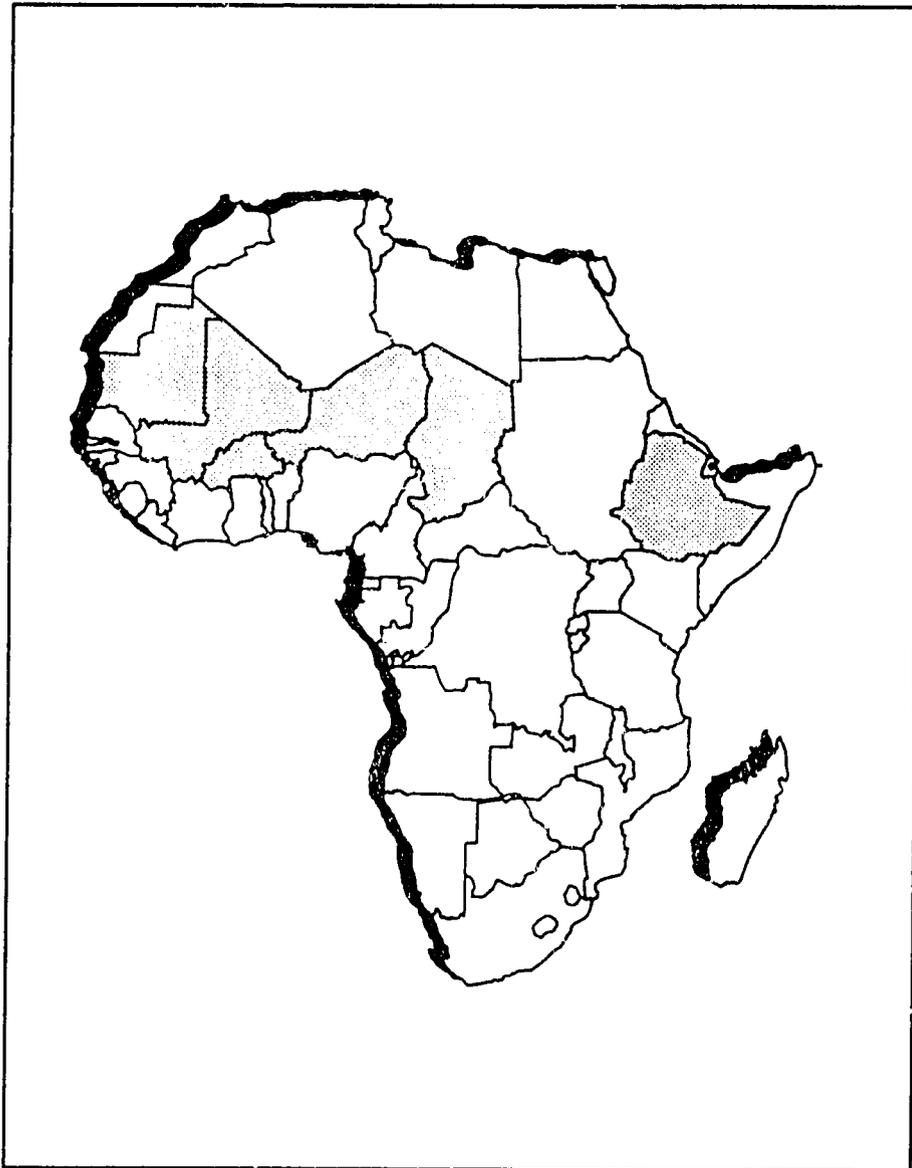


Harvest Assessment



Contains reports on:

Mauritania

Mali

Burkina

Niger

Chad

Ethiopia

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Harvest Assessment

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Executive Summary

MAURITANIA

Increased seasonal rainfall levels have improved Mauritania's harvest prospects for 1993/94. A recent FAO/CILSS/SSA evaluation team estimated 1993/94 national net production at 145,746 metric tons (MT). FEWS/Mauritania has calculated a high net production estimate of 118,021 MT and a low estimate of 105,566 MT.

MALI

The 1993/94 cereal harvest in Mali is average. Pockets of crop failure have occurred in Kayes Cercle, the Niger River Inland Delta of Mopti Region, eastern Douentza Cercle, and the lake region of southwestern Tombouctou. These local cereal shortages will be met through trade and existing stocks.

BURKINA

National cereal production is above-average for the third consecutive year. Emergency food aid will not be required, despite localized cereal deficits in some areas for the second or third consecutive year. The Government of Burkina Faso should be able to address any urgent food security problems during the coming year with its own resources.

NIGER

Severe food shortages may develop in certain areas of Niger despite an average cereal harvest (1.8 million MT net). The Government of Niger has requested approximately 55,000 MT of emergency food aid to assist affected areas.

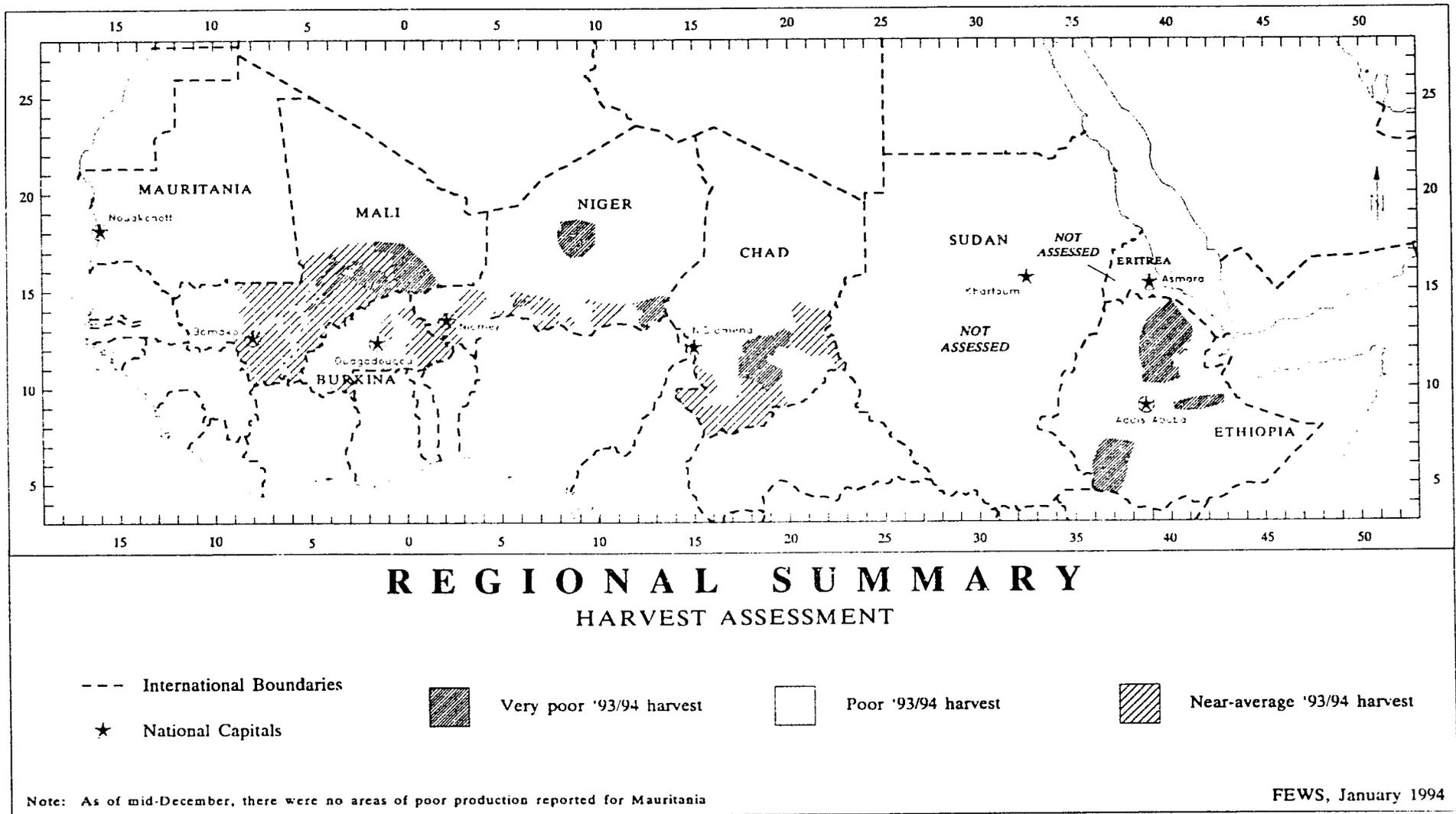
CHAD

Late rains and low rainfall in much of the Sahelian zone reduced crop acreage and caused low yields. Cereal prices rose sharply in June. Affected villages are being abandoned and emergency food distribution has begun. GOC estimates 312,000 people in the Sahelian zone will require food distribution for nine months. In the Sudanian zone, the flooded rice crop was a near-total failure, and rainy season sorghum production was severely affected by a drought period in June. GOC estimates that 553,000 people in Chad, including 265,000 people in the Sudanian zone, will require emergency food for four months of the hungry period (May—August). Private and GOC food security stocks will be drawn down to replenish deficit zones. Emergency food imports will be needed to meet the needs of food distribution and to reconstitute security stocks.

ETHIOPIA

Despite a fair aggregate harvest from the *meher* (main) season (at least 6 percent less than last year's record, but still above-average), Ethiopia has a grain import requirement of over one million MT and emergency food needs of about 500,000 MT. This need is mainly for the drought prone regions of the north and northeast that have been hit by acute crop failures. Poor rainfall distribution has been the single most important factor in harvest shortfalls throughout the country. Heavy rains caused flooding and excess soil moisture levels in the west and central part of the country. Drought stress occurred in the north and northeast. Seasonal shifts in the timing of rainfall also affected planting and crop development. Pest attacks, and reduced fertilizer use in other surplus areas, have increased overall crop losses.

Map 1. Regional Summary: Harvest Assessment



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FEWS REGION

1993/94 Harvest Production Near Average

Chad and Ethiopia Struggle with Food Insecurity

National cereal production is close to or above average in all FEWS monitored Sahel and Horn region countries except Sudan. While there are local areas of poor and very poor harvest in all countries but Mauritania, it is in Chad and Ethiopia that sub-national deficits are having the greatest impact on populations' food security.

Ethiopia's basic economic condition remains weak. Even with programmed aid and expected commercial imports, a large gap exists between the amount of food available and the amount required for Ethiopia's population. In Chad, poor pastures and water shortages have combined with local deficits to cause unusual population movements from the northern Sahel to urban and southern areas. In Niger, Sahelian zone pastures have also been mediocre to poor, putting added pressure on the resources of nearby agricultural zones. Mali's pastures are reported to be about average and pastures in Mauritania are excellent.

CFA devaluation: Food security implications in FEWS countries

The devaluation of the CFA franc by 50 percent on January 12 raises additional concerns about food security for both urban and rural households in Sahelian FEWS countries. As part of structural adjustment efforts in the region, the move is designed to promote long-term economic growth. This action could lead to declines in incomes and food access for moderately, highly, and extremely vulnerable groups. In the context of the adjustment process, the implications of drought or other potential shocks to affected local economies could also be more severe.

The devaluation is designed to promote domestic production of exports. Current conditions in international markets for commodities, aside from livestock products, will limit the prospects for an immediate expansion of trade.

The urban poor may be particularly affected by increases in the cost of imported food, such as rice and wheat, as well as higher costs for fuel and transport. Rural consumers, particularly those dependent in some part on migration to urban centers, would also be seriously affected by higher prices on consumer goods. Increases in the cost of imported agricultural inputs such as fertilizers and petroleum products could create a general increase in prices for farm products and adversely affect future production yields.

This significant policy change adds an important new dimension to the analysis of vulnerability, monitoring, and the interpretation of early warning indicators in the FEWS Project.

Country Briefs

Ethiopia

There are two crop production estimates available for Ethiopia—made with similar methodologies, but at different times—5,706,000 MT by the Ethiopian Grain Trade Enterprise (EGTE), formerly the Agricultural Marketing Corporation, in October; and 6,938,000 MT by the United Nations Food and Agriculture Organization and the World Food Programme (FAO/WFP) in November. The FAO/WFP estimate is widely accepted for planning purposes.

Ethiopia's above-average harvest masks strong regional variations. Only one of Ethiopia's five high-production areas (Arsi) is expected to have a good 1993/94 harvest. Crops (especially maize and pulses) were damaged by insufficient rain (north and east), waterlogging (west), nonmigratory pests such as stalk borers and grasshoppers (especially against sorghum crops), and a decline in fertilizer use.

Pastures have been generally good, except in South Omo, the northern and southern Harerge lowlands (inadequate rainfall) and Afar (flooding). Also, continuing civil security in most areas allowed an increase in total area cultivated, somewhat offsetting poor yields.

The Relief and Rehabilitation Commission (RRC) estimates that some three million people in Ethiopia require emergency food aid for 1994 because of crop failure. A further 1.4 million people are in need of aid for part of the year because of man-made causes (displaced, ex-soldiers, and returnees from Sudan, Eritrea, and Kenya). The RRC has requested 448,000 MT in food aid to meet the needs of these people.

Chad

Chad's 1993/94 net harvest of 630,300 MT is close to the 1986-92 average. Even so, there are areas with poor and extremely poor production (in the northern Sahelian zone and in the southwest). There are reports of early and unusually intense responses to the crop losses. In the northcentral Sahelian zone, where pastures have also been insufficient and of short duration, whole villages are being abandoned as people move to larger towns seeking assistance. In the southwest, there are reports that the harvest of wild tubers has begun six months earlier than normal. Estimates of food aid needs range from 13,000 MT (the Système d'Alerte Précoce (SAP) estimate for the Sahelian zone) to 36,000 MT (the Government of Chad (GOC) estimate for the entire country). USAID/Chad may carry out additional assessment missions to judge just how far and how fast conditions have deteriorated since the October and

November assessments. With 16,000 MT of food aid stocks prepositioned in the larger towns, the most severe situations can be dealt with quickly.

