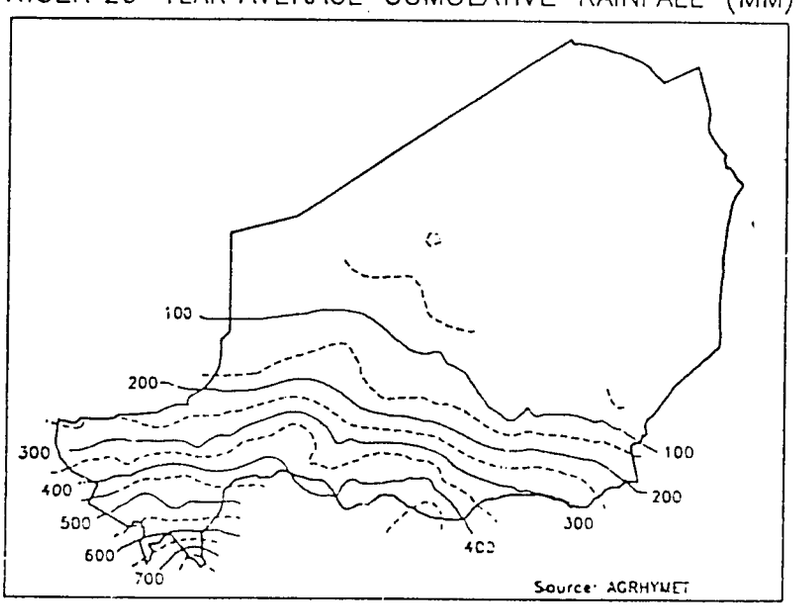
Maps 2, 3, and 4

NIGER 1988 CUMULATIVE RAINFALL (MM)



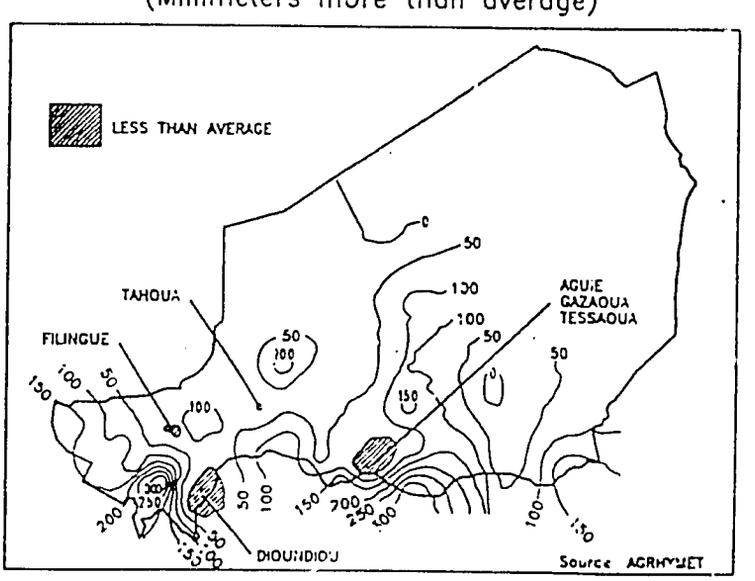
Map 2

NIGER 20-YEAR AVERAGE CUMULATIVE RAINFALL (MM)



Map 3

NIGER 1988 RAINFALL COMPARED TO AVERAGE
(Millimeters more than average)



Map 4

Tera (137 mm), and Dargol (138 mm) in Tera Arrondissement, and Maradi (90 mm) and Dan Issa (198 mm) in Madarounfa Arrondissement, as well as Magaria Arrondissement (see above).

Locust damage to crops and pastures was, on the whole, relatively minor. Abundant rainfall in semi-desertic and desertic breeding areas provided ample greenery to keep breeding locust populations anchored at the edges of the pastoral zone and in intermittent stream valleys in the mountains. What damage there was occurred early in the season in marginal millet and sorghum crops, and later on in the gardens in and around the Aïr Mountains. The heavy concentrations of locusts found late in the season in the Tamesna Region and throughout the Aïr Mountains were producing large populations that will contribute to the number going north towards Morocco and Algeria for the Winter months. There will also be a larger than normal residue of locusts left in Niger during this dry season. Both of these groups may eventually pose a threat to Niger at the beginning of the next rainy season as they begin to return southward with prevailing winds. Control operations are continuing around the Aïr Mountains and in the Tamesna. A total of approximately 862,000 hectares were treated by control operations during 1988.

