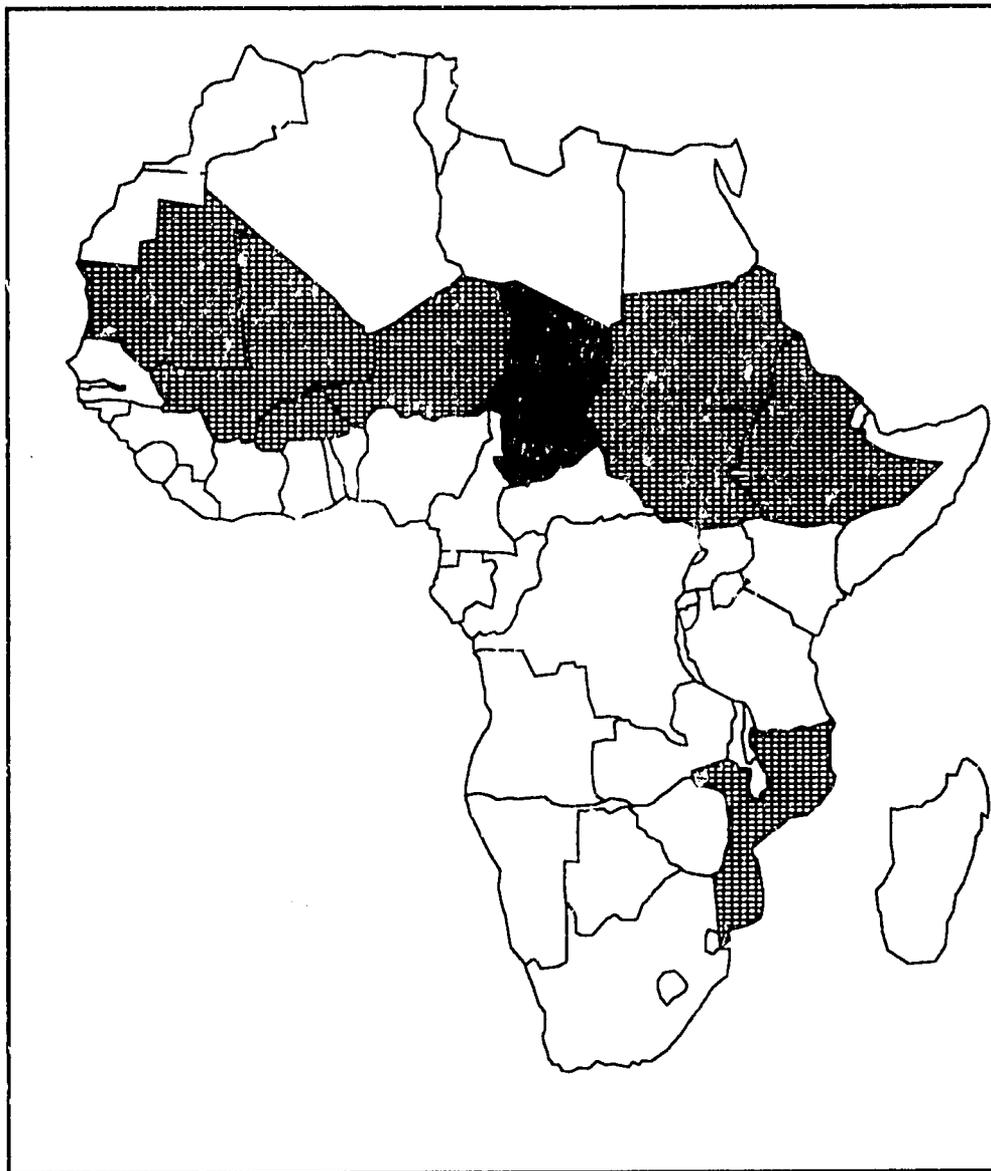


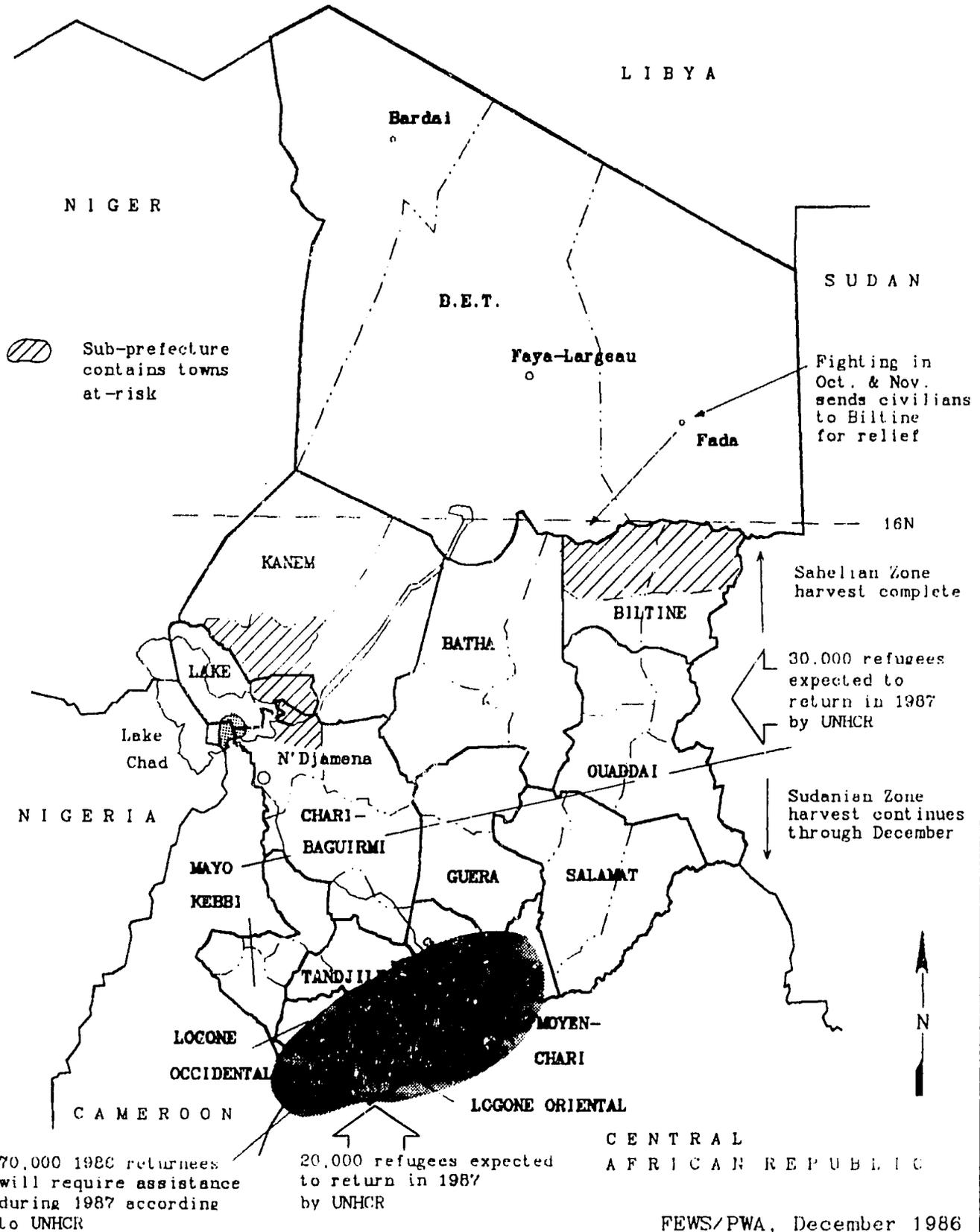
Report Number 7
December 1986

FEWS Country Report CHAD



Africa Bureau
U.S. Agency
for International
Development

Summary Map



CHAD

Good Harvest! Will It Reach Deficit Areas?

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

Prepared by
Price, Williams & Associates, Inc.
December 1986

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INTRODUCTION

This is the seventh of a series of monthly reports issued by the Famine Early Warning System (FEWS) on Chad. 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 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.

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.

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. 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, the seventh Chad report owes a debt to various offices of the US Agency for International Development (AID), National Oceanic and Atmospheric Administration's National Environment Satellite, Data, and Information Service's Assessment and Information Services Center (NOAA/NESDIS/AISC), and USAID/N'Djamena; the Government of Chad (GOC) Ministry of Agriculture National Office of Rural Development (ONDR) and Ministry for Food Security and Disaster Victims (MSAPS); LICROSS; the UN Development Program (UNDP), Food and Agricultural Organization (FAO) and World Food Program (WFP); the Permanent Interstate Committee for Drought Control in the Sahel (CILSS); the European Agency for Development and Health (AEDES); and AGRHYMET.

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

SUMMARY

The 1986 cereals harvest in Chad is among the best in the past ten years, in spite of an early drought in the Sudanian Zone and heavy grasshopper damage in parts of the Sahelian Zone. When combined with expected imports and exports, and stock on hand, this year's harvest should be sufficient to feed the total population. This calculation, however, does not take into account the problem of transporting grains from surplus to deficit areas. In the Sahelian Zone, as many as 150,000 people, three percent of Chad's current estimated population, are nutritionally at-risk. A further 120,000 to 150,000 people, refugees returning from Sudan and the Central African Republic, will require assistance in 1987.

Issues

- o There has been no further word on the people displaced by fighting in eastern Borkou-Ennedi-Tibesti (B.E.T.) Prefecture. There are reports of new fighting in northwestern B.E.T., although none mention civilians trying to leave the area.
- o No further information has been received regarding the African Migratory Locust infestations seen near N'Djamena in November or the grasshopper/locust resurgence reported near Bol.