Mauritania

Although production has been poor in Mauritania for the past several years, there is general agreement that the 1993/94 harvest will be a record. With three-quarters of the annual production yet to be harvested the range of estimates for the 1993/94 harvest range from 105,800 to 146,700 MT net. The lower figure is still close to the record high of the last several years. Pastures are excellent. Desert Locust infestations remain a threat to unharvested crops, but the threat could dissipate as swarms continue moving northward.

Burkina

Burkina's cereal production (2.1 million MT net) is above average for the third consecutive year. There are a few areas of production shortfalls, but it is expected that any 1994 food aid requirements can be met by the Government of Burkina Faso (out of a population of about 9.9 million people, there are still some 100,000 who remain highly vulnerable).

Mali

Mali's 1993/94 cereal harvest is slightly above average. There are a few small areas (in Mopti and southern Gao regions) where crop production was poor. The National Early Warning System (SAP) has estimated that some 47,000 people in Mopti and Gao regions will require about 1,300 MT of food aid in 1994. Given the size of the harvest (2.1 million MT gross), the amount of stocks in-country and the behavior of cereal prices at the end of 1993, it is expected that emergency food aid imports will be unnecessary in 1994.

Niger

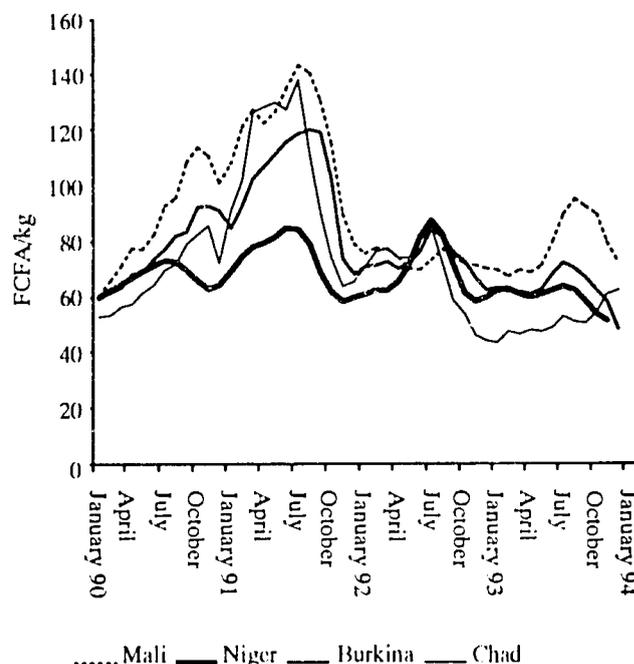
In Niger, national rainfed cereal production is close to average (1993/94 production is 1.8 MT net—199 kg per capita). When in-country stocks and expected cereal imports are added, the national cereal balance shows a surplus.

However, several arrondissements were affected by drought and have produced well below-average harvests. In November, the Government of Niger (GON) estimated that the most vulnerable villages would require 55,000 MT of food aid in 1994. Discussions are underway in the donor community to determine how to respond to an anticipated GON request for aid.

Millet prices in CFA zone

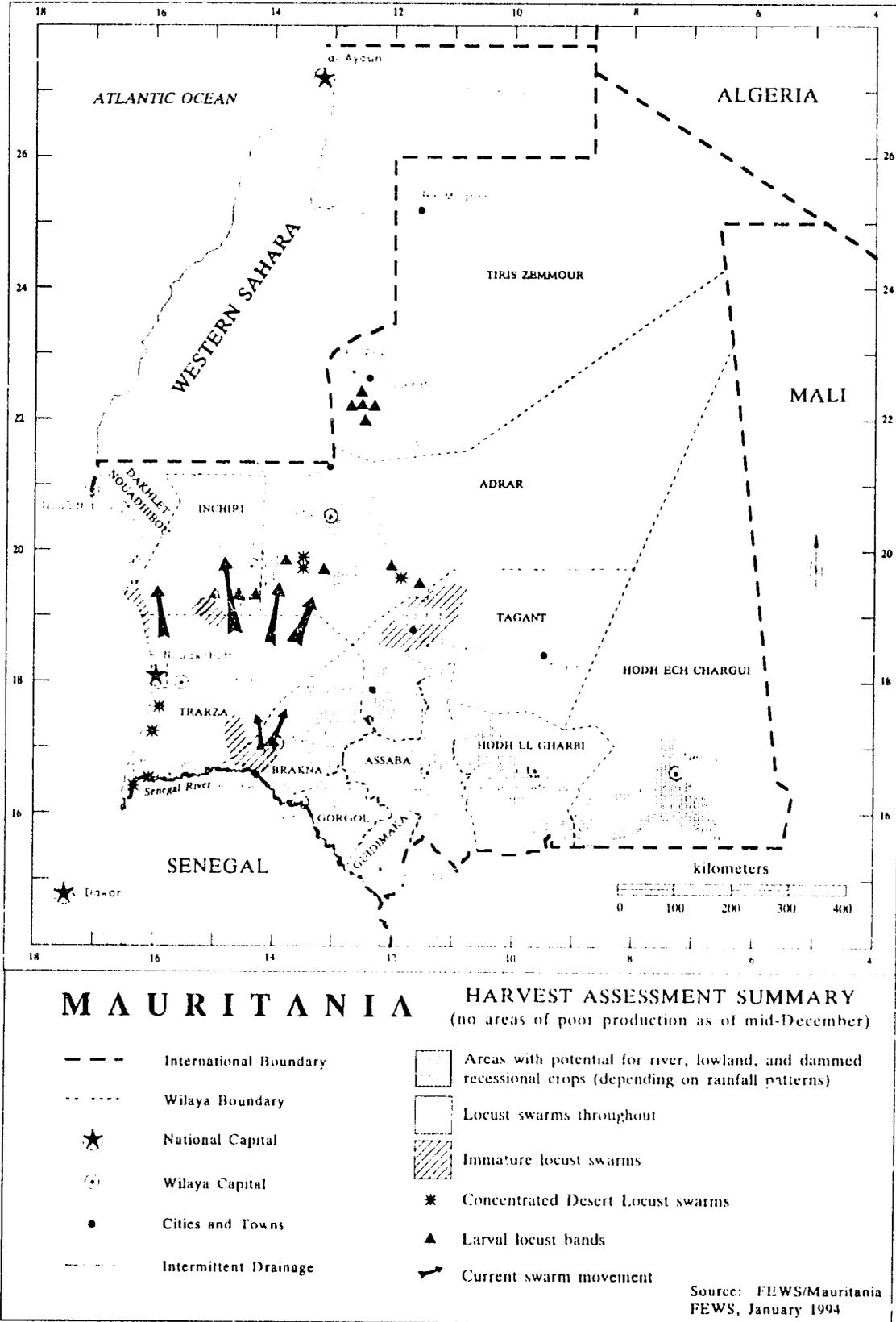
Market data reflect the contrast in conditions between Chad and the other FEWS-monitored CFA countries. Millet prices for 1993 in all four countries show a slow onset of price increase following the excellent 1992/93 harvest (see Figure 1). Prices peaked in July in Mali, Niger, and Burkina and then fell rapidly as is usual just before harvest time. Millet prices in Chad dipped briefly after July, and then climbed rapidly. A sub-national breakout of prices in Chad shows no dip in anticipation of the harvest in the Sahelian zone (see Chad chapter). Such price behavior reflects a market that is pessimistic about commodity availability in the near future. This pattern was last seen in Chad, Mali, and Burkina following the poor harvest of 1990/91. At that time production from the strong harvest of 1991/92 brought prices back down. For Chad, it remains to be seen whether the 1994/95 harvest will be as strong. If the 1994/95 harvest is as poor as that of 1993/94 in the affected areas, Chad could see serious food security problems in 1995, particularly in the Sahelian zone.

Figure 1. FEWS Region: Average millet prices



Sources: Mali SIM; Niger OPVN/SIM; Burkina OFNACER; Chad SAP & ONC

Map 2. Mauritania: Harvest Assessment Summary



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MAURITANIA

1993/94 Harvest Prospects are Promising

Based on a report released by US Embassy/Mauritania on December 30, 1993

SUMMARY

Since the 1990/91 growing season, local cereal production has been very poor, falling well below 100,000 metric tons (MT) per year. This year prospects are better--the lowest estimate available is for 105,000 MT net and the highest is for 146,000 MT (see Table 1). The wide range in the estimate is the result of having only *dieri* (rainfed) crop production estimates available. The other three predominant planting schemes: irrigated (harvested -- October-December and during the hot season), *walo* (river recessional -- harvested December-February) and *bas-fonds* (lowland -- harvested November-December); have incomplete or unavailable production information.

The Agricultural Statistics Department (SSA) has not yet published rainfed crop production figures. Some irrigated rice crops have been harvested. River recessional and lowland crops are one to two months from harvest, depending on planting dates.

The first harvest assessment for 1993/94 was released in November by a joint evaluation team of the FAO/CILSS/SSA (United Nations Food and Agriculture Organization, Permanent Interstate Commission to Combat Drought in the Sahel) the Mauritanian Service of Agricultural Statistics of the MRDE, and SONADER. Their report estimated 1993/94 harvest production at 146,000 MT. In December, 1993, the Ministry of Rural Development and Environment (MRDE) released a revised estimate of 115,000 MT. FEWS/Mauritania calculated a high production estimate of 118,021 MT, and a low estimate of 105,565 MT.

Widespread infestations of Desert Locusts and grasshoppers persist (see Map 2). Treatment efforts by the MRDE, FAO, and other international organizations are ongoing. Damage to *dieri* (rainfed) and irrigated crops appears to have been limited, but unharvested *bas-fonds* (lowland) and *walo* (river recessional) remain vulnerable.

72,753 MT for 1992/93. Harvesting of *dieri* (rainfed) crops was completed in October, but final production estimates are not yet available. The Mauritanian SSA has not yet completed its second round of *dieri* production field surveys.

MRDE Revised Estimate

In late December, 1993, a government technical advisor evaluated the FAO/CILSS/SSA estimate and released a revised estimate of 114,999 MT. The reasons for the reduced estimate include:

- The FAO/CILSS/SSA figure reflects area sown for rainfed crops at 146,330 hectares (ha). In the best of recent years (1988) area sown was only around 105,000 hectares.
- To date, only one field survey (for area planted) had been conducted by the agricultural statistics department (normally three surveys are completed by the end of the season).
- *Walo* areas sown are likely reduced from last year because scheduled water releases from the Manantali Dam (Mali) were not completed; only 3 days of flooding occurred instead of the planned 2 weeks.
- Although rainfed and irrigated rice crops may have largely escaped damage from the Desert Locust invasion, remaining lowland, behind-dam, and river recessional crops remain vulnerable. A projected loss rate of 10 percent was subsequently applied to non-*dieri* traditional crops (see Map 3 for location of dams and recessional agriculture areas).

As of December 20, 1993, the MRDE decided to retain the revised estimate of 114,999 MT until the SSA completes a second round of field surveys and releases new figures.

1993/94 FEWS Production Estimates

In the FEWS 1993 Preharvest Report, FEWS/Mauritania estimated 1993/94 national production at 110,684 MT. The SONADER and the Federation of Private Farmers have revised their production estimates for irrigated rice. FEWS/Mauritania revised the September 1993 figures taking into account the new rice figures, secondary information gathered by FEWS/Mauritania (evolution of the rainy season since the September report, the effects of Desert Locust and grasshopper invasions, field observations, analysis of satellite images and cold-cloud-duration data) and FAO/CILSS/SSA projections.

The FEWS/Mauritania high production estimate is now

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

This year's harvest should be the best in recent years according to figures released by the FAO/CILSS/SSA team. The FAO/CILSS/SSA team estimated this year's net cereal production at 145,746 MT, almost double the team's prediction of

Table 1. Mauritania: 1993/94 estimated harvest results (MT)

	FAO/ CILSS/SSA	FEWS gross	FAO/CILSS/ SSA net	FEWS high net	FEWS low net
Dieri	69,161	42,455	58,787	36,087	36,087
Walo	15,826	9,156	13,452	7,783	6,226
Bas-fonds	25,992	25,992	22,093	22,093	17,675
Decrue SONADER	7,266	7,210	6,176	6,129	4,903
Private irrigated rice	33,667	35,910	18,601	19,840	17,215
Private irrigated traditional cereals	50	33	43	28	22
SONADER irrigated rice	30,614	34,082	16,914	18,830	17,287
SONADER irrigated traditional cereals	1,379	1,404	1,172	1,193	955
Cold Season	3,360	5,122	2,856	4,354	3,482
Hot Season	10,230	3,100	5,652	1,713	1,713
Total	197,545	164,464	145,746	118,050	105,565

Notes/Sources:

FAO/CILSS/SSA

1. FEWS estimates were obtained as follows:

a. Dieri estimates were produced by AGRHYMET.

b. Last year's *walo* totals were adjusted down by 20 percent because of late and inadequate flooding (only 1/5th of last year's area in the Gorgol) of the Senegal River this year.

c. Bas-fonds estimates by FAO/CILSS/SSA.

d. SONADER estimates provided by SONADER and include the M'pourie perimeter. High estimate 4.2 MT/ha yield, low estimate 3.8 MT/ha (3.0 for M'Pourie).

e. Private irrigated estimates furnished by the National Federation of Private Agriculturalists and SONADER.

f. Decrue SONADER = Flood recession farming away from the Senegal River, with financial assistance from the agricultural parastatal SONADER.

g. The low FEWS estimate was calculated by applying loss rate of 20 percent to non-rainfed traditional cereals for projected loss due to locusts.