Cereal prices rose steadily throughout the rainy season, reflecting locally-short supplies resulting from the mediocre harvest of 1987. In September, in anticipation of the exceptional harvest, the bottom fell out of cereal market prices over much of the country. From August to September, prices in Magaria, Filingué, Tera, Mayahi, Tessaoua, and Madaoua fell by almost 50% or more. October prices in most other areas followed this trend and are approximately half of what they were in August. The lowest prices are found in Maradi and Zinder Departments, as they usually are after a good harvest. The highest prices are found in the non-grain producing areas of the north. Preliminary information about animal prices indicates that the price of breed stock is increasing steadily, suggesting that many people may be attempting to restock herds that had been depleted by previous conditions.

Harvest Estimates

The 1988 harvest of 2,326,504 metric tons (MT) of millet and sorghum will easily shatter the previous record harvest of 1,779,000 MT in 1985 (see Figures 1 and 2). After seed, feed, and post-harvest losses are deducted, the net cereal (millet and sorghum only) harvest will make 1,977,000 MT available for consumption and stock replenishment during 1989. The size of this year's harvest is also particularly striking compared to last year's mediocre harvest of 1,362,000 MT, a rise of 70% since 1987. The peanut harvest suffered greatly from pests and disease, falling to less than half of last year's total (17,000 MT). Niebe (an edible bean) production soared from last year's harvest of only 208,000 MT to over 350,000 MT. Although not usually included in the government of Niger (GON) food balance equations because it is often commercialized, niebe will nevertheless make a significant, nutritious contribution to the national and international (especially Nigeria) diet in 1989.

Figure 1: National Cereal Harvests

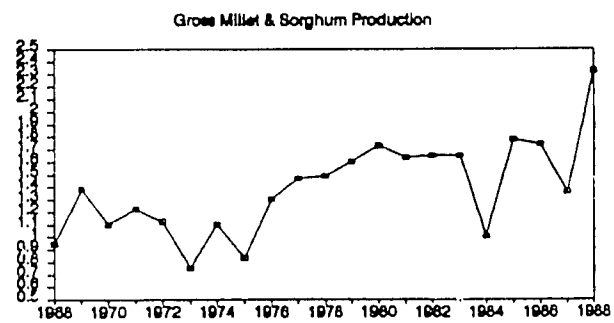
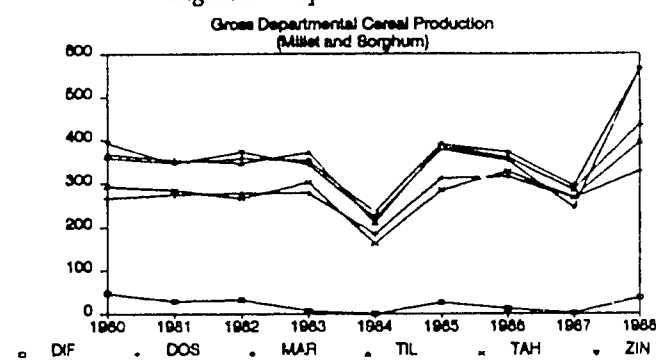


Figure 2: Departmental Cereal Harvests



On a departmental level, 1988 production was notably higher than during 1987 in Diffa (1,969%), Zinder (131%), and Maradi (91%) departments (see Figure 2). The good harvest was shared over most of the country with only two arrondissements (Tchin-Tabaraden and Gaya) producing less than they did in 1987 (see Appendix 1 and Map 5). The increases in production were particularly large in many areas that were left vulnerable to food shortage after the 1987 harvests. Ouallam's harvest in 1988 was 218% of its 1987 harvest. All of the arrondissements in Diffa Department registered over a thousand-fold increase in production between the two years (Diffa 3,028%; Mainé-Soroa 1,325%; N'Guigmi 5,512%). Magaria (142%), Mirria (105%), and Matameye (186%) followed a similar pattern.

Food Balances and Relative Vulnerability

On the national level, a preliminary food balance calculation suggests cause for optimism regarding the food supply during 1989 and even beyond. Table 1 shows two food balance calculations using the Government of Niger cereal consumption rates (200 kg per year for urban and pastoral populations and 250 kg per year for sedentary populations) and the lesser rates of 190/220 used by USAID (extremely close to the consumption rate of 191/219 used by the Food and Agriculture Organization).