Key December Events

- o The harvest of recessional crops will be nearing completion by the end of the month, allowing refinement of the estimate for the 1986 cereals production.

AGRICULTURE

The harvest of rainfed crops was completed in November. Flood recessional crops, grown in Chari-Baguirmi Prefecture and in the sudanian prefectures of Mayo-Kebbi, Moyen-Chari, Logone Oriental and Occidental, and Tandjile, will be harvested through the end of December. There has been no further word on the African Migratory Locust infestation outside of N'Djamena or the resurgence of grasshoppers (or locusts) near Bol. In the case of the locust infestation near N'Djamena, the aerial treatment applied in November probably was effective in destroying the insects. Ground control for grasshoppers continues in the recessional crop areas to ensure that pest damage remains minimal.

Chad's projected 1986 cereals harvest, 685,000 MT, is on a par with harvests experienced during the late sixties, when grain harvests exceeded 690,000 MT. This contrasts sharply with the harvests of 1981 through 1984, which ranged from about 550,000 MT in 1981 down to 315,000 MT in 1984. Considering the amount of pest damage (possibly as high as 485,000 MT of grain, mostly in the Sahelian

Zone, according to one Mission cable) this year's harvest is outstanding.

Much of this outcome can be attributed to higher yields induced by good and steady rainfall from July through October (see Appendix I for discussion of rainfall and Normalized Vegetation Difference Index). Other factors in this year's bumper harvest include an increase of six to nine percent in acreage planted and the large amount of seed remaining from last year's excellent harvest. The amount of seed available allowed farmers to replant as many as three and four times, so that early losses to pests and the May/June drought could be recouped during the late summer rains.

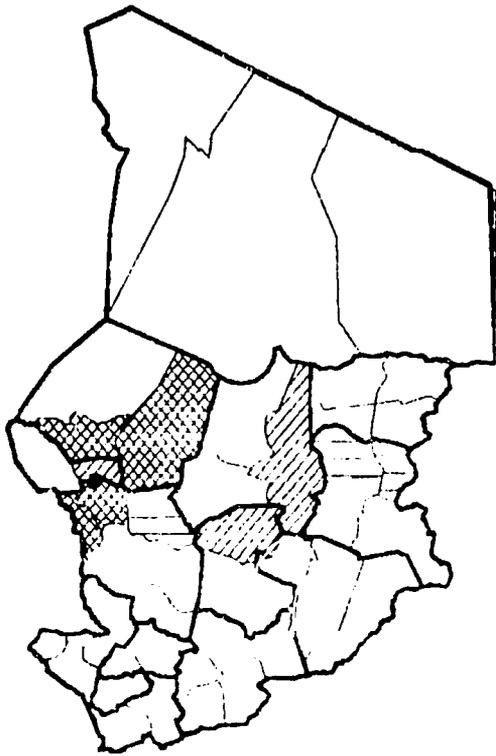
In the few areas that have done poorly, the crop deficit can be ascribed to erratic and poor rainfall (areas in Sahr Sub-prefecture of Moyen Chari Prefecture and Biltine Prefecture), severe pest damage (areas in Ouaddai Prefecture, Massakory Sub-prefecture in Chari-Baguirmi Prefecture, and Koumra Sub-prefecture in Moyen-Chari Prefecture), or a combination of the two (areas in Batha, Lake, and Kanem Prefectures). The effects of this year's erratic rainfall on general vegetative growth can be seen in Figures 2a and 2b, Item 6, N'Gouri Sub-prefecture and Items 8 through 10, Kelo, Maissala and Moundou Sub-prefectures (Appendix I).