2. Net production calculated based on conventional loss percentages (difference between weight of grain on grain ear or head and that of the grain alone—after processing): 15 percent for sorghum, millet and corn, rice 35/15 percent (CILSS figure based on 35 percent loss from head to paddy and 15 percent loss from paddy to grain).

3. Traditional cereals = maize, millet, and sorghum.

118,021 MT. The low estimate is 105,566 MT. The low production estimate includes a projected 20 percent loss to all traditional cereals (non-rice) still in the fields (*walo*, *bas-fonds* and *decrue*) as a result of locust and grasshopper attacks. (In 1988, a year of severe locust invasions, a 17 percent loss to sorghum crops was reported by the MRDE.) Reports from the MRDE's locust control and survey teams described large swarms of Desert Locusts in Boghe and other parts of Brakna (Brakna Wilaya has very important lowland and *walo* farming areas) during late December. Farmers from the region arriving in Nouakchott in early January spoke of crop destruction by locusts and *cantharides* (blister beetles).

Other observations on 1993/94 projected harvests

There were two estimates for area sown in private irrigated rice. According to the Federation of Private Agriculturalists, areas

cultivated nearly doubled from last year, 13,300 ha this year (with a yield of around 2.7 MT per ha) compared to 6,776 ha of last year. SONADER reported that private rice fields totalled 9,619 ha with a yield of around 3.2 MT per ha (SONADER's numbers were used in the low FEWS estimate, the Federation's in the high estimate). The Federation's chief stated that its estimations were based upon the number of farmers coming to its offices to obtain diesel fuel.

Area sown in SONADER irrigated rice increased from 5,945 ha last year to 7,432 ha this year, and 1,016 ha were cultivated at M'Pourie in Trarza.

Bas-fonds estimates were reduced (FAO/CILSS/SSA estimate used) from the 1993 FEWS Preharvest Report because METEOSAT imagery showed breaks in rainfall at the end of July and in early August. Such dry spells could reduce yields in important *bas-fonds* areas in Hodh ech Chargui, Hodh el Gharbi, and Assaba.

Table 2. Mauritania: Current on-hand food stocks compared to 1991/92 and 1992/93

	1991/92 (MT)	1992/93 (MT)	1993/94 (MT)
On-Farm stocks	5,000	5,000	0
CSA stocks	50,362	7,950	14,390
Private sector (Commercial and SONIMEX)	21,021	57,300	49,000
Total	76,383	70,250	63,390

Notes: 1. SONIMEX is the national import/export company.
2. CSA is the Commission for Food Security.
Sources: CSA, SONIMEX, CPA

AGRHYMET's *divi* yield estimates were based on analysis of this year's rains, their spacing, and planting dates compared to previous years. These yields are applied to area-sown figures taken from earlier years when rainfall totals were similar to this year.

Pasture Conditions

The seasonal drying of pastures in the south and east of the country is complete with the end of the rainy season. With very few exceptions (Nema Moughataa in Hodh ech Chargui, and Magta Lahjar Moughataa in Brakna), pasture conditions remain better than in recent years in Hodh ech Chargui, Hodh el Gharbi, Gorgol, Brakna, Guidimaka and southern Assaba (see Map 3). The Normalized Difference Vegetation Index (NDVI) images show greenness levels greater than last year, and the nine year average (1982–1990) in the most important pasture areas. Greenness levels also compare favorably in many pasture areas with those of 1988, which was a good year for rainfall levels, pasture growth, and cereal production. Some herders from Trarza Wilaya reported pasture conditions as the best in recent memory, although grasshoppers and locusts have caused some damage.

Contrary to recent years, NDVI data for the month of November also showed good development of pasture in the north of the country, in the central and eastern parts of Inchiri between Akjoujt, and Choum in western Adrar. During November there was also heavier than normal rainfall in Tiris Zemmour (Zouerate and Bir Moghreïn) which improved pasture prospects there.

Poor conditions in the north have led (during the past few years) to large concentrations of animals in the southern *wilayas*.

Desert Locusts

Desert Locusts are still present in Trarza, Brakna, Tagant, Inchiri, Adrar, and Tiris Zemmour (see Map 2). Important *bas-fonds* and *walo* crops are unharvested in many areas.

Locust movement continues toward the north. A very large swarm descended on Boghe (Brakna) during late December, apparently coming north from Senegal.

Intensive treatment and surveying efforts are ongoing in

Table 3. Mauritania: Expected 1994 food aid (MT)

Donor	Type	Amount	For sale	For free distribution
WFP/Germany	Sorghum	2,013	—	2,013
WFP/USA	Sorghum	14,390	—	14,390
France	Wheat	2,000	2,000	—
France	Wheat	3,000	3,000	—
France	Sorghum	2,000	2,000	—
Spain	Wheat	4,800	4,000	800
Swiss	Sorghum	1,800	—	1,800
Japan	Wheat	3,500	3,500	—
WFP	Rice	1,087	—	1,087
WFP	Wheat	13,550	—	13,550
Total		48,140	14,500	33,640

Notes: 1. WFP = World Food Programme.
2. Food aid is divided into food for sale and food for free distribution.
Source: WFP

all of these areas. New pesticide supplies arrived in late December, but these supplies will reportedly not last more than several weeks. FAO reported over 57,000 hectares were treated during December.

Existing Food Stock Information, Projected Food Aid and Commercial Imports/Exports

On-farm cereal stocks are considered to be nil because of several years of poor harvests. Commercial stocks are the most difficult to calculate due to the dearth of import information aside from figures from the port at Nouakchott, but have been estimated by the Food Security Commission (CSA) to be 49,000 MT (see Table 2). Food aid for the period November 1993–October 1994 is expected to total 48,140 MT (see Table 3).

The Food Aid Planning Committee (CPA) has discussed using the 1992/93 commercial import figures for 1993/94 projections. Last year's figures were 213,027 MT. FAO/CILSS/SSA used a figure of 195,000. Unknown quantities of imports are reexported to Mali and Senegal, for which estimates are unavailable. In addition, it is by no means certain that the private sector will be able to match last year's import figures because of a lack of hard currency.

FACTORS AFFECTING FOOD ACCESS

There are three separate estimates of the Mauritanian cereal balance: the CPA technical committee provisional table, an FAO/CILSS/SSA provisional table, and the FEWS low production estimate (see Table 4). New food aid figures announced by the WFP have been included in all tables.

Table 4. Mauritania: 1993/94 estimated cereal balance (MT)

Cereal needs	FEWS	CPA/CSA	FAO/CILSS/SSA
1994 estimated population	2,214,495	2,296,000	2,296,000
Cereal consumption needs: (pop. x 165 kg grain per annum)	365,392	378,840	378,840
Seed and feed loss	12,600	12,600	
Stock replenishment (includes [MT]: farmer-5,000; commercial-57,140; and government-6,000 security stocks)	68,140	68,140	63,140
Total	446,132	459,580	441,980
1993/94 cereal supply			
Net cereal production	105,711	114,999	145,746
Available in country stocks	63,390	63,390	63,390
Programmed food aid	48,140	48,140	48,140
Commercial imports (projected)	213,000	213,000	195,000
Total	430,241	439,529	452,276
Provisional cereal balance	-15,891	-20,051	10,296

Note: FEWS/Mauritania 1994 population figure provided by the National Statistics Office.
Sources: FAO/CILSS/SSA, CSA/CPA

Mauritanian cereal balances have limited usefulness when calculated at this time of the year because many important figures are unavailable. Actual cereal production figures, amount of imports for the coming year, and the quantity of those imports which will be reexported are all hypothetical. There are also differing opinions about whether animal feed should be included in a calculation of cereal needs, and population and per capita human consumption figures are under discussion.

The higher CPA/CSA population figure (used also by FAO/CILSS/SSA) was adopted to reflect the influx of Mauritanian repatriates from Senegal in 1989. As stated in earlier FEWS reports, the influx of Mauritanians from Senegal in 1989 was negated by an equal or larger number of Mauritanians leaving the country during the same period, so FEWS/Mauritania uses a lower population figure.

The CPA technical committee proposed changing consumption figures from the present 165 kg per person per year to 176 kg per person per year based on the results of a 1988 study by the National Office of Statistics. In addition, it proposed adopting the population figure of the National Office of Statistics. Their cereal balance will be revised again, incorporating these changes, and submitted to the CPA committee for consideration by the donors.

Following the FEWS low net production scenario, there may be a deficit of over 15,000 MT this year. According to the estimate of FAO/CILSS/SSA as of late October, there could be a surplus of over 10,000 MT. According to the revised scenario of the MRDE, the deficit could be over 20,000 MT. (The CILSS estimate includes a lower figure for imports, 195,000 MT and no allowances for animal feed or seed.)

It will probably be several months before more complete harvest figures will be available.

Economic Data

Nouakchott millet prices have been falling since October (see Figure 2). This decline reflects the availability of newly harvested millet and sorghum in the market. Not all the grain is from domestic sources; traders say that much of the available cereals have been imported from Mali.

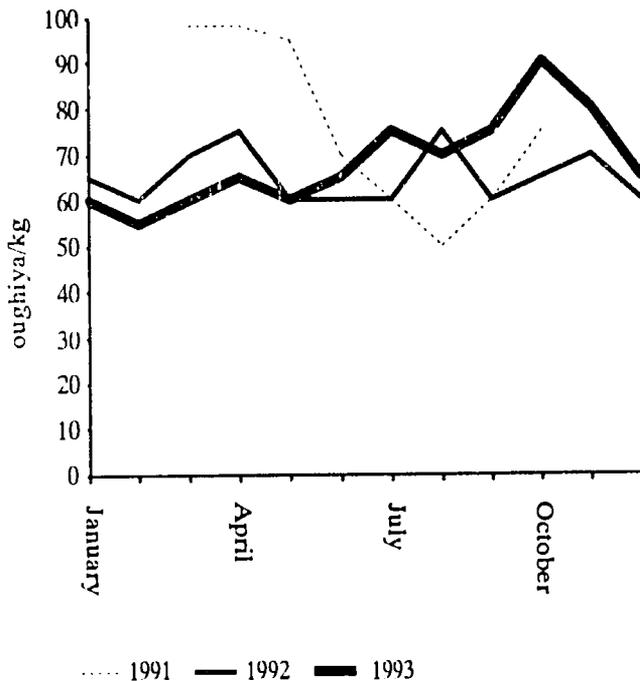
Price information, received from travellers arriving from other parts of the country during November, for a kilogram of sorghum include: Kaedi - 25 oughiya (UM), Boghe - 30 UM, and Sclibaby - 18-20 UM.

UPDATE ON VULNERABILITY

Tagant residents

No additional information has been received concerning populations in the Tagant classified as extremely vulnerable by FEWS/Mauritania in the *FEWS 1993 Vulnerability Assessment (VA)*. UNICEF reports that they have no new nutritional information; the fact that their feeding programs have been discontinued (because of a lack of funding) in this isolated zone could mean increased hardship for vulnerable groups who benefited from their services. The positive effects of the date harvest

Figure 2. Mauritania: 1991–1993 selected millet prices in Nouakchott



Source: FEWS/Mauritania

are now over as most date stocks are exhausted.

The Agricultural Statistics Bureau has not been to the *wilaya* to evaluate production. If harvests at Achram and in important lowland farming areas (Iguewan, Derroum, Rachid) are good, food insecurity in the region should be improved. Harvests in these areas normally take place during February and March.

There are continuing reports of locust swarms which pose a threat to crops. Until more accurate harvest information is forthcoming, populations of Moudjeria, Tidjikja, and Tichit *moughataas* are still considered highly vulnerable.

Agropastoralists in Trarza, Brakna, Gorgol, and Assaba *wilayas* who were listed as highly vulnerable in the 1993 VA have benefited from this season's improved rainfall levels and greatly improved pasture conditions. Grasshoppers and Desert Locusts destroyed important parts of pasture land in Trarza but even remaining areas are superior to those of recent years.

Falling grain prices should allow greater access to food for populations with limited purchasing power. For these reasons, the level of vulnerability of these populations has fallen to only slightly vulnerable.

Urban Poor

There are no dramatic improvements in the situation of poor urban and periurban residents. They remain highly vulnerable due to actions such as the recent strike by minibuses operators, who provide the only transportation between the city center and "P.K." communities (5–15 kilometers outside of town). This strike left many people unable to travel between home and work. Prices in small shops in the densely populated peripheral areas continue to be higher than those in town.

Malian Refugees

Malian refugees now number 46,000 and, according to a representative of the United Nations High Commissioner for Refugees, few are returning to Mali. There are no immediate plans for repatriation, reportedly due to the lack of an agreement between the Malian and Mauritanian governments. They are said to be adequately supplied with food, water, health care, and shelter, but are still moderately vulnerable.

Farmers along the Senegal River

The situation of these farmers is significantly better with the increased seasonal rainfall and better *dieri* harvests. Civil tension and military surveillance along the river has been reduced. This allowed residents to fish and cross the river into Senegal more freely. As a result they are now only slightly vulnerable.

CONCLUSIONS

The harvest outlook in Mauritania for 1993/94 is very good, but many unknowns remain. Only one of the four principal agricultural schemes has reported any production figures, and these are not final.

Livestock populations should have ample grazing land as pastures are verdant in the south and east this year and have begun to develop well in the north.