Table 1: National Food Balance ('000)

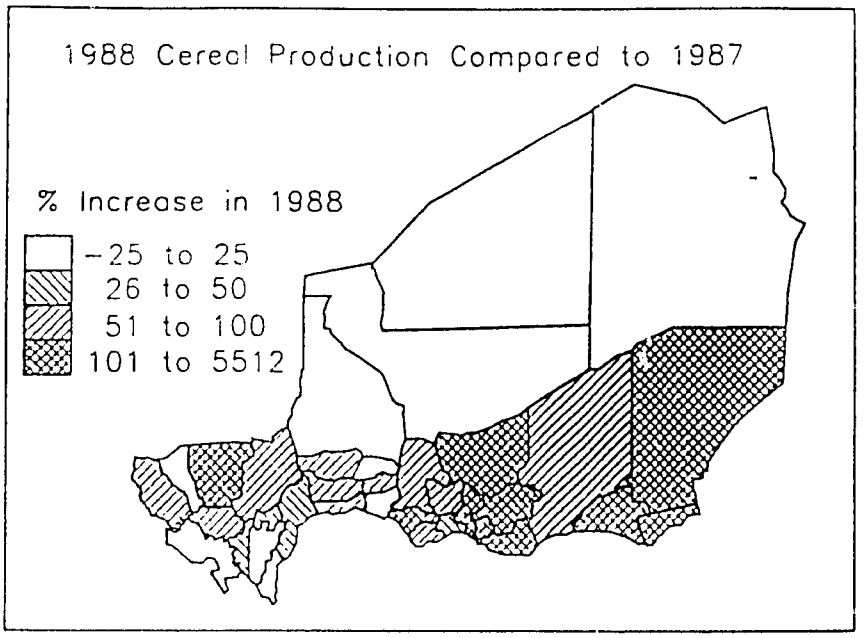
	GON	USAID
Population	**7,475**	**7,475**
Consumption (MT)	**1,769**	**1,585**
Food Supply		
Gross Production	2,375	2,423
Non-Food Uses	(356)	(364)
Net Production	2,019	2,060
Public Stocks	32	32
Commercial Stocks	0	0
On-Farm Stocks	0	0
Donor Stocks	0	0
Food Exports	0	0
Off-Season Production	80	80
Total Domestic Supply (MT)	**2,131**	**2,172**
Import Requirement	(362)	(587)
Food Imports	59	59
Food Balance (MT)	**421**	**646**

Source: USAID/Niamey

Except for the divergent views about how much cereal is required each year for consumption, most of the assumptions found in each balance sheet equation regarding the food supply are quite similar. Another significant difficulty commonly encountered in developing a food balance, estimating the amount of existing on-farm stocks, is much reduced by the general agreement that most on-farm stocks were consumed during 1987 and 1988. The resultant surpluses, either 421,000 MT or 646,000 MT, provide a comfortable margin to the prospects for meeting (and surpassing) cereal requirements in 1989.

The national food supply is, nevertheless, not spread evenly across Niger. Appendix 2 lists all departmental and arrondissement cereal (millet and sorghum only) production surpluses and deficits, using both the GON and USAID assumptions about annual cereal requirements. An examination of these figures provides an initial indication of areas likely to be vulnerable to food crises in 1989.

Map 5:



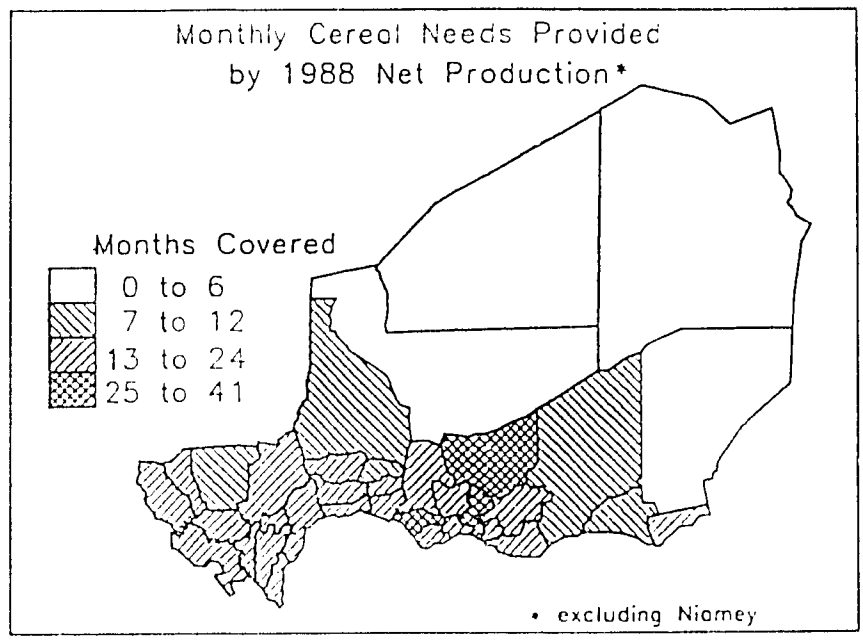
In this best of harvest years, one would expect that areas of chronic food shortage might still show production deficits. Indeed, of the eight arrondissements with cereal production deficits shown in the last column in Appendix 2 (Tchirozerine, Arlit, Bilma, Gouré, Mainé-Soroa, N'Guigmi, Tchin-Tabaraden, and Ouallam), six were included in the list of arrondissements classified as displaying "high current, high structural (chronic) vulnerability" in the 1988 June FEWS Vulnerability Report. The largely pastoral Agadez arrondissements (Tchirozerine, Arlit, and Bilma) account for 60% of the aggregate deficit found in these eight arrondissements (45,059 MT). Of these eight, Bilma and Arlit are less vulnerable than production figures suggest, since the majority of the population does not particularly depend upon local millet and sorghum production or animal husbandry for survival (Bilma surviving on trade and Arlit on wage labor from mining). These figures reconfirm the chronic vulnerability of the other six arrondissements and their need to fulfill consumption requirements by other than local production. How well they may be able to accomplish this will be the subject of the upcoming June Vulnerability Report.

Other arrondissements have largely been able to meet most of their cereal needs through their own production of millet and sorghum. Some have covered far more than 1989 needs with their excellent 1988 harvest. Map 6 looks at production in terms of how many months of coverage their 1988 harvest provides. Using a monthly cereal requirement (1/12th of the annual requirement shown in Appendix 2), all arrondissements have been classified by the number of months their agricultural production will cover. Those arrondissements that will have less than 12 months covered by the 1988 harvest will require other food inputs during the year. Those with more will either be able to replenish their on-farm stocks for future use, sell the surplus to cover other needs, or consume more cereal during 1989.

Particularly notable because of the reversal from the poor 1987 harvest are the results for the arrondissements of Magaria, Mirria, Matameye, and Tessaoua. These four were classified in the June Vulnerability Report as having "high current, low structural vulnerability," meaning that the extremely poor harvest of 1987 was severe yet, judging from recent history, relatively atypical. The 1988 harvest tends to confirm that analysis, as their rebound has been relatively complete. The reported production of Tanout is also noteworthy, as it was last year. Reported levels of millet and sorghum production there appear surprisingly good (with little evidence to dispute these figures), given previous production

levels and the substantial numbers of people in this arrondissement who are usually reported as at-risk. Recent field trip reports from this area indicate at least 23 villages have been classified as having a 60% deficit owing to damage from locusts and locust control efforts.

Map 6:



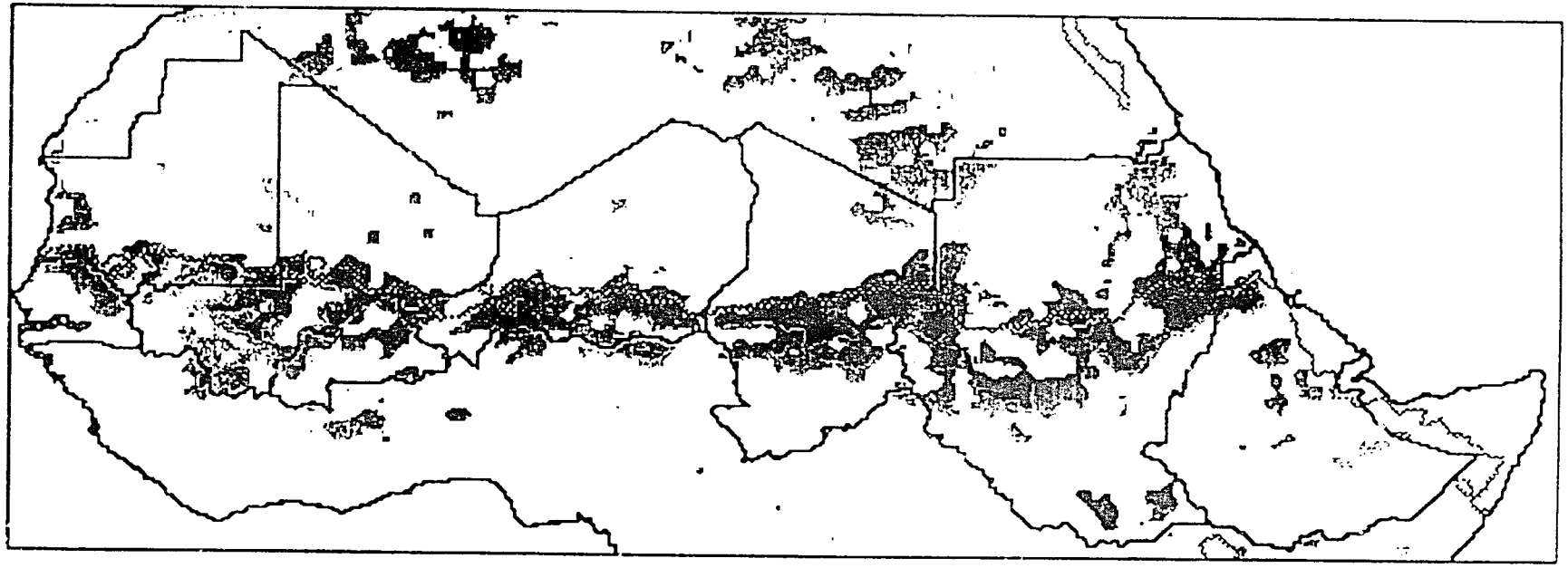
In any year there are pockets of hardship and food shortage in Niger, if not famine. From the excellent harvest results, it would appear that there will be many fewer "pockets" in 1989 than there were in 1988. Nevertheless, the healthy national food balance and the relatively good agricultural production figures from the arrondissements should not hide the likelihood that certain segments of the population (wage laborers, people dependent upon small herds for their livelihood, farmers living in marginal farming areas) will again face hardship in acquiring sufficient food during 1989. Field reports already indicate the location of certain village groupings (among other relatively well-off areas) where problems currently exist. These may include: 30 villages in Dogondoutchi; 8 villages in Tessaoua where crops were damaged by hail, late plantings and sand storms; 50,000 people in Mainé-Soroa; 16,000 in Diffa; and 23 villages (13,000 people) in Magaria.

Regional Summary

From Mauritania east to Ethiopia, the FEWS-monitored countries report excellent rainfall (in terms of recent history) during the 1988 growing season. Satellite imagery showed vegetative potential to be very good, and in some areas better than the historical (1982-1987) maximum (see Map 7). While estimates vary, record production can be expected in Sudan, Chad, Niger, and Mali. Production is expected to be good or better in Ethiopia and Burkina. The only exception to this good agricultural year may be Mauritania, which is the only country where predictions of significant (at a national level) locust damage might be borne out. Mauritania, however, is a grain-importing nation even in the best of years.

The areas of greatest vulnerability currently lie where war and civil strife limit access to food. There is a famine among displaced people in and around the Southern Region of Sudan. In Ethiopia, civil war in Eritrea and Tigray continues to make populations there extremely vulnerable to famine. Elsewhere, vulnerable populations are more localized.

Regional NDVI Greater than Historical Maximum



Areas where 1988 NDVI reached levels significantly higher than the 19[illegible]-87 record

..... Historic northing of the 0.2 NDVI contour (which corresponds very closely with the 1988 contour)