There should be sufficient seed stock available from this year's harvest to produce a bumper crop again in 1987, as long as the rains and pests cooperate. A great deal of thought is going into plans for pest control for next year, so it is possible that rain will be the only major item of worry.

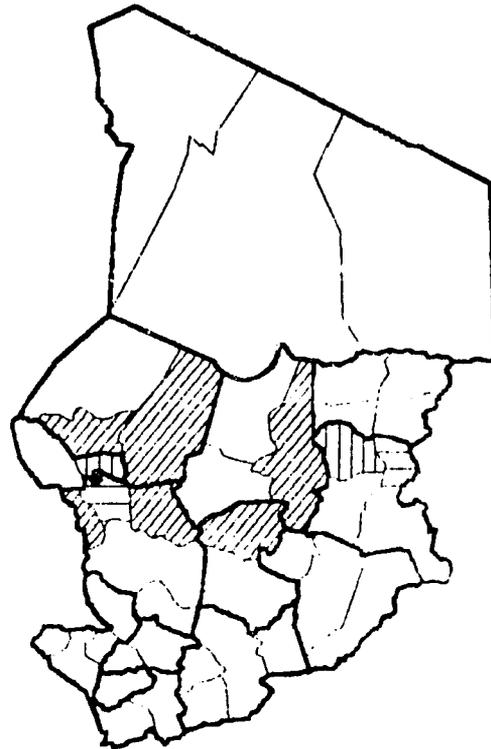
MARKET CONDITIONS In the Sahelian Zone, the price of one coro (about 2.5 kg) of millet remained fairly stable over the summer, but began to drop in most areas as the harvest progressed. Exceptions to this rule are the markets in Adre Town, Ouaddai Prefecture, Oum Hadjer Town, Batha Prefecture, and Bitkine Town, Guera Prefecture (Map 2 and Table 1).

The fact that millet prices did not increase over the summer, the traditional lean season before the harvest, would indicate that reserves from the 1985 harvest were quite high. The continued stability of millet prices in Bitkine may imply that reserves from last year remain strong, but that this year's grain crop has not been sufficient to flood the market. The end-of-growing-season increase in prices seen in Adre and Oum Hadjer may indicate a shrinking of reserves.

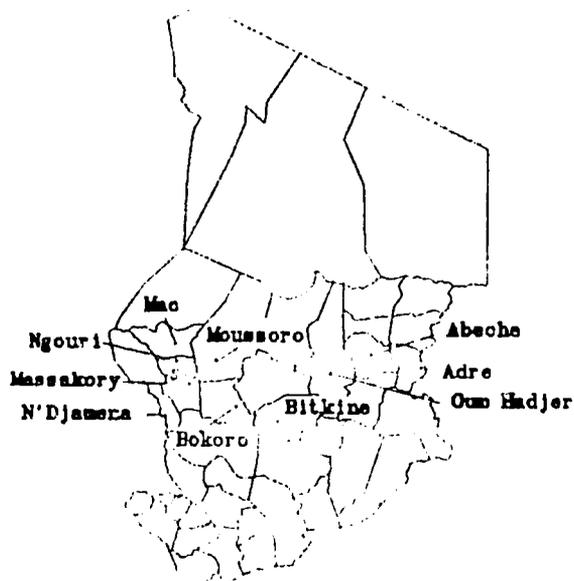
Millet Price at Town Markets, August and October, 1986



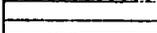
August 1986



October 1986



CFA

	200 TO 275
	110 TO 200
	75 TO 110
	60 TO 75

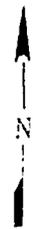


Table 1: Market Price of Millet per Coro (approx 2.5 kg)

Location	Jun '86 (CFA)	Jul '86 (CFA)	Aug '86 (CFA)	Sep '86 (CFA)	Oct '86 (CFA)
Chari-Baguirmi					
Bokoro	150	140	110	80-150	115-125
Massakory	250	250	250	150-175	100-115
N'Djamena	200	175-250	200-250	175	150
Lake					
N'Gouri	275-300	225	150	125	60-90
Kanem					
Moussoro	300	250	275	200-225	175
Mao	325	300	225	175-200	115-125
Ouaddai					
Abeche	100	100	100	125	50-75
Adre	50-75	50-85	80	45-100	100
Guera					
Bitkine	150	150	125	100	125
Batha					
Oum-Hadjer	175	150	175	200-250	125-200