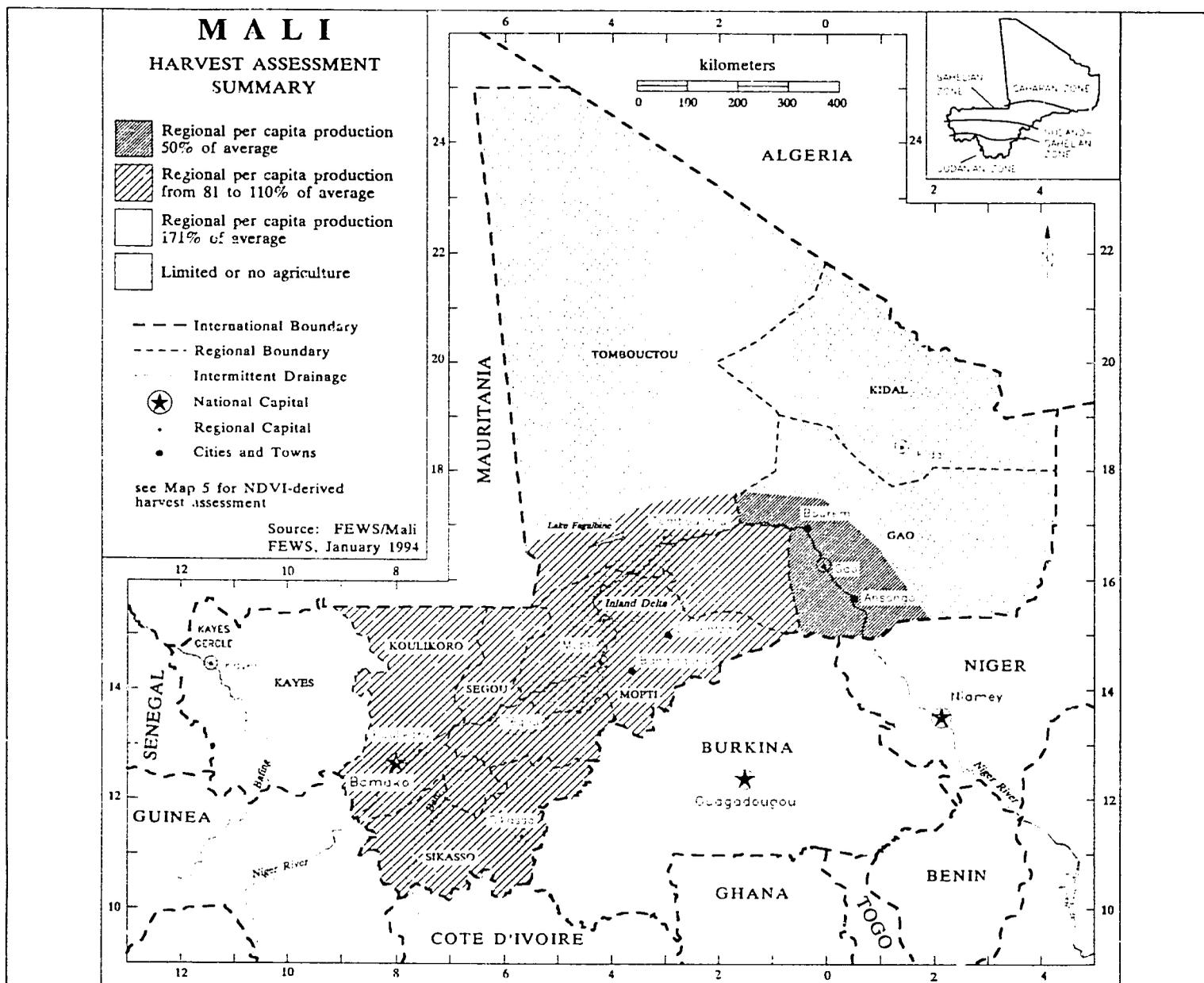
Desert Locusts are present in many areas of the country and the extent of crop damage that will occur to *bas-fonds*, *walo*, and *decrue* farming areas is unknown. Reports from farmers in the Boghe area in late December noted locust attacks on *bas-fonds* and *walo* crops.

Based on the FEWS/Mauritania low estimate of a harvest production near 105,566 MT, Mauritania could cover roughly 29 percent of its consumption needs. If the commercial sector imports as much as reported last year (213,000 MT) and promised food aid arrives this year (48,140 MT), much of the production shortfall could be made up.

Problems related to distribution and access to available cereals, especially for the poorest and most isolated populations (Tagant, Adrar) will remain. A more complete assessment of the regional food situation will only be possible in several months when definitive production figures are available.

Mauritania will post a cereal deficit (in an exceptional year Mauritania only produces 40 percent of its cereal needs) and food stress will continue in different areas of the country, especially among identified vulnerable groups. The projected deficit of between 15,000 and 20,000 MT (which may be significantly more depending on actual import levels) will have to be made up by some combination of additional donor assistance, increased imports, or increased production.

Map 4. Mali: Harvest Assessment Summary



MALI

MALI

Pockets of Crop Failure Amid Average National Harvest

Based on a report released by USAID/Mali on December 15, 1993

SUMMARY

The Government of the Republic of Mali (GRM) estimates 1993/94 gross cereal production at 2.07 million metric tons (MT). This is slightly above the 1986-92 average of 1.96 million MT (see Map 4). Poor harvests in Kayes Cercle, the Niger Inland Delta, eastern Douentza Cercle, and the lake region of southwestern Tombouctou are the result of a late start of the rainy season, an early end of rains, and low river and lake levels (see Map 4).

The National Early Warning System (SAP) has recommended cereal distributions of 1,300 MT to 47,000 moderately vulnerable persons in Mopti and Gao regions. In the Sahelian zone, an additional 200,000 moderately vulnerable people will be closely monitored.

In late October, millet prices started to decline throughout Mali. Goat for millet terms of trade are increasing in the Sahelian zone due to falling millet prices, indicating adequate cereal supplies following three consecutive years of satisfactory harvests. Any local cereal needs will be met through trade and existing stocks. No emergency food aid imports are required.

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

The 1993/94 cereal harvest has been average. The rainy season started late (10 to 20 days) in the southeast and throughout the Sahelian zone. Cumulative rainfall for 1993 reached the 30-year normal (1961-90) in most locations except in Kayes Cercle (just north of Kayes city, in Kayes Region), which only received 50 percent of normal, and along the border with Burkina (80 percent of normal). Rains stopped abruptly in late September in Mopti Region, reducing yields of late planted crops.

Seasonal water levels on the Niger, Bani, and Senegal rivers were lower than average. Normalized Difference Vegetation Index (NDVI) images show that flooding in the Niger Inland Delta was less extensive than average and adversely affected crops (see Map 5).

Diminished river flooding, combined with the early cessation of rain in Mopti Region, negatively affected the rice crop. Mopti rice production is significantly less than average. Poor harvests are also significant in Kayes Cercle, where the rains started more than one month late and reached only half of the normal cumulative level. Low lake levels in southern

Table 5. Mali: Per capita gross cereal production

Year	Gross production (MT)	Estimated April, post-harvest population	Gross production per capita (kg)
1986/87	1,727,144	7,606,128	227
1987/88	1,638,893	7,742,065	212
1988/89	2,195,945	7,881,687	279
1989/90	2,156,439	8,025,098	269
1990/91	1,769,284	8,172,405	216
1991/92	2,416,651	8,323,717	290
1992/93	1,809,252	8,479,149	213
1993/94	2,073,365	8,638,819	240
Average (1986-92)	1,959,087		244

Notes: 1. Cereals represented = millet, sorghum, maize, rice, fonio, and wheat.

2. Population statistics projected from 1987 census using per-region growth rates.

Source: GRM Direction nationale de l'agriculture (DNA)/Direction nationale de la statistique et de l'informatique (DNSI)

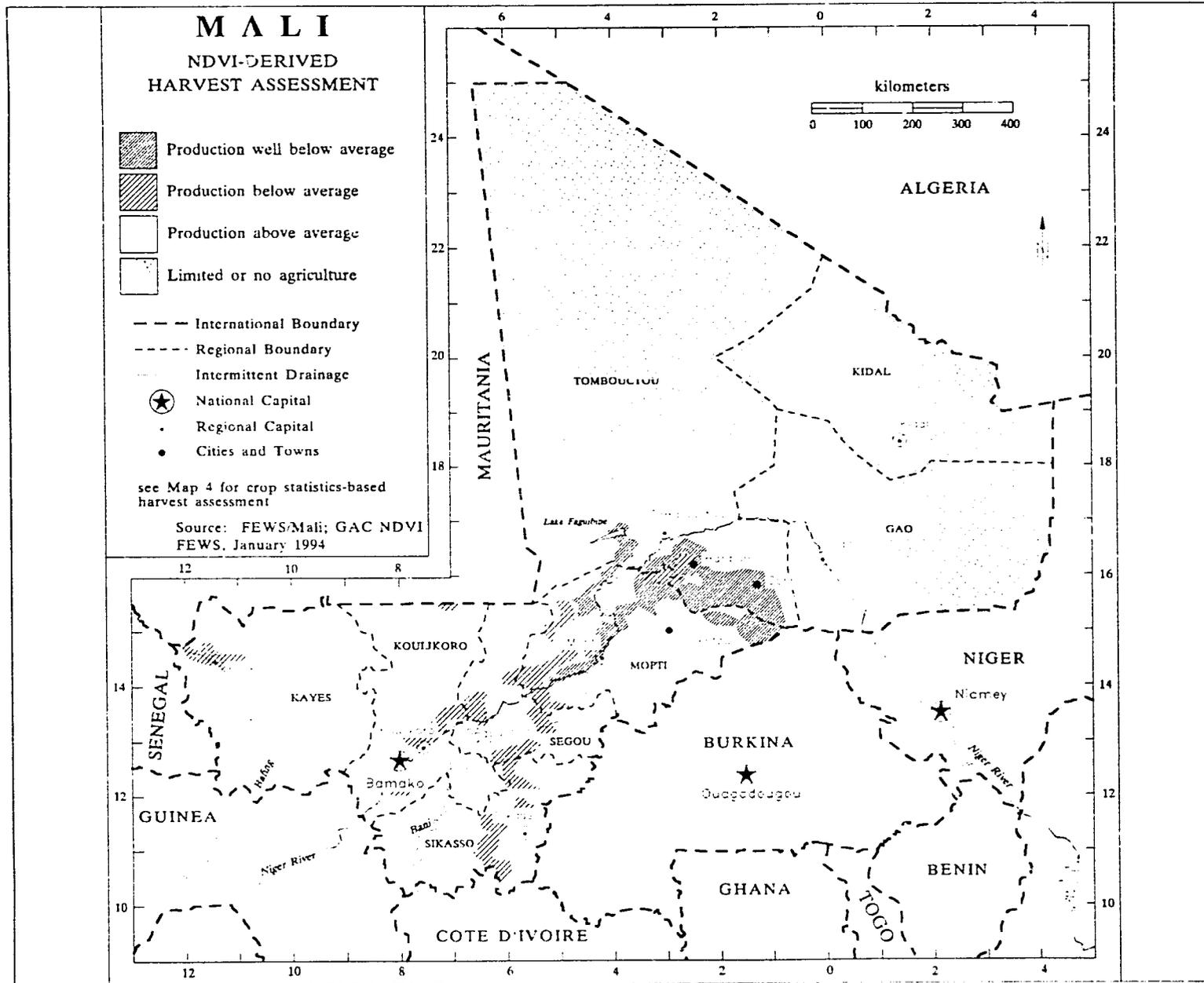
Tombouctou Region reduced production of recessional cereal crops around the lakes.

In October 1993, the GRM released provisional results of the 1993/94 cereal harvest assessment. Gross national cereal production is estimated at 2.07 million MT, above the 1986-92 average of 1.96 million MT. The current production estimates represent a gross production per capita of 242 kilograms per person, almost equal to the 1986-92 average of 244 kg per person (see Table 5).

Pasture Conditions

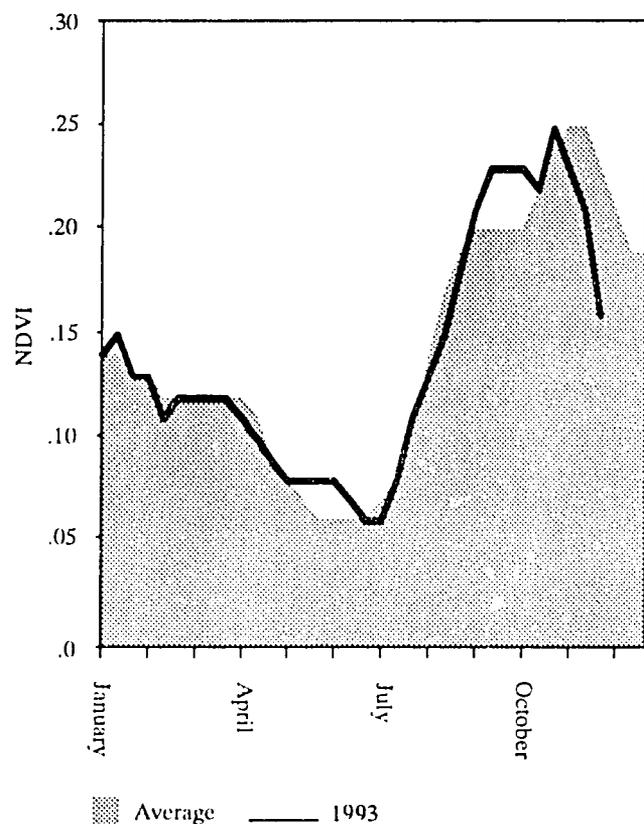
The outlook for dry-season fodder is average in the Sahelian zone, but below average in the Niger Inland Delta and in northern Kayes Region. In the Niger Inland Delta, the lack of extensive flooding has reduced productive pastures in this area of traditional dry-season cattle grazing. NDVI images show an early brown-down in the Inland Delta (see Figure 3). In northern Kayes Region, low 1993 rainfall reduced cumulative biomass. These two areas will more rapidly experience poor pasture conditions before the onset of rains in 1994. There are

Map 5. Mali: NDVI-Derived Harvest Assessment



MALI

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Figure 3. Mali: Biomass development in the Niger Inland Delta

Source: NASA, FEWS/Mali

no reports of severe cattle or other livestock disease outbreaks.