Appendix 1: Net Millet and Sorghum Production 1986-1988

	88 Production	87 Production	86 Production
AGADEZ	1,530	1,522	1,477
Agadez-Commune	0	0	0
Tchirozérine	1,357	1,363	1,273
Arlit	173	160	204
Bilma	0	0	0
DIFFA	31,143	1,505	10,024
Commune	0	0	0
Diffa	15,795	505	5,186
Mainé-Soroa	13,869	973	4,600
N'Guigmi	1,479	26	238
DOSSO	279,132	226,794	268,606
Dosso Commune	0	0	0
Boboye/B. N'Gaouré	52,393	36,853	52,684
Dogondoutchi	92,185	69,948	73,116
Dosso	61,628	52,593	68,356
Gaya	45,244	48,269	53,885
Loga	27,682	19,131	20,565
MARADI	479,593	250,465	316,246
Commune	0	0	0
Aguié	43,647	31,575	53,340
Dakoro	89,278	49,564	49,813
Guidan Roumji	113,626	45,487	48,608
Madarounfa	57,400	35,873	60,709
Mayahi	71,599	47,564	39,302
Tessaoua	104,043	40,402	64,474
TAHOUA	335,408	227,788	278,709
Commune	0	0	0
Konni	78,068	39,167	70,000
Bouza	45,469	29,724	30,816
Illéla	56,704	30,982	41,596
Keïta	36,011	33,655	33,080
Madaoua	55,419	50,057	46,896
Tahoua	51,528	29,088	39,986
Tchin Tabaraden	12,209	15,116	16,335
TILLABERY	371,763	242,757	306,019
Niamey Commune	3,970	0	0
Tillabery Commune	0	0	0
Filingué	73,394	46,355	51,951
Kollo	81,987	53,098	63,164
Ouallam	40,592	12,740	28,948
Say	48,112	43,888	55,444
Tera	86,403	56,590	68,679
Tillabery	37,305	30,087	37,833
ZINDER	478,957	207,529	300,944
Commune	4,001	2,307	3,035
Gouré	33,563	18,061	23,199
Magaria	108,473	44,873	81,926
Matamèye	55,475	19,395	34,508
Mirria	137,877	67,258	97,947
Tanout	139,568	55,635	60,329
NIGER	1,977,526	1,158,360	1,482,025

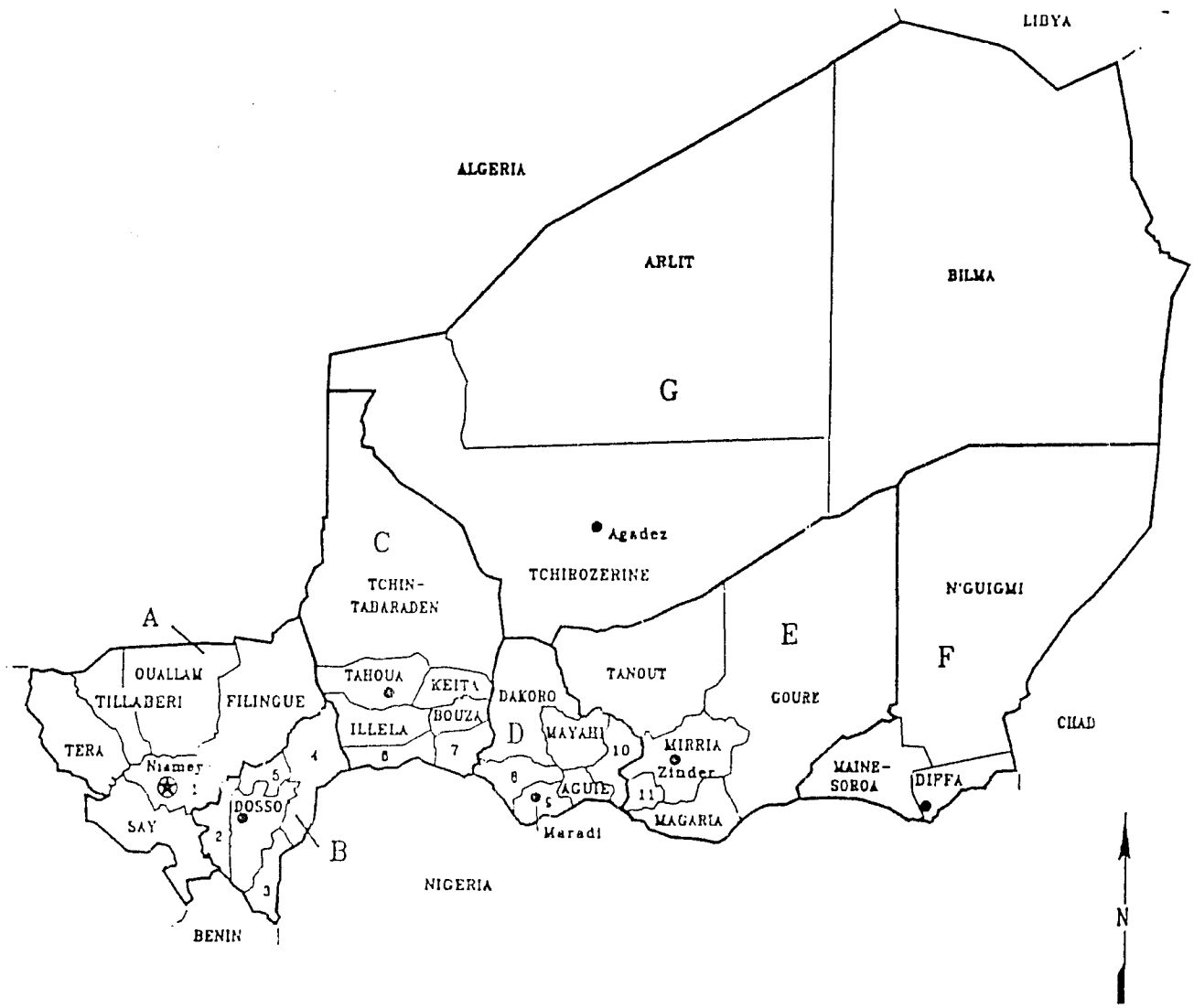
Source: Ministry of Agriculture and Environment