Source: AEDES/Chad

POPULATION MOVEMENTS

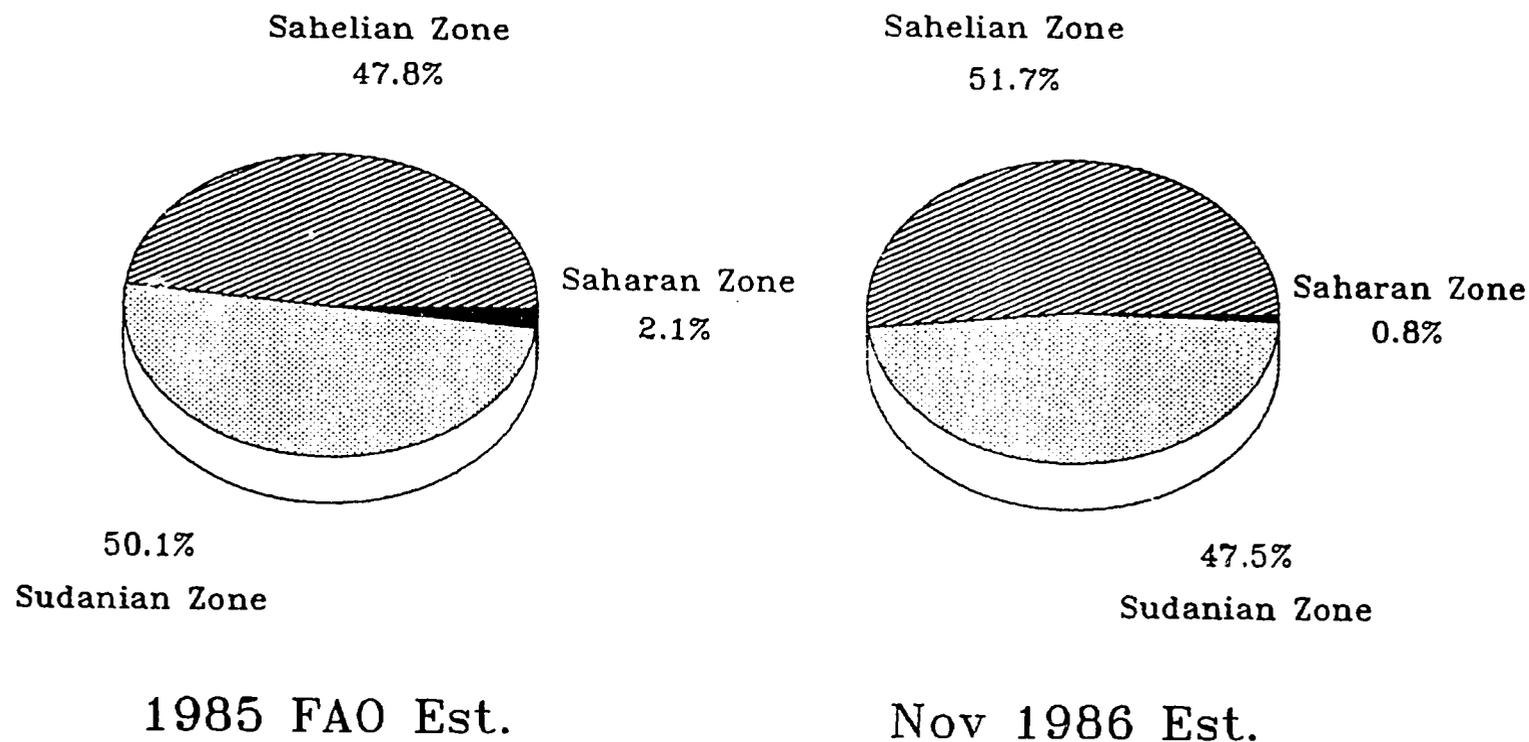
Short-term

Refugees have continued to return to Chad in response to greater political stability and improved agricultural conditions. A November UN High Commission on Refugees (UNHCR) mission to Chad has determined that up to 150,000 returnees will need assistance in 1987. Of 122,000 people who have returned from the Central African Republic (CAR) to southern Chad, 70,000 will still require assistance next year. In addition, UNHCR expects that next year, 20,000 Chadians currently being aided in CAR will return to southern Chad, and in the east, near Adre Sub-prefecture, Ouaddai Prefecture, some 30,000 refugees will return from Sudan. (Of the 150,000 total, 30,000 people were left out of the geographical breakdown.) Returnees will be assisted with farm tools, seeds, building materials, and locally obtained food aid utilizing private voluntary organizations (PVOs) and UN organizations already in-country.

Long-term

A comparison between the Mission-cited November 1986 estimate of 1987 population in the Saharan, Sahelian, and Sudanian Zones and the 1985 FAO population estimate indicates that there has been a shift in population distribution from the Saharan and Sudanian Zones to the Sahelian Zone over the past two years (Table 2 and Figure 1). The 1985 FAO population estimate was aggregated into climatic zones by defining the Saharan Zone as B.E.T. Prefecture; the Sahelian Zone as Batha, Biltine, Chari-Baguirmi,

Population Distribution



Source: Mission Cable; FAO

Gucra, Lake, Kanem and Ouaddai Prefectures; and the Sudanian Zone as Logone Occidental, Logone Oriental, Mayo-Kebbi, Moyen-Chari, Salamat and Tandjile Prefectures.

Table 2: Population Distribution

Zone	Projected FAO Est from 1985	Nov 1986 Est for 1987
Saharan	, 98	, 34
Sahelian	2,210	2,388
Sudanian	2,309	2,195
Total	4,617	4,617

Source: Mission Cable; FAO

The apparent shift in population distribution could be due to differences in the estimation methods used. If the shift is real, however, it presages higher dependence on rainfed crops in areas subject to erratic rainfall, and perhaps less cultivation of Chad's prime source of foreign exchange, cotton, which is grown in the Sudanian Zone.