Existing Food Stock Information

Food stocks are near normal according to GRM reports. On December 1, 1993, the GRM Agricultural Products Office (OPAM) reported a national cereal security stock of 52,290 MT. Commercial stocks in OPAM warehouses totaled 1,307 MT. These stock levels are more than adequate to respond to the local needs of populations who have suffered a poor harvest (see Table 6).

Projected Food Aid and Commercial Imports/Exports

Based on an assessment of the 1993/94 harvest and estimations of household purchasing power, SAP has recommended the distribution of 1,300 MT of cereal to 47,000 persons in four arrondissements in Mopti and Gao regions. An additional 200,000 persons in the Sahelian zone are considered moderately vulnerable to food insecurity and may eventually require assistance before the next harvest. The SAP may make further recommendations for distributions as more information becomes available on certain arrondissements (Konna, Goundaka, Mondoro, and Anderamboukane) whose food security status has not yet been determined.

Table 6. Mali: Regional production balance (MT)

Region	Estimated population in April 1994	Gross production 93/94	Consumption needs	Percent of needs met
Kayes	1,200,612	246,657	243,000	102
Koulikoro	2,238,920	356,786	452,000	79
Sikasso	1,460,605	423,959	295,000	144
Ségou	1,517,002	690,724	306,000	226
Mopti	1,384,326	288,636	280,000	103
Tombouctou	443,847	55,125	90,000	61
Gao/Kidal	393,508	11,478	790,000	15
Total	8,638,820	2,073,365	1,745,000	119

Notes 1. Kidal Region was formerly an arrondissement in Gao region.
2. Per capita annual consumption rate is 202 kg, applied to gross production.

3. Population statistics projected from 1987 census using per-region growth rates.

Source: GRM Direction nationale de l'agriculture (DNA)/
Direction nationale de la statistique et de l'informatique (DNSI)

The GRM is continuing assistance to populations returning to northern Mali from Mauritania, Algeria, and Burkina. The GRM distributed 500 MT of a planned 1,000 MT, in Kidal Region by the end of November, 1993.

FACTORS AFFECTING ACCESS TO FOOD

Projected Food Consumption Need

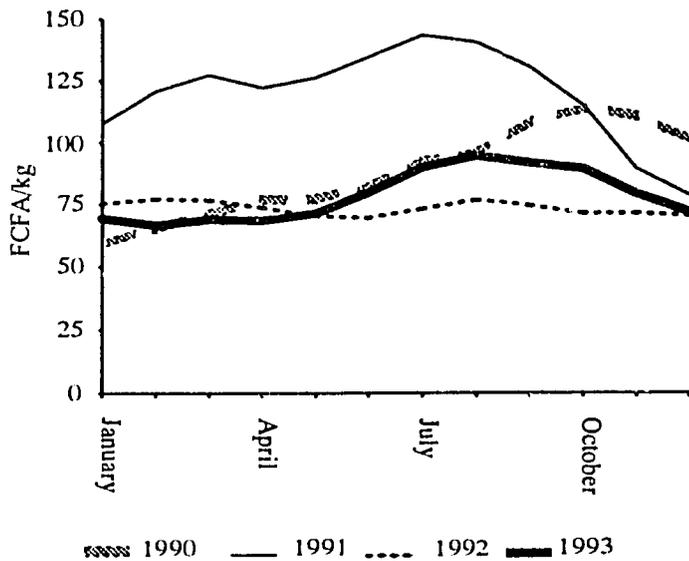
On the basis of the estimated national gross production figures and the results of the National Direction of Statistics (DNSI) consumption survey, Mali should have an overall cereal surplus of 344,000 MT before imports and exports. This surplus comes from the millet and sorghum harvests. An important production deficit in rice exists and there are other regional deficits due to poor harvests.

Economic Data

Millet prices are registering declines throughout Mali following a peak in August 1993 (see Figure 4). The declines follow the 1991 trend when grain prices declined after a good harvest. The current millet price level is the second lowest in five years.

Goat for millet terms of trade improved in November. According to the Mali SAP, this is primarily due to declining millet prices. This will benefit pastoralists who barter their animals to purchase grain.

Figure 4. Mali: Average regional and national capital millet prices



Source: GRM Market Information System

VULNERABILITY UPDATE

Populations in Bandiagara and Douentza *cercles* remain moderately vulnerable; people in the regions of Gao, Tombouctou, and Kidal are highly vulnerable due to uncertain civil security. People in Kayes Cercle remain moderately vulnerable due to production failures over the last few years in several areas. Displaced Malians continued to return from neighboring countries (Mauritania, Algeria, Burkina). Tensions have generally lessened in the north. The UNHCR is organizing a repatriation program for refugees wishing to return. The GRM, international donors, and NGO's are supporting this activity which would enhance reintegration of the returnees into Malian society.

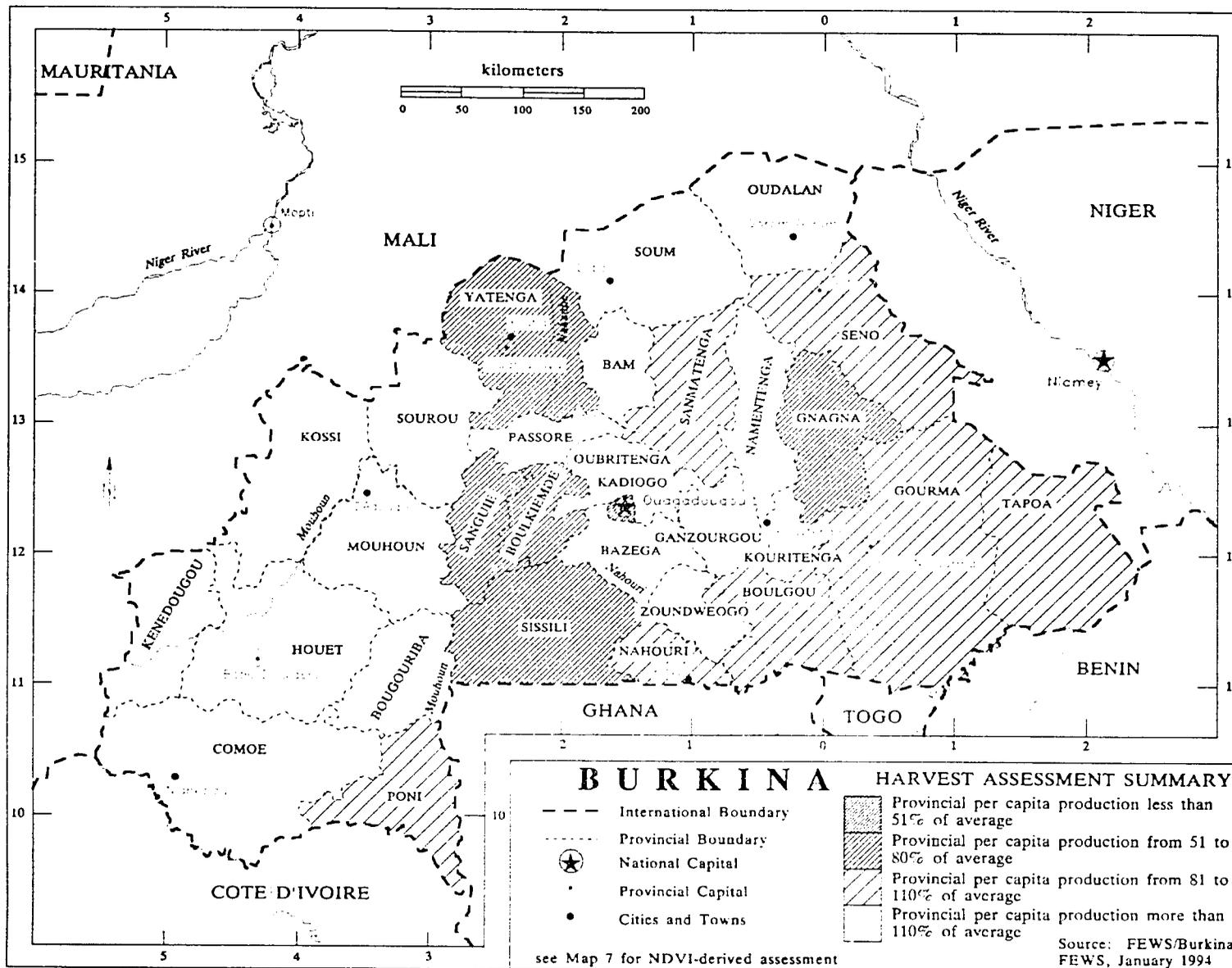
CONCLUSIONS

The estimated 1993/94 harvest is sufficient to meet national food needs. Security and infrastructural problems will constrain the ability of the commercial cereals market to meet local cereal deficits. Some food aid distributions, drawn from in-country national security stocks, will be required.

No major change in overall vulnerability is expected as a result of the 1993/94 harvest. However, smallholder agriculturalists in Kayes and Tombouctou *cercles* who suffered poor harvests, and tenant farmers in the rice producing areas of Mopti, will become more vulnerable in 1994.

Map 6. Burkina: Harvest Assessment Summary

BURKINA



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BURKINA

1993 Harvest Produces Cereal Surplus: NDVI Validates Problem Areas

Based on a report released by USAID/Burkina on December 16, 1993

SUMMARY

Burkina is not expected to require emergency food aid during 1994. Well-distributed rainfall over most of the country contributed to a substantial cereal surplus. According to estimates released by the Government of Burkina Faso (GOBF), a 213,000 metric ton (MT) cereal production surplus is predicted for the 1993/94 production year. Despite this favorable harvest, four provinces (Boulkiemde, Nahouri, Sanmatenga, and Tapoa) have below-average production for the third consecutive year. This further erodes the purchasing power of smallholder agriculturalists in these provinces, leaving 100,000 people moderately vulnerable.

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

Provisional estimates by the GOBF suggest cereal production for 1993/94 will be above the 1986-92 average. According to the production estimates, emergency food aid will not be needed to meet consumption demands this year. The GOBF estimates suggest a cereal production surplus (production minus consumption with no other cereal sources considered) of 213,000 MT. This total is also reflected in the 1993 FEWS Pre-harvest Assessment based on an analysis of NDVI imagery. The national cereal balance surplus of 379,000 MT includes programmed food aid and commercial imports (see Table 7).

Despite a cereal surplus, the GOBF will need to address regional production shortfalls. The GOBF figures suggest 1993/94 production per capita will fall far short of the 1986-92 average in the provinces of Boulkiemde, Gnagna, Nahouri, Sanguié, Sanmatenga, Sissili, and Yatenga (see Table 8 and Map 6).

Food insecurity in Burkina develops only after several years of below-average production. FEWS/Burkina believes the four-year deficit production balance in Boulgou, Boulkiemde, Nahouri, Sanmatenga, Sanguié, Gnagna, Sissili and Tapoa provinces makes their populations moderately vulnerable (see Table 9 and the FEWS Vulnerability Index pg 45).

The Cereal Production Season Reviewed

Rainfall

Across southern Burkina rainfall began a little later than the mid-May normal (in late May-early June). There was be-

Table 7. Burkina: 1993/94 estimated national cereal production

Estimated population June 1994	9,900,000
Annual per capita consumption rate in kg	190
1993/94 CEREAL CONSUMPTION REQUIREMENTS	
Expected 1993/94 cereal consumption	1,881,000
Replenishment of stocks (not available for consumption)	13,000
OFNACER	3,000
On-Farm	10,000
Total 1993/94 cereal requirement	1,894,000
1993/94 CEREAL SUPPLY	
Estimated net 1993/94 production	2,100,000
Available incountry stocks (OFNACER)	20,000
Programmed food aid for 1993/94	18,000
CAHIWEL	13,000
WFP	5,000
Expected 1993/94 commercial imports	135,000
Wheat	35,000
Rice	100,000
Total available cereal supply for 1993/94	2,273,000
1994 Estimated national cereal balance	379,000
Apparent kilograms available per capita	230

Sources: *Institut national de la statistiques et de la démographie, CILSS Projet diagnostique permanent II, Office nationale des céréales, Grands moulins du Burkina, Caisse de péréquation*

low-average rainfall in mid-July and again in early August. These short drought periods cause localized yield reductions of maize and white sorghum.

In central Burkina, rains were not well established until mid-July. This necessitated planting sorghum, millet and peanuts at the same time, producing a labor bottleneck that may have reduced area planted. Inadequate rainfall in early September, during the crop flowering stage, also contributed to slightly reduced yields.