Appendix 2: 1989 Cereal Balances in '000 Metric Tons (without stock adjustments)

	Population 1989 (1988+3.1%) Sedent	Nom/Urb	Total	89 FoodNeeds @200/250Kg	89 FoodNeeds @190/220Kg	89 Balance @200/250Kg	89 Balance @190/220Kg
AGADEZ	0	210,282	210,282	42,056	39,954	(40,526)	(38,424)
Agadez-Commune	0	51,719	51,719	10,344	9,827	(10,344)	(9,827)
Tchirozérine	0	78,695	78,695	15,739	14,952	(14,382)	(13,595)
Arlit	0	70,752	70,752	14,150	13,443	(13,977)	(13,270)
Bilma	0	9,115	9,115	1,823	1,732	(1,823)	(1,732)
DIFFA	113,867	81,318	195,185	44,730	40,501	(13,587)	(9,358)
Commune	0	14,058	14,058	2,81[illegible]	2,671	(2,812)	(2,671)
Diffa	54,433	10,374	64,807	15,663	13,946	112	1,849
Mainé-Soroa	44,531	40,945	85,476	19,322	17,576	(5,453)	(3,707)
N'Guigmi	14,903	15,941	30,844	6,914	6,308	(5,435)	(4,829)
DOSSO	971,162	80,455	1,051,617	258,881	228,942	20,251	50,190
Dosso Commune	0	27,932	27,932	5,586	5,307	(5,586)	(5,307)
Boboye	212,011	0	212,011	53,003	46,612	(610)	5,751
Dogondoutchi	302,237	24,626	326,863	80,484	71,171	11,701	21,014
Dosso	216,791	8,715	225,507	55,941	49,350	5,687	12,278
Gaya	153,088	16,019	169,107	41,476	36,723	3,768	8,521
Loga	87,035	3,163	90,198	22,391	19,749	5,291	7,933
MARADI	1,154,468	267,590	1,432,058	344,635	307,025	134,958	172,568
Commune	0	116,467	116,467	23,293	22,129	(23,293)	(22,129)
Aguie	142,879	35,641	178,520	42,848	38,205	799	5,442
Dakoro	218,182	47,910	266,092	64,127	57,103	25,151	32,175
Guidan Roumji	215,367	2,605	217,972	54,363	47,876	59,263	65,750
Madarounfa	178,240	21,584	199,824	48,877	43,314	8,523	14,086
Mayahi	224,547	9,249	233,796	57,986	51,158	13,613	20,441
Tessaoua	185,253	34,134	219,388	53,140	47,241	50,903	56,802
TAHOUA	962,201	384,957	1,347,158	317,542	284,826	17,866	50,582
Commune	0	53,207	53,207	10,641	10,109	(10,641)	(10,109)
Konni	146,699	114,810	261,509	59,637	54,088	18,431	23,980
Bouza	184,913	0	184,913	46,228	40,681	(759)	4,788
Illela	160,143	20,126	180,269	44,061	39,055	12,643	17,649
Keita	159,482	3,749	163,231	40,620	35,798	(4,609)	213
Madaoua	137,124	86,565	223,689	51,594	46,615	3,825	8,804
Tahoua	173,840	21,042	194,882	47,668	42,243	3,860	9,285
Tchin-Tabaraden	0	85,459	85,459	17,092	16,237	(4,883)	(4,028)
TILLABERY	1,235,171	549,143	1,784,314	418,621	376,075	(46,858)	(4,312)
Niamey Commune	0	410,611	410,611	82,122	78,016	(78,152)	(74,046)
Tillabery Commune	0	9,342	9,342	1,868	1,775	(1,868)	(1,775)
Filingue	283,712	13,333	297,045	73,594	64,950	(200)	8,444
Kollo	208,232	33,872	242,105	58,833	52,247	23,154	29,740
Ouallam	190,514	6,274	196,788	48,883	43,105	(8,291)	(2,513)
Say	169,372	0	169,372	42,313	37,262	5,769	10,850
Tera	228,959	74,653	303,612	72,176	64,555	14,233	21,848
Tillabery	154,382	1,058	155,440	38,807	34,165	(1,502)	3,140
ZINDER	1,033,720	420,812	1,454,532	342,592	307,373	136,365	171,584
Commune	20,502	104,137	124,640	25,953	24,297	(21,952)	(20,296)
Goure	129,464	34,033	163,497	39,173	34,948	(5,610)	(1,385)
Magaria	235,649	129,571	365,220	84,827	76,461	23,646	32,012
Matameye	144,306	25,717	170,023	41,220	36,634	14,255	18,841
Mirria	383,029	50,326	433,355	105,822	93,828	32,055	44,049
Tanout	120,769	77,027	197,796	45,598	41,204	93,970	98,364
NIGER	5,480,589	1,994,556	7,475,145	1,769,058	1,584,695	208,468	392,831