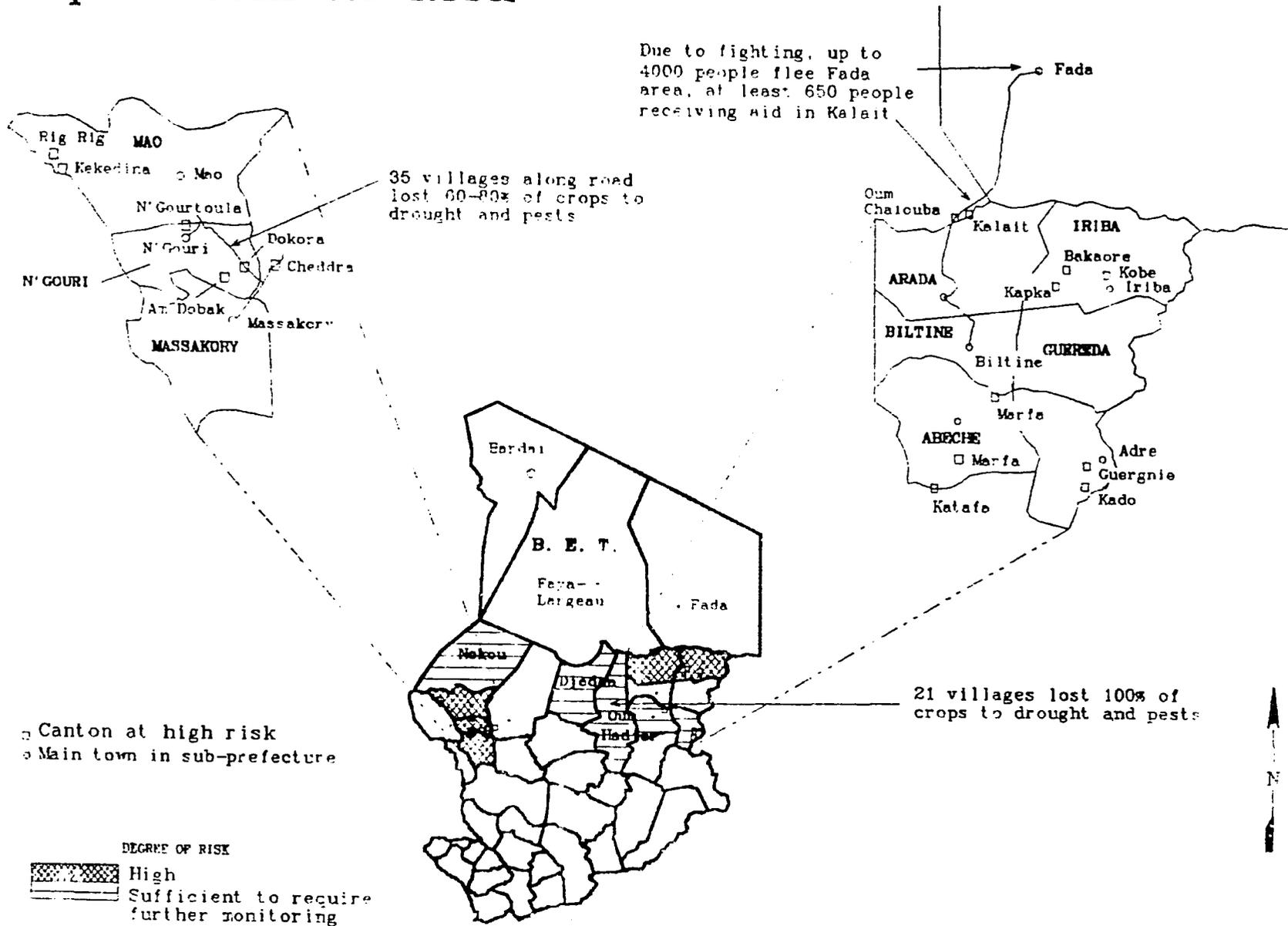
**FOOD FLOWS/
NEEDS**

The projected 1987 food grain balance for Chad shows the country has just enough cereals to meet the needs of its population (Table 3, in Appendix II). This information, however, does not indicate where the grains have been grown and does not address the problem of internal redistribution. The transportation network in Chad is quite poor, so it is unlikely that surplus grains will be marketed far from where they are produced. Any transport of grains outside of the sub-prefecture of production will probably require assistance either from the Government of Chad (GOC) or from the donor community.

**POPULATIONS
AT-RISK**

In its October report, the European Agency for Development and Health (AEDES) team in Chad listed the following as containing "at-risk zones": Kanem Prefecture; Massakory Sub-prefecture of Chari-Baguirmi Prefecture; Djedaa and Oum Hadjer Sub-prefectures of Batha Prefecture; Iriba and Arada Sub-prefectures of Biltine Prefecture; and Adre and Abeche Sub-prefectures of Ouaddai Prefecture (Map 3). While it is not clear that all of the 150,000 people who live in these areas are at-risk, it was estimated in October that each area had sufficient food reserves to last one to three months.

Populations At-Risk



Source: Mission Cables; AEDS
FEWS/PWA, December 1986

Areas in Kanem and Lake Prefecture, especially the cantons of Am Doback (population 15,000) and Dokora, have been cited as "at-risk" by AEDES for several months (Map 3). The harvest in Am Doback and Dokora was quite poor. The average product per family in 253 villages in these two cantons ranged from 25 to 75 kilograms. A LICROSS nutritional survey of Am Doback Canton completed in October showed that 17% of the children under the age of five years are malnourished. These areas will likely require some form of assistance until the next harvest.

No further information has been received concerning the people fleeing strife in Fada, in northeastern B.E.T. Prefecture (Map 3). There are reports of a current Libyan offensive in northwestern B.E.T. Prefecture near Bardai, but so far there has been no word on the effect of this fighting on the civilian population. Bardai is far enough from the 16th parallel, the northern boundary of general GOC influence, that civilians under duress are likely to flee westward to Niger rather than southward to Kanem Prefecture.

UNHCR has estimated that 70,000 recently returned refugees and 50,000 future returnees will require six to nine months of assistance in 1987. These people will need food-aid during the months of assistance.

APPENDIX I

Figures 2a and 2b compare the 1986 Normalized Vegetation Difference Index (NVDI) for the period of good rains with the average NVDI over the same four month period for 1981 through 1986, excluding 1984, and for 1981 through 1985. NVDI is a measure of greenness, or vegetative vigor, derived from satellite imagery, and tends to reflect rainfall experienced in previous weeks.

The shape of the 1986 NVDI curve for the sahelian sub-prefectures, shown in Figure 2a, is quite different from that for the sudanian sub-prefectures, shown in Figure 2b. In Figure 2a, the 1986 NVDI is generally well above even the average NVDI for good years and tends to parallel both of the other NVDI curves. In Figure 2b, the 1986 NVDI does not pass either of the other NVDI curves until mid-August, evidence of the drought experienced in May and June in these areas.