In western Burkina, cumulative rainfall for the season was

Table 8. Burkina: 1990–92 totals, and 1993 estimated net cereal production in kilograms per capita
Difference from average

Province	1986–92 Average	1990	1991	1992	1993 estimated	1990–93 total
Deficit production						
Boulgou	166	-124	-35	-9	10	-158
Boulkiemdé	150	-36	-18	-35	-50	-139
Nahouri	109	-75	-1	-6	-17	-99
Sanmatenga	152	-46	-31	-4	-15	-96
Sanguié	189	-67	68	-59	-78	-136
Gnagna	209	-56	-39	9	-54	-140
Sissili	194	8	50	-81	-77	-100
Tapoa	187	17	-47	-14	-2	-46
Kadiogo	13	-9	-7	-7	-7	-30
Yatenga	129	-20	119	-7	-36	-6
Surplus production						
Comoé	239	-60	38	-5	44	17
Gourma	239	-50	-1	5	14	-32
Houét	199	-68	31	22	37	22
Sourou	189	-132	68	94	54	84
Oudalan	122	-19	42	57	28	108
Mouhoun	239	-57	43	61	74	121
Oubritenga	191	-34	58	28	62	114
Kouritenga	126	-94	61	93	101	161
Passoré	170	-111	33	116	60	98
Ganzourgou	192	3	49	64	30	146
Poni	206	46	54	72	11	183
Bazèga	203	-71	84	91	73	177
Kénédougou	287	-73	84	77	115	203
Bam	174	-111	70	130	83	172
Namentenga	172	-49	53	113	71	188
Séno	184	21	91	122	15	249
Zoundwéogo	205	-65	139	66	107	247
Soum	143	-69	135	118	37	221
Bougouriba	268	-36	61	192	246	463
Kossi	325	-34	156	163	207	492
Average	181	-51	39	39	31	58

Source: *Institut national de la statistiques et de la démographie*

Table 9. Burkina: 1993/94 estimated net cereal production

Province	Estimated population April 1994 (000)	Need (000 MT)	Net production (000 MT)	Production balance (000 MT)	Production per capita (kg)	1986-92 Average per capita	1993 production per capita as a percent of average
Bougou	499	95	88	-7	176	166	106
Boulkiemde	408	78	41	-37	100	150	67
Nahouri	130	25	12	-13	92	109	84
Sanmatenga	424	81	58	-23	137	152	90
Sanguié	243	46	27	-19	111	189	59
Gnagna	296	56	46	-10	155	209	74
Sissili	326	62	38	-24	117	194	60
Tapoa	205	39	38	-1	185	187	99
Kadiogo	790	150	5	-145	6	13	46
Yatenga	572	109	53	-56	93	129	72
Comoé	322	61	91	30	283	239	118
Gourma	380	72	96	24	253	239	106
Houét	800	152	189	37	236	199	119
Sourou	338	64	82	18	243	189	129
Oudalan	133	25	20	-5	150	122	123
Mouhoun	364	69	114	45	313	239	131
Oubritenga	340	65	86	21	253	191	132
Kouritenga	242	46	55	9	217	226	180
Passoré	239	45	55	10	230	170	135
Ganzourgou	239	45	53	8	222	192	116
Poni	272	52	59	7	217	206	105
Bazèga	377	72	104	32	276	203	136
KénéDougou	174	33	70	37	402	287	140
Bam	179	34	46	12	257	174	148
Namatenga	222	42	54	12	243	172	141
Séno	286	54	57	3	199	184	108
Zoundwéogo	186	35	58	23	312	205	152
Soum	233	44	42	-2	180	143	126
Bougouriba	255	48	131	83	514	268	192
Kossi	419	80	223	143	532	325	164
Total	9,890	1,879	2,092	213	212	181	117

Note: Annual consumption rate 190 kg/per capita/year.

Source: *Institut national de la statistique et de la démographie*

below average, but adequately distributed for good cereal crop production.

In the three northern Sahelian zone provinces, rains began earlier than normal in mid-June, but rainfall was below average throughout the season. Rainfall ended early this year and the

critical September rains were considerably below-average (at Ouahigouya it rained only 56 mm compared to the 30 year average of 103 mm) creating several small pockets of almost complete cereal crop failure and severely reduced pasture quality.

Map 7. NDVI-Derived Harvest Assessment



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Normalized Difference Vegetation Index (NDVI)

A summary of the NDVI time series for Burkina departments is presented in Map 7. This map shows the 1993 differences from the 1982–90 average of cumulative NDVI from the dekad (10-day period) when NDVI began to increase to the dekad of highest NDVI. This serves as an indicator of the total quantity of photosynthetic activity over the growing period.

The quality of the growing season, as indicated by total photosynthetic activity during the growing period, was above-average over most of Burkina. The six northern provinces (Soum, Séno, Sanmatenga, Gourma, Comoé and Houét) were an exception to this and show an early end-of-season with areas of reduced cereal yields and pasture quality.

FACTORS AFFECTING FOOD ACCESS

Cereal Market

Nominal millet prices over the past year have been lower than average following the excellent harvest of 1992/93, and show a normal decline during the latter half of 1993. Poor growing conditions in southern Burkina and southern Mali kept prices higher than in 1992 in the southern market of Niankologo, but this will not have a widespread effect on cereal availability. Prices in Niankologo have increased from 58 FCFA/kg in August to 76 FCFA/kg in October, as compared to falling prices at the same time last year. In northern markets, millet prices are even lower than last year due to the late arrival of some food aid in October 1993.

The Livestock Market

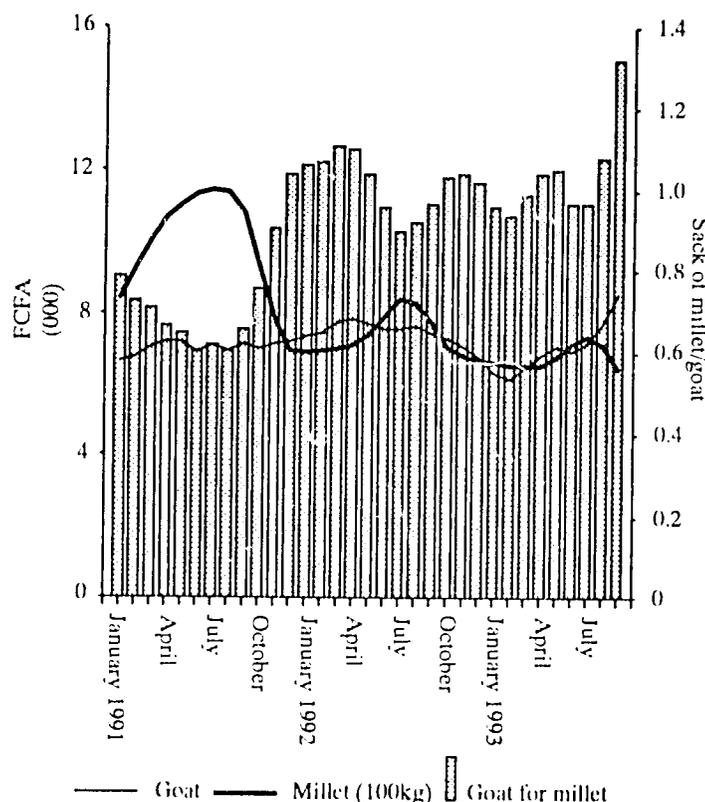
Livestock are a form of savings for a large percentage of Burkina farmers. Pasture quality is the best indicator of the health of this sector of the economy. Due to below-average rainfall in September in northern Burkina, pastures will be generally poor. The poor pastures will cause livestock movements to southeastern Burkina where pastures are in excellent condition and have been for two years now. This movement is a normal pattern in Burkina.

The livestock market, has been healthy. Currently, the sale of a goat provides enough money to purchase 140 kg of millet. At the same period in 1991 the sale of a goat would only provide enough money for 80 kg of millet. Figure 5 shows the evolution of the terms of trade between goats and millet from 1991 to September of 1993, averaged over five major markets.

VULNERABILITY UPDATE

The 1993 FEWS Vulnerability Assessment identified five provinces (Boulkiemde, Sanmatenga, Nahouri, Boulgou and Tapoa) as having at least 40 percent of their population in a highly vulnerable state. The most vulnerable in these provinces are smallholder agriculturalists. Even though national 1993/94

Figure 5. Burkina: Goat to millet terms of trade



Note: Five market (Djibo, Gorom Gorom, Pouytenga, Kaya, and Youba) average 1991–93

Source: FEWS/Burkina

cereal production is above average, production in the most vulnerable provinces is again below average and the number of highly and moderately vulnerable smallholder agriculturalists will not change. FEWS/Burkina estimates there are over 100,000 people who remain highly vulnerable.

Vulnerable agropastoralist populations show a great reduction in vulnerability due to good pastures and robust terms of trade.

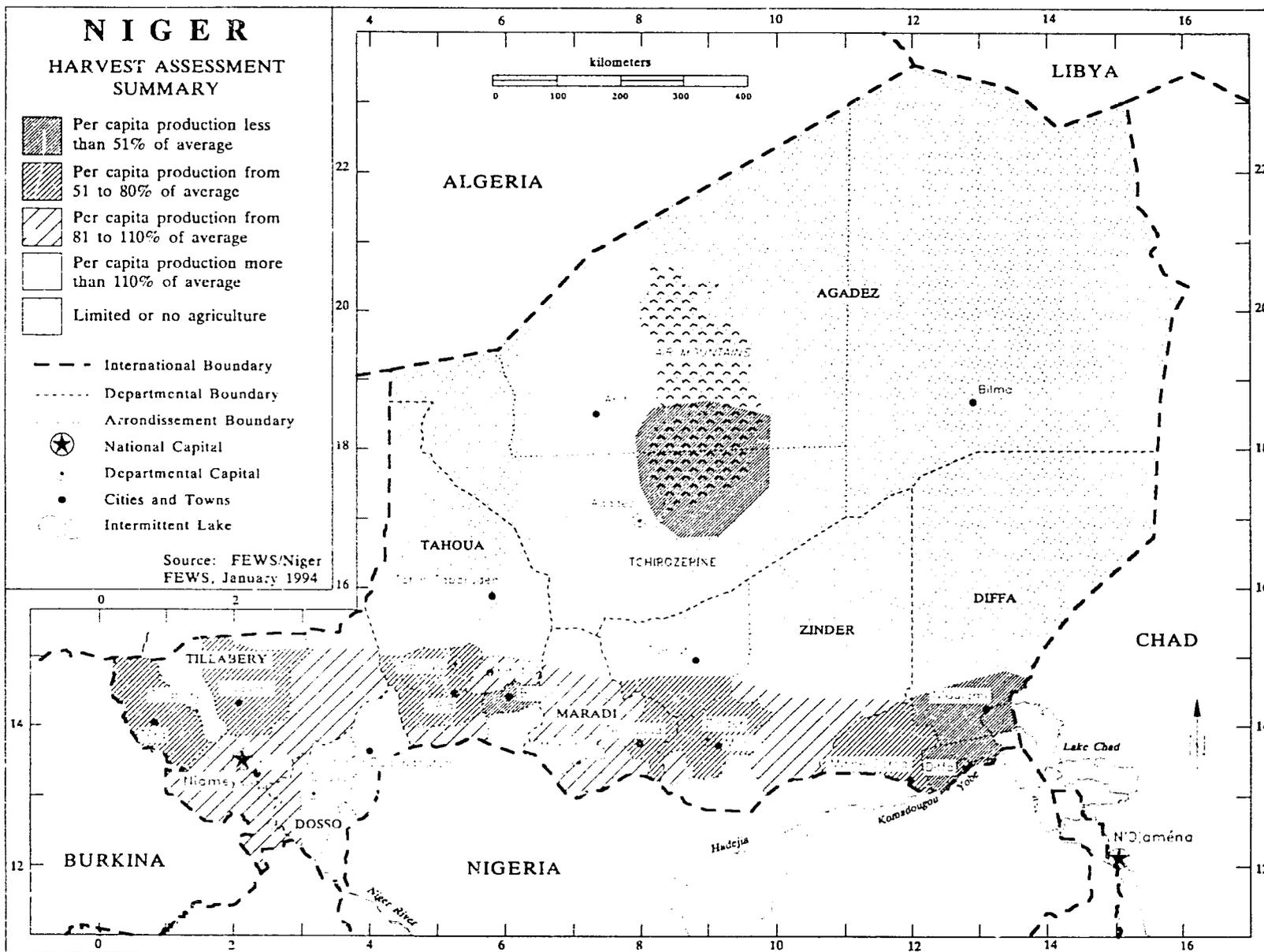
CONCLUSION

Estimated cereal production estimates from the GOBF and FEWS/Burkina suggest that national per capita production will be above the seven-year average for the third consecutive year.

Emergency food aid will not be required, although the GOBF may need to provide some assistance to 100,000 highly vulnerable smallholder agriculturalists in five provinces where drought again caused below-average cereal production.

The *Commission nationale de secours d'urgence et de rehabilitation* of the GOBF and its provincial organizations are identifying areas of crop failure, developing action plans, and identifying appropriate interventions. FEWS/Burkina continues to assist the GOBF with department-level analysis of NDVI, allowing local decision makers to assess the growing season with the perspective of the long-term average.

Map 8. Niger: Harvest Assessment Summary



NIGER

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NIGER

Regional Shortages Despite Average Harvest

Based on a report released by USAID/Niger on December 23, 1993

SUMMARY

Current Ministry of Agriculture and Livestock data suggest that the 1993/94 harvest should meet about 93 percent of Niger's 1994 food needs (net production is about 1.8 million MT; Niger's population is about 8.9 million). With current in-country stocks and expected imports figured in, Niger's cereal balance shows about a five percent surplus.

There are still several localized areas of food insecurity. The Government of Niger (GON) estimates that the most vulnerable populations will require about 55,000 MT of food aid and has requested that amount from donors.

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

The Ministry of Agriculture and Livestock (MOA) reports a 1993/94 national cereals harvest (rainfed millet and sorghum) of just over 2 million MT gross. This amount is near the five-year average (1986-92), but slightly below 1992/93 totals.

Only Dosso Department registered overall millet and sorghum production significantly above the 1986-92 average (see Table 10). The most significant changes in production were in Diffa Department, which only produced 86 percent of the seven year average and 35 percent of 1992 production.

At the next administrative level (arrondissement), 21 of the 35 arrondissements are not expected to meet consumption requirements (see Table 11). The most dramatic decrease in production was in N'Guigni (12 percent of average), followed by Diffa, Bouza, Illéla, and Tanout, which harvested less than 60 percent of their respective averages. Arrondissements in Agadez Department (Bilma, Arlit and Tchirozérine), which are primarily pastoral, did produce a small proportion of their expected cereal consumption needs, but, as in the past, they will be dependent on supplies from the southern agricultural zones of the country.

Pasture conditions

There was very little livestock movement towards the north during 1993. Most herds stayed in the southern limits of the pastoral zone due to questionable civil security in northern areas. If a majority of herds remain in the southern zone, crowding in agricultural areas may result in conflict with the farming populations. This could affect availability of animal fodder be-

fore the 1994 rainy season.