Source: Production: Ministry of Agriculture and Environment; Nomad/Sedentary: FEWS;

Administrative Units



DEPARTEMENTS

A. TILLABERY
B. DOSSO
C. TAHOUA
D. MARADI
E. ZINDER
F. DIFFA
G. AGADEZ

OTHER ARRONDISSEMENTS

1. KOLLO
2. BIRNI N'GAOURE
3. GAYA
4. DOGONDOUTCHI
5. LOGA
6. BIRNI N'KONNI
7. MADAOUA
8. GUIDAN ROUMDJI
9. MADAROUNFA
10. TESSAOUA
11. MATAMEYE

FEWS/PWA, June 1988

Key Terms

At Risk - FEWS Reports employ the term "at risk" to describe those populations or areas either currently or in the near future expected to be 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.

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. The food needs of individual populations at risk depend 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.

ITCZ - The Intertropical Convergence Zone (ITCZ) is where the high pressure system originating in equatorial regions of the Atlantic (the St. Helena's High) collides with the Azores High descending from the north. The ITCZ tends to move northward during the spring and summer in response to normal global weather patterns. The position of the ITCZ normally defines the northern limits of possible precipitation in the Sahel; rainfall generally occurs 100 to 300 kilometers south of the ITCZ.

NDVI - Normalized Difference Vegetation Index (NDVI) images are created at the laboratory of the National Aeronautic and Space Administration (NASA) Global Inventory Modeling and Monitoring System (GIMMS). These images are derived from Global Area Coverage (GAC) imagery (of approximately 4 km resolution) received from the Advanced Very High Resolution Radiometer (AVHRR) sensors on board the National Oceanic and Atmospheric Administration (NOAA) Polar Orbiting series of satellites. The polar orbiter satellites remotely sense the entire Earth and its atmosphere once each day and once each night, collecting data in 5 spectral bands. Bands 1 and 2 sense reflected red and infra-red wavelengths respectively, and the remaining 3 bands sense emitted radiation in 3 different spectral bands. The NDVI images are created by calculating

$$(\text{infrared} - \text{red}) / (\text{infrared} + \text{red})$$

for each pixel from the daytime satellite passes. Since chlorophyll reflects more in the infrared band than in the red band, higher NDVI values indicate the presence of more chlorophyll and, by inference, more live vegetation. A composite of daily NDVI images is created for each 10-day period, using the highest NDVI value for each pixel during that period. This technique minimizes the effects of clouds and other forms of atmospheric interference that tend to reduce NDVI values. NDVI is often referred to as a measure of "greenness" or "vegetative vigor." The NDVI images are used to monitor the response of vegetation to weather conditions.