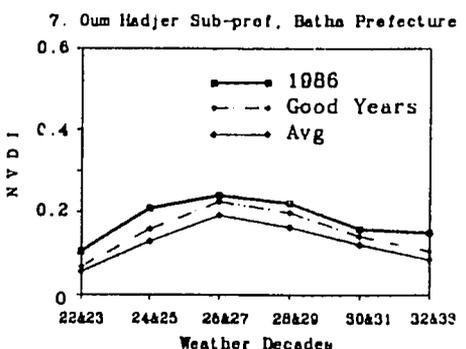
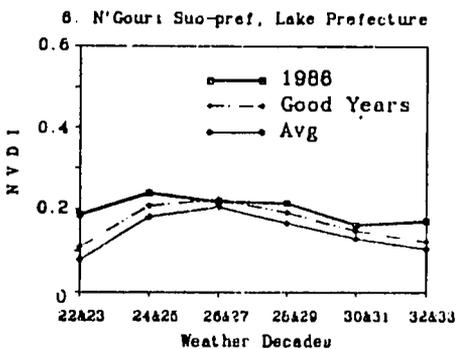
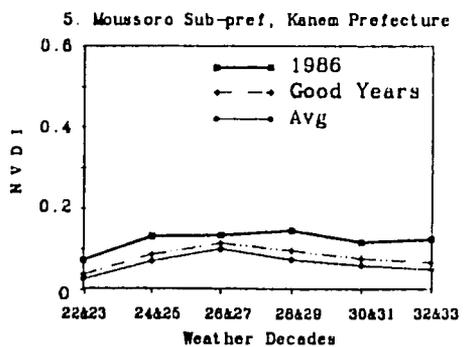
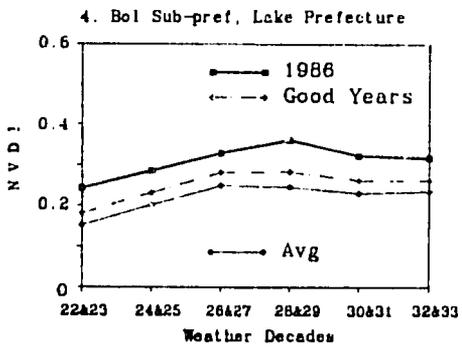
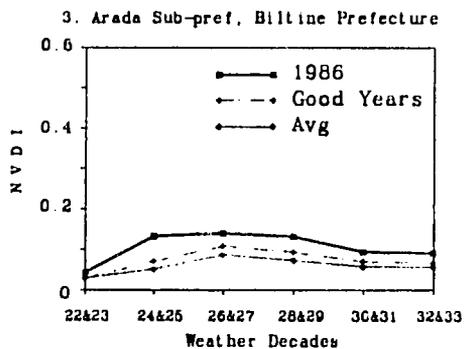
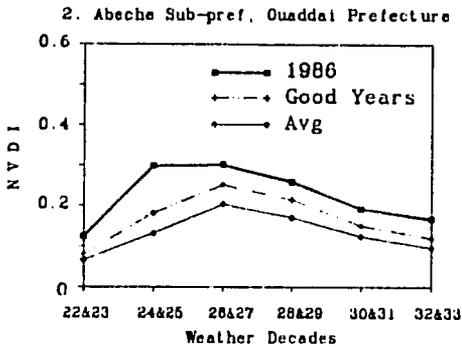
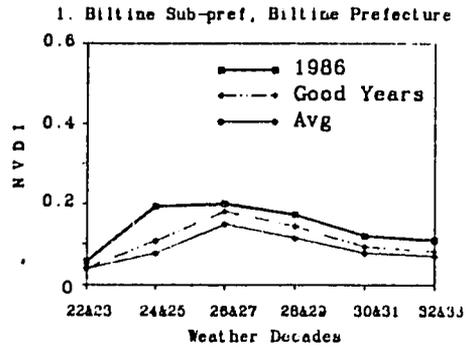
The relationship between the average NVDI for the good harvest years and the average NVDI for 1981 through 1985 is also quite different in the two figures. In Figure 2a, the two curves tend to run parallel to each other throughout the growing season, showing the marked influence of dropping 1984 NVDI values (the year of the worst recent harvest) and adding 1986 NVDI values in the Sahelian Zone. In Figure 2b, however, the two curves only begin to diverge in the beginning of September, indicating little difference in the influence of summer rainfall patterns on good and bad harvest years in Chad's Sudanian Zone.

Map 4 shows the progression of the 1986 growing season NVDI as it relates to the average NVDI for the five best harvest years from 1981 through 1986. In most of the important crop growing areas, the 1986 NVDI remained more than 10% higher than the average throughout the season, and in the south remained more than 40% greater through early October.

FIGURE 2a: CHAD, SAHELIAN ZONE

NVDI, July 1 - October 31:
'86 vs '81 - '85 Avg and
Avg of Good Years*

Weather Decades	Periods Covered
22 & 23	July 1-20
24 & 25	July 20-Aug 10
26 & 27	Aug 11-31
28 & 29	Sept 1-20
30 & 31	Sept 21-Oct 10
32 & 33	Oct 11-Oct 31



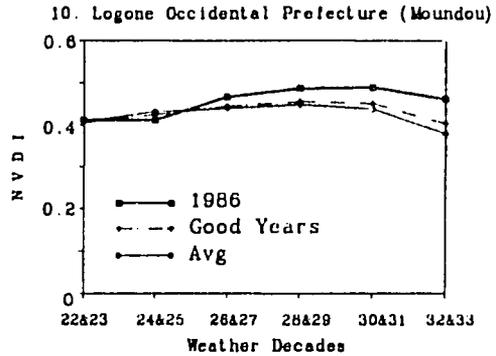
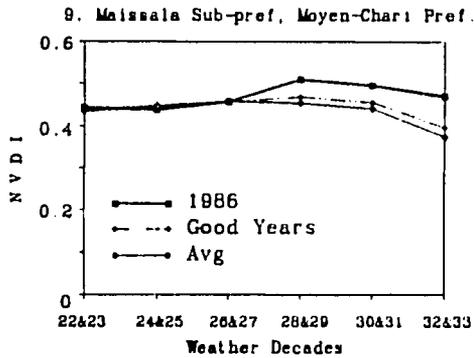
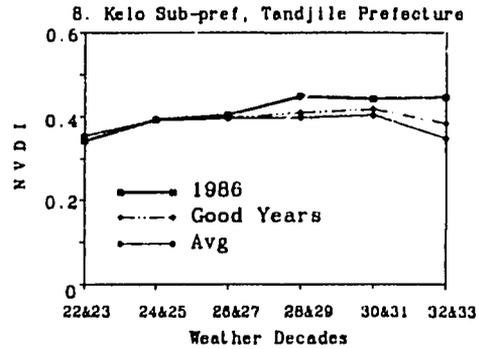
* Average of '81, '82, '83, '85, and '86