The MOA reports that late starts and inadequate rainfall contributed to poor pasture conditions and production. The total fodder production estimate (natural pasture plus agricultural residues) shows that only the departments of Diffa, Dosso, and Zinder registered adequate production levels. All other departments have inadequate production to meet normal needs.

Agricultural residues (in agricultural zones) were adequate and should help alleviate the effects of poor pasture conditions. Many of the pastoral zones have not been fully utilized for security reasons, which has a negative impact on overall fodder accessibility.

Food stock information

As of November 30, there were approximately 44,235 MT of millet reported in the GON security stock. An additional 2,641 MT of rice were in stock with the rice parastatal, and the national flour mill had 710 MT in wheat. There were 1,069 MT of other food stocks held by the World Food Programme.

Projected food aid and commercial imports/exports

The GON has made a request to donors for 55,000 MT in immediate food assistance for the most vulnerable people. The GON estimates an additional 118,000 MT will be needed for less vulnerable populations—to see them through the difficult period before the next harvest.

The food aid request was calculated using information derived from a food security questionnaire developed by the Niger SAP. The questionnaire requests data covering the agropastoral situation; cereal and animal market prices; health and nutrition; and other socioeconomic variables.

The World Food Programme expects 1993/94 project food aid to include 16,349 MT of millet and sorghum, and 4,512 MT of other food stocks (see Table 12). The GON estimates commercial cereal imports will be similar to last year's total of approximately 94,000 MT.

FACTORS AFFECTING FOOD ACCESS

Projected Food Consumption Needs

The national breakdown for projected food consumption needs is given in Tables 10 and 11, with a total rainfed production deficit of nearly 133,000 MT (rainfed millet and sorghum

Table 10. Niger: 1993/94 department production balance for rainfed millet and sorghum—percent of needs met

Department	1993/94 estimated population	1993/94 estimated gross production (MT)	1993/94 estimated net production (MT)	1993/94 consumption requirement (MT)	1993/94 estimated production balance (MT)	1993/94 per capita production (MT)	1986-92 average per capita production (MT)	1993 amount as percent of 1986-92 average
Tillabéry	2,142,749	386,907	328,871	452,084	-123,213	153	169	91
Dosso	1,269,825	405,633	344,787	276,046	68,741	272	246	111
Tahoua	1,538,461	369,740	314,279	332,457	-18,178	204	212	96
Maradi	1,735,775	466,110	396,193	373,384	22,809	228	257	89
Zinder	1,711,376	428,866	364,526	367,365	-2,839	213	232	92
Diffa	201,709	21,502	18,277	42,587	-24,310	91	106	86
Agadez	282,451	721	613	56,602	-55,989	2	6	33
Total	8,882,347	2,079,479	1,767,546	1,900,525	-132,979	199	211	94

Sources: For Tables 10 and 11 – GON production figures and USAID consumption rates

production). Rainfed millet and sorghum production comprises 95 percent of total cereal production in Niger and 70 to 80 percent of total food intake. If we consider estimates from other sources of cereal production (irrigated, off-season) the national cereals balance shown in Table 12 reveals a national production deficit of nearly 79,000 MT. The addition of available stocks and potential imports results in an overall surplus of over 92,000 MT.

Economic Data

Market prices

Data from the national cereal price Market Information System (SIM) indicates that millet prices declined over the year throughout Niger. Prices were more than 20 percent lower than 1992 prices in Agadez, Maradi, and Zinder (see Figure 6) departments. The minimal peak in July and subsequent decline in millet prices reflects ample cereal stocks, most likely remaining from the 1992/93 harvest. Prices have also been affected by the falling value of the *naira* and less expensive millet imports from Nigeria.

From September through November animal prices have been declining (see Figure 7). Prices are 10-15 percent lower for adult male goats in Diffa, Agadez, and Maradi in comparison to the same time last year. Livestock prices are generally 15 percent lower nationwide when compared to the five-year average (1988-92). Animal prices in 1993 did not show a typical seasonal peak, reflecting that animal supply has exceeded demand in most of the principal markets. Even though animal prices are low, the drastic fall in millet prices has slowed the seasonal drop in the overall goat to millet terms of trade. If animal availability continues to exceed demand, terms of trade could deteriorate sharply, especially in cereal deficit areas.

Other economic factors

The GON National Assembly passed the 1994 budget in late November. The austere budget continues to be largely supported by international donors, mainly France. Public service wages continue to be a large part of operating expenditures. Talks between the GON and the International Monetary Fund (IMF) recently ended with little progress on a structural adjustment program. The GON must do more to reduce public service wages while increasing revenues.

VULNERABILITY UPDATE

Most vulnerable populations are located in areas which were affected primarily by a cereal production deficit (see Table 10 and 11). Included are: the entire departments of Agadez and Diffa, most of Tahoua and Tillabéry, and scattered arrondissements in Maradi and Zinder departments.

The effects of the cereal deficit will be most felt by people in arrondissements that have experienced several consecutive poor production seasons (Ouallam, Diffa, Keïta, and Illéla), or dramatic decreases in per capita production (Bouza and N'Guigmi). Populations of deficit arrondissements such as Kollo, Mirriah, and Dogondoutchi should only be slightly vulnerable because of access to stocks and other sources of income.

Tanout and Loga *arrondissements* had a better than forecast production year. Tanout, affected by widespread food shortages last year, has only a slight production deficit this year,

Table 11. Niger: 1993/94 arrondissement production balance for rainfed millet and sorghum—percent of needs met

Arrondissement	1993/94 estimated population	1993/94 estimated gross production (MT)	1993/94 estimated net production (MT)	1993/94 consumption requirement (MT)	1993/94 estimated production balance (MT)	1993/94 per capita production (MT)	1986-92 average per capita production (MT)	1993 amount as percent of 1986-92 average
Bilma	9,409	0	0	1,985	-1,985	0	0	—
Arlit	117,060	82	70	23,372	-23,302	1	2	50
Tchirozérine	155,981	639	543	31,245	-30,702	3	8	38
N'Guigmi	26,383	240	204	5,132	-4,928	8	68	12
Niamey City	516,213	9,329	7,930	98,080	-90,150	15	12	125
Mainé Soroa	86,870	10,095	8,581	18,636	-10,055	99	136	73
Diffa	88,457	11,167	9,492	18,819	-9,327	107	220	49
Bouza	207,131	26,448	22,481	45,307	-22,826	109	256	43
Ouallam	223,001	29,182	24,805	48,635	-23,830	111	164	68
Tahoua	293,484	47,090	40,027	62,447	-22,420	136	173	79
Madarounfa	412,334	69,627	59,183	84,995	-25,812	144	165	87
Mirriah	682,555	120,320	102,272	144,241	-41,969	150	194	77
Keïta	180,589	37,731	32,071	39,427	-7,356	178	204	87
Illéla	205,124	44,045	37,438	44,595	-7,157	183	353	52
Tchin Tabaraden	77,954	17,274	14,683	16,049	-1,366	188	136	138
Téra	356,296	78,906	67,070	77,123	-10,053	188	286	66
Filingué	341,254	75,891	64,507	74,238	-9,731	189	230	82
Tanout	221,059	50,698	43,093	47,771	-4,678	195	319	53
Dakoro	315,909	73,011	62,059	68,335	-6,276	196	214	92
Kollo	318,951	75,706	64,350	69,813	-5,463	202	223	91
Mayayi	269,997	66,780	56,763	59,155	-2,392	210	241	87
Dogondoutchi	390,163	97,497	82,872	84,857	-1,985	212	88	241
Gouré	196,272	54,668	46,468	42,038	4,430	237	291	81
Tillabéry	169,994	48,725	41,416	36,815	4,601	244	193	126
Boboye	254,039	76,211	64,779	55,527	9,252	255	240	106
Aguié	207,684	62,927	53,488	45,451	8,037	258	271	95
Tessaoua	265,139	81,522	69,294	57,570	11,724	261	346	75
Konni	311,504	98,193	83,464	67,355	16,109	268	243	110
Say	217,041	69,168	58,793	47,379	11,414	271	275	99
Matameye	200,487	65,172	55,386	43,665	11,721	276	265	104
Magaria	411,003	138,008	117,307	89,650	27,657	285	218	131
Dosso	310,995	108,128	91,908	67,271	24,637	296	244	121
Madaoua	262,675	98,959	84,115	57,277	26,838	320	226	142
Loga	110,553	42,062	35,753	24,118	11,635	323	226	143
Gaya	204,075	81,735	69,475	44,273	25,202	340	171	199
Guidan Roundji	264,712	112,243	95,406	57,879	37,527	360	191	188
Total	8,882,347	2,079,479	1,767,546	1,900,525	-132,979	199	211	94

NIGER

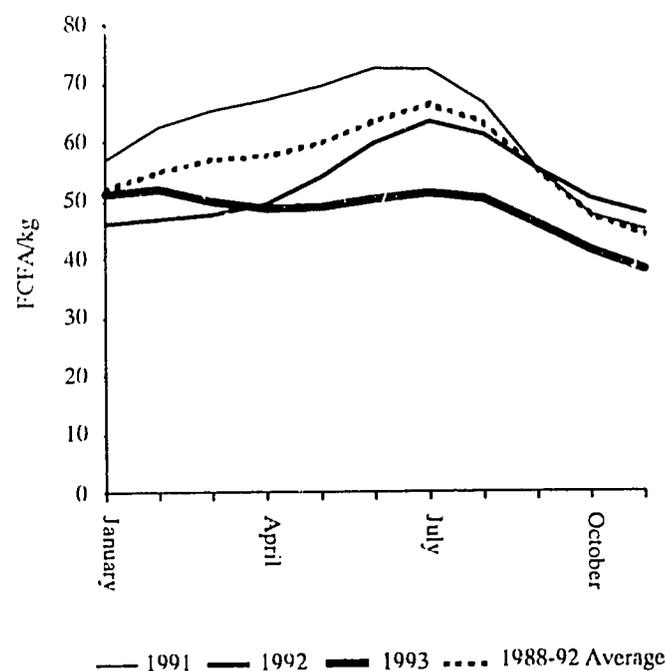
Table 12. Niger: 1993/94 estimated national cereal balance

Estimated population April 1994	8,900,000
Annual per capita consumption rate in kg	190/220
1993/94 CEREAL CONSUMPTION REQUIREMENTS	
Expected 1993/94 cereal consumption	1,900,525
1993/94 CEREAL SUPPLY	
Available stocks	59,720
Public reserve	44,235
Public working	3,352
Commercial	3,297
On-farm	—
Donor	8,836
Estimated net 1993/94 production (rainfed 1,767,546; irrigated 49,957; and off-season 13,145)	1,821,648
Program food aid for 1993/94	16,349
Expected 1993/94 commercial imports	94,844
Total available cereal supply for 1993/94	1,992,561
1994 Estimated national cereal balance	92,036
Apparent kilograms available per capita	224

Note: Per capita consumption rates vary on a rural (190 kg) to urban (220 kg) basis.

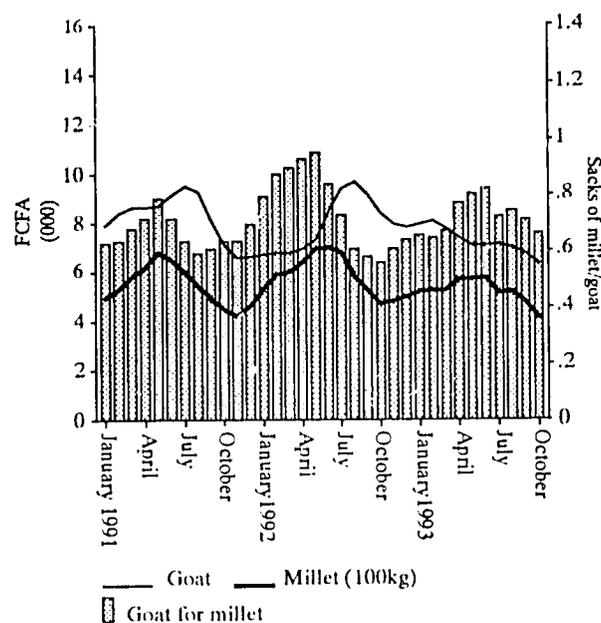
Source: FEWS/Niger

Figure 6. Niger: Zinder—Intra-year millet price comparison



Source: FEWS/Niger

Figure 7. Niger: Agadez—goat to millet terms of trade January 1991–October 1993



Source: FEWS/Niger

but remains moderately vulnerable. Loga, which just barely meets its consumption needs in 1992/93, had an exceptional year (148 percent of needs met) and is now considered slightly to moderately vulnerable.