Source: NOAA; NASA; USGS
FEWS/PWA, DECEMBER 1986

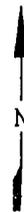
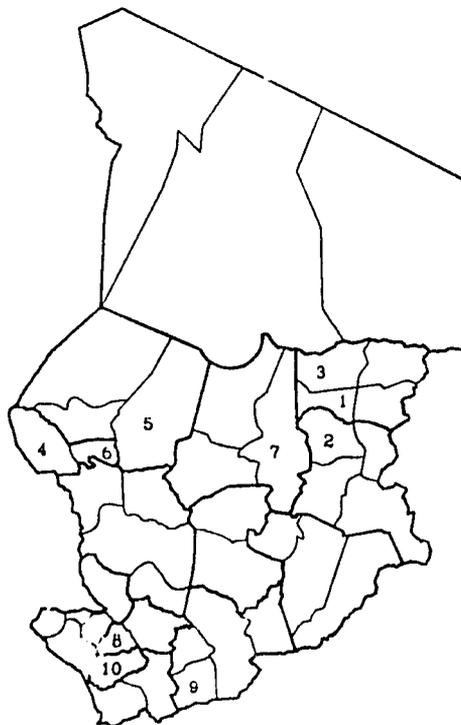
FIGURE 2b: CHAD, SUDANIAN ZONE

NVDI, July 1 – October 31:
'86 vs '81 – '85 Avg and
Avg of Good Years*

Weather Decades	Periods Covered
22 & 23	July 1-20
24 & 25	July 20-Aug 10
26 & 27	Aug 11-31
28 & 29	Sept 1-20
30 & 31	Sept 21-Oct 10
32 & 33	Oct 11-Oct 31



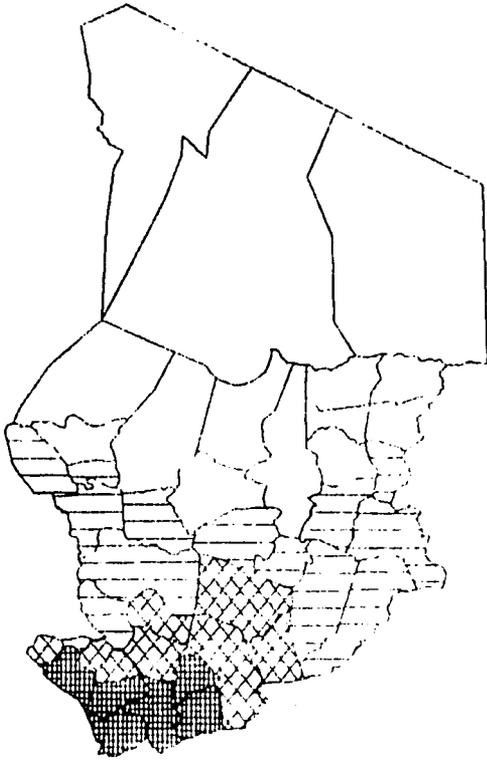
1. Biltine Sp
2. Abeche Sp
3. Arada Sp
4. Bol Sp
5. Moussoro Sp
6. N'Gouri Sp
7. Oum Hadjer Sp
8. Kelo Sp
9. Maissala Sp
10. Moundou Sp



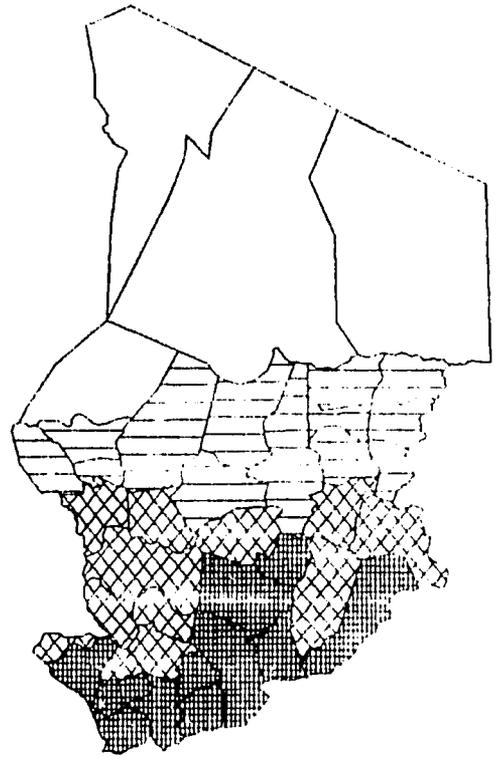
* Average of '81, '82, '83, '85, and '86

Source: NOAA; NASA; USGS
FEWS/PWA, DECEMBER 1986

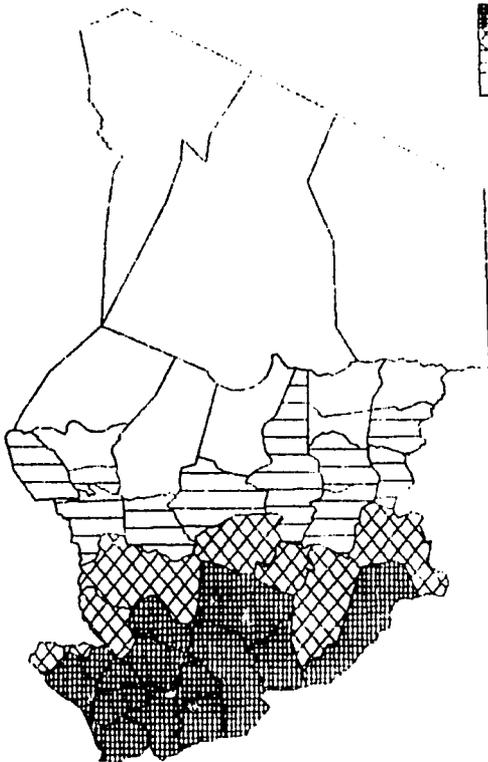
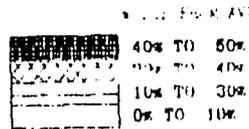
Percent Difference NVDI, 86 vs Average Of Good Years *



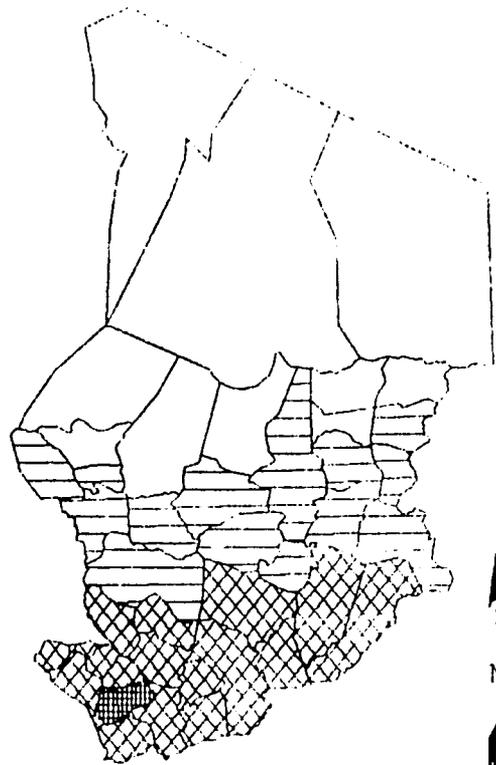
July 1-21



August 11-31



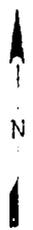
September 21 - October 10



October 11-31

* 1951, 1982, 1983, 1985, 1986

FEWS/IDA December 1990



APPENDIX II

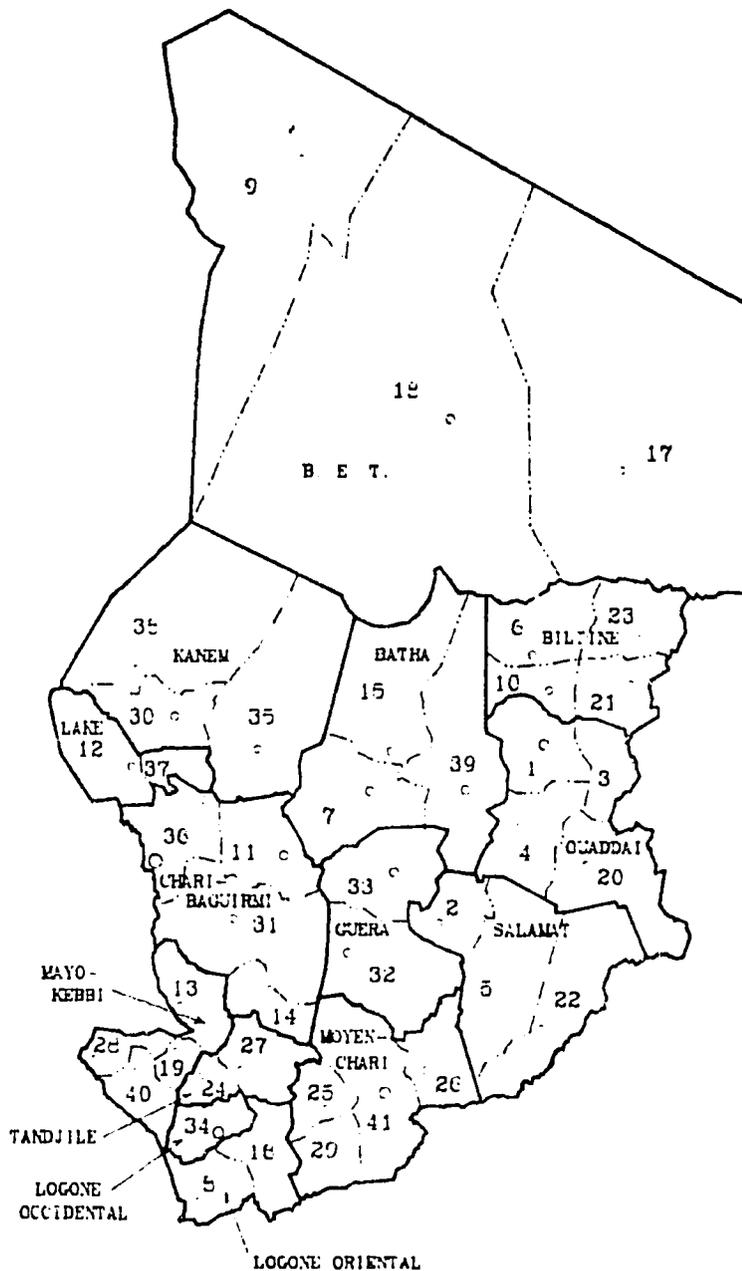
Table 3: Estimate of Cereals Available for 1987

Est. Net Harvest	+582,250 MT	Cereals
In-country Stock	+ 25,000 MT	GOC Stocks
	+ 5,800 MT	Donor Stock
Food aid pipeline	+ 10,000 MT	Emergency PL 480
	+ 10,000 MT	Italian Rice
	+ 2,500 MT	PL 480, ongoing FFW
	+ 10,000 MT	WFP cereals, ongoing
Unofficial Imports	+ 75,000 MT	Cereals
Unofficial Exports	<u>-60,000 MT</u>	Cereals
Total Available Cereals	+660,550 MT	Cereals
1987 Estimated Population	4,617,000	People
Cereal Needs @ Avg 142 kg/capita	+655,600 MT	Cereals
Surplus	+ 4,950 MT	Cereals

Source: Mission Cables, as of November 28, 1986

Sub-prefectures

- | | |
|-----------------------------|-----|
| 1. Abeche | OUA |
| 2. Abou Deïa | SAL |
| 3. Adre | OUA |
| 4. Am Dam | OUA |
| 5. Am Timan | SAL |
| 6. Arada | BIL |
| 7. Ati | BAT |
| 8. Balbokoum | LOR |
| 9. Bardaï | 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 Belda | OUA |
| 21. Guereda | BIL |
| 22. Haraze | BIL |
| 23. Iriba | BIL |
| 24. Kelo | TAN |
| 25. Koumra | MCh |
| 26. Kyabe | MCh |
| 27. Lal | TAN |
| 28. Lere | MK |
| 29. Maïssala | MCh |
| 30. Mao | LAK |
| 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: 1969 Map in Eng. Two Undated Maps in Fr.

Map Authors Unknown

Fews/PWA, December 1966