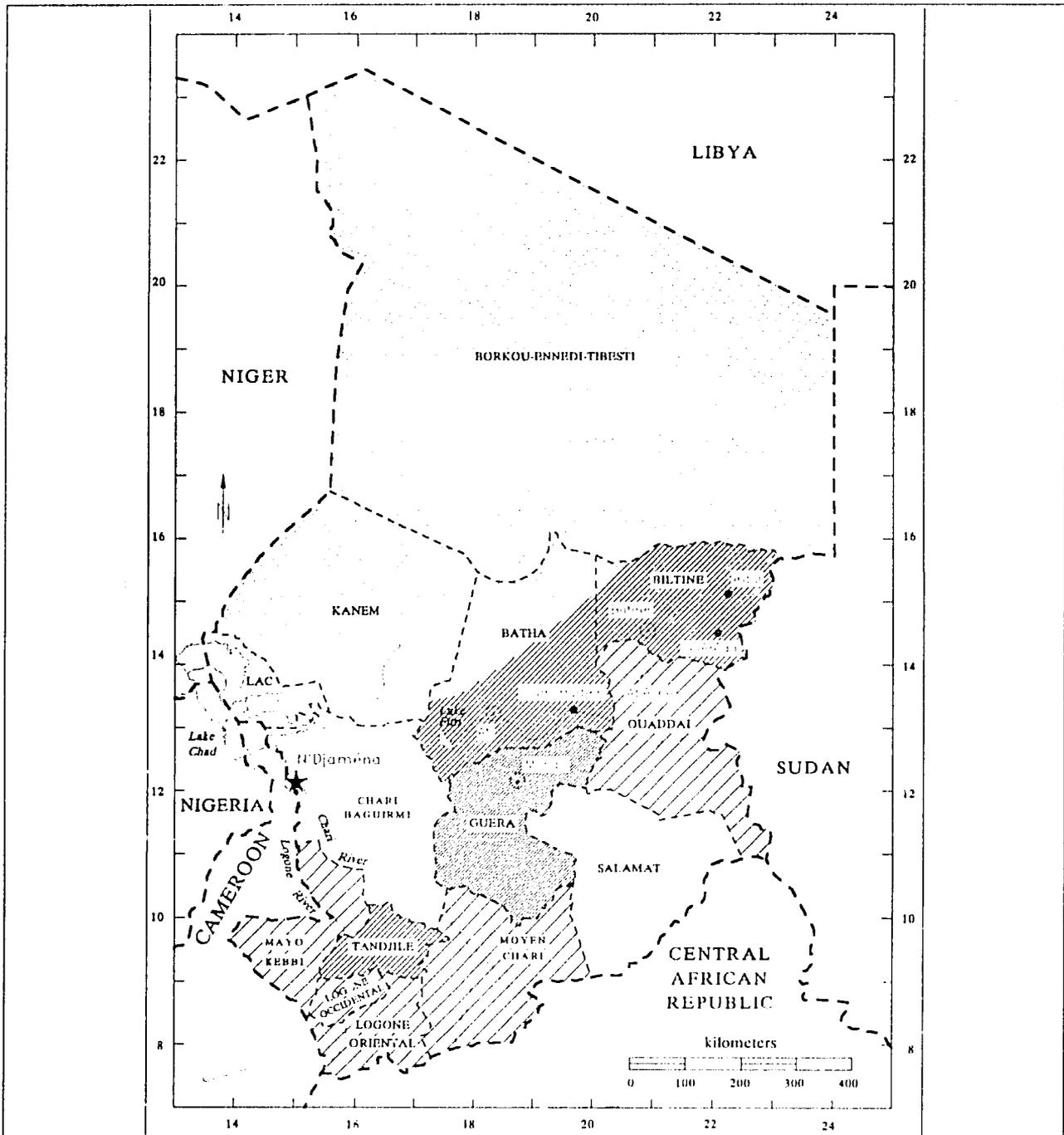
CONCLUSIONS

Despite an average cereal production year, Niger will once again experience pockets of food shortages. The hardest hit areas, in addition to the nonagricultural zones, are in Diffa, Tahoua, and Tillabéry departments. Several arrondissements in these areas have experienced consecutive years of poor production (Ouallam, Diffa, Keita, and Illéla) and will be more vulnerable than those areas which had slightly below-average production this year.

In-country redistribution of available stocks should help offset the most immediate needs.

Talks have begun in the donor community to determine the appropriate actions to respond to the GON request for 55,000 MT of immediate food assistance.

Map 9. Chad: Harvest Assessment Summary



CHAD

HARVEST ASSESSMENT SUMMARY

- National Capital
- Prefecture Capital
- Cities and Towns
- International Boundary
- Prefecture Boundary
- Intermittent Drainage
- Intermittent Lake

- Per capita production 50% of average
- Per capita production from 51% to 80% of average
- Per capita production from 81% to 110% of average
- Per capita production more than 110% of average
- Limited or no agriculture



Source: FEWS/Chad
FEWS, January 1994

CHAD

Chad: Localized Harvest Failures Causing Extreme Hardship

Based on a report released by USAID/Chad on December 22, 1993

SUMMARY

Late-starting rains and below average rainfall, combined with serious localized grasshopper and bird attacks resulted in below-average cereal production across much of the Sahelian zone (see Map 9). Several prefectures in the Sahelian zone had below-average production. Salamat, Chari Baguirmi, Kanem and Lac prefectures were the exceptions.

Flooded-rice production was extremely low in the Sudanian zone, and rainfed cereal production suffered from inadequate rainfall in parts of this zone. Millet prices in the Sahel increased sharply in June rather than slowly declining. Sorghum prices in the Sudanian zone began climbing in September, several months earlier than usual. Existing private and security stocks may prove adequate to supply about half of the estimated cereal needs of the deficit regions. Emergency food aid imports are necessary to meet the remaining needs and to replenish food security stocks.

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

Total cereal production is estimated near average for the country. Four Sahelian zone prefectures (Ouaddaï, Batha, Biltine, and Guéra) show cereal production estimates that are significantly below average. Net cereal production for 1993/94 is estimated to be 294,925 metric tons (MT) in the Sahelian zone and 335,376 MT in the Sudanian zone (see Table 13). These production estimates include off-season sorghum grown with residual moisture in heavy clay soils, and harvested during early 1994.

The rainy season started late in the Sahelian zone and ended early. This led to lower than normal total rainfall. Periods of drought also affected crops. Localized grasshopper and bird attacks caused serious crop losses in parts of this zone towards the end of the season. Agriculture officials in Batha Prefecture estimate that only about half as much cereal acreage was planted in 1993 as in 1992, due to the late start-up of the rainy season. Lower acreage planted and lower yields account for the cereal deficits in the Sahelian zone.

The rice-growing prefectures in the Sudanian zone suffered crop failure because the Logone River failed to reach flood stage. Considerable acreages were never planted or were abandoned during the growing season. In addition, 1993 rainfall in parts of the Sudanian zone was lower than in 1984 during the worst drought in recent history. Information obtained during a

recent visit to Tandjilé and Logone Occidental prefectures indicates that rainy season cereal production was significantly lower than predicted in the October production estimates (see Map 9).

Pasture Conditions

The late start of the rainy season in the Sahelian zone affected pasture conditions as well as cereal production. Normalized Difference Vegetation Index (NDVI) images show much of the Sahelian zone became green later than normal by at least 10 days. Vegetation failed to extend as far north as usual and there was a precipitous season end across the Sahelian zone. The 1993 pattern of vegetation resulted in less pasture area, lower than average biomass in pasture areas, and early migration of herds to pastures in the southern part of the Sahelian zone. Evaluation teams report traditional movements toward Lake Chad and southern areas to be about two months earlier than normal departure time, which has put additional pressure on scarce pasture and water supplies along migration routes.

Existing food stocks

Households are expected to have some cereal stocks following two years of above-average production. Private stocks may account for the slow increase in cereal prices in areas of crop failure. However, many of the Sahelian areas with cereal production deficits in 1993 also suffered deficits in 1992. Household cereal stocks are reportedly depleted in the areas of immediate need (see Map 10). Commercial cereal stock levels are unknown. Government of Chad security stocks amount to nearly 13,000 MT and have been prepositioned in warehouses around the country for rapid distribution.

Projected food aid and commercial imports/exports

Purchase of 5,000 MT of cereal is underway to supplement national food security stocks using USAID counterpart funds. Food distribution by the World Food Programme through its ongoing projects in Chad annually totals about 5,000 MT. Commercial cereal import data have not been collected since 1989, when approximately 24,000 MT of assorted cereals were registered. The net flow of informal cereal trade across Chadian borders with Sudan, Niger, Cameroon, and the Central African Republics unknown.

Table 13. Chad: 1993/94 net cereal production and per capita production

Prefecture	1993/94 gross cereal production (MT)	1993/94 net cereal production (MT)	Estimated 1994 population	Cereal needs (MT)	Production balance (MT)	1993/94 per capita production (kg)	1986-92 per capita production (kg)	1993 per capita production as percent of average
Saharan zone								
B.E.T.	0	0	72,227	10,184	-10,184	0	0	—
Sahelian zone								
Batha	17,600	14,960	294,700	41,553	-26,593	51	94	54
Biltine	11,310	9,614	191,419	26,990	-17,377	50	73	68
Chari Baguirmi	133,120	113,152	1,280,961	180,615	-6,746	388	65	135
Guéra	27,440	23,324	313,706	44,233	-20,909	74	148	50
Kanem/Lac	61,140	51,969	541,198	76,309	-24,340	96	59	163
Ouaddai	41,760	35,496	562,580	79,324	-43,828	63	75	84
Salamat	54,600	46,410	190,259	26,826	19,584	244	193	126
Sahelian total	346,970	294,925	3,374,822	475,850	-180,925	87	84	104
Sudanian zone								
Mayo Kebbi	118,540	100,759	839,115	118,315	-17,556	120	122	98
Tandjilé	61,710	52,454	468,780	66,098	-13,644	112	156	72
Logone Occidental	38,930	33,091	465,608	65,651	-32,560	71	76	93
Logone Oriental	73,470	62,450	450,470	63,516	-1,067	139	154	90
Moyen Chari	101,910	86,624	761,870	107,424	-20,800	114	119	96
Sudanian total	394,560	335,376	2,985,842	421,004	-85,628	112	124	90
Total	741,530	630,301	6,432,891	907,038	-276,737	98	102	96

Notes: 1. Population statistics from 1993 Census, projected at a growth rate of 2.3 percent.

2. Consumption requirement calculated at 141 kg per capita per year.

3. Production netted by a factor of 0.85.

Sources: GOC/DSEED, GOC/ONDR

FACTORS AFFECTING FOOD ACCESS

Projected food consumption needs

Reliable population statistics are available for the first time as a result of the 1993 census (see Table 13). Based on these figures and a national annual consumption figure of 141 kg/person, cereal needs are estimated to be 907,000 MT. Population estimates were increased by a growth rate of 2.3 percent to reflect cereal needs in mid-1994. Table 13 shows that the cereal needs of all prefectures except Salamat are greater than estimated cereal production, even in the Sudanian zone prefectures with average cereal production in 1993/94.

Economic data

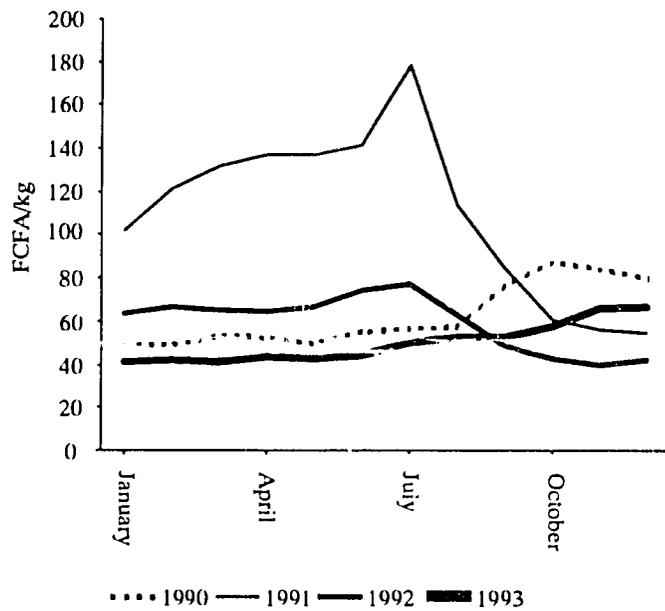
Sahelian millet prices remained low from November 1992 through June 1993, when they began to increase rapidly (see

Figure 8). The usual pattern is for prices to increase during the first two quarters of the year and then start to decline in June or July as harvest prospects become clearer. The low grain prices during the first part of 1993 may be due to significant residual stocks remaining after two good national harvests or an overall lack of buying power in the economy. The year end increase very likely reflects the realization that the 1993/94 Sahelian harvest was going to be poor.

Sorghum prices in the Sudanian zone began to climb until September and were approximately 50 FCFA/kg in November (see Figure 9) after an apparent peak in May (market prices were not collected during the first four months of 1993 in this area). This upturn is two to three months early, and likely reflects a shortage of sorghum in the area. The price of rice in Tandjilé and Logone Occidental prefectures did not decrease after harvest, which reflects the harvest failure. Farmers are selling plow animals to buy grain in Tandjilé. Widespread sale of plow animals will reduce future productivity and probably indicates absence of cereal stocks in the rice-producing zone.

For pastoralists in the Sahelian zone, the terms of trade

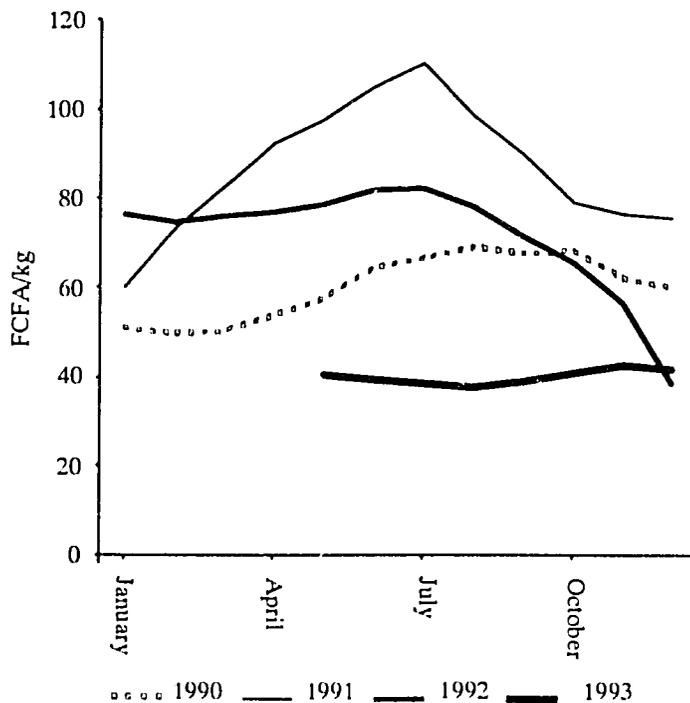
Figure 8. Chad: Sahelian zone—nominal millet price



Note: Average of 33 markets.
Source: SAP Chad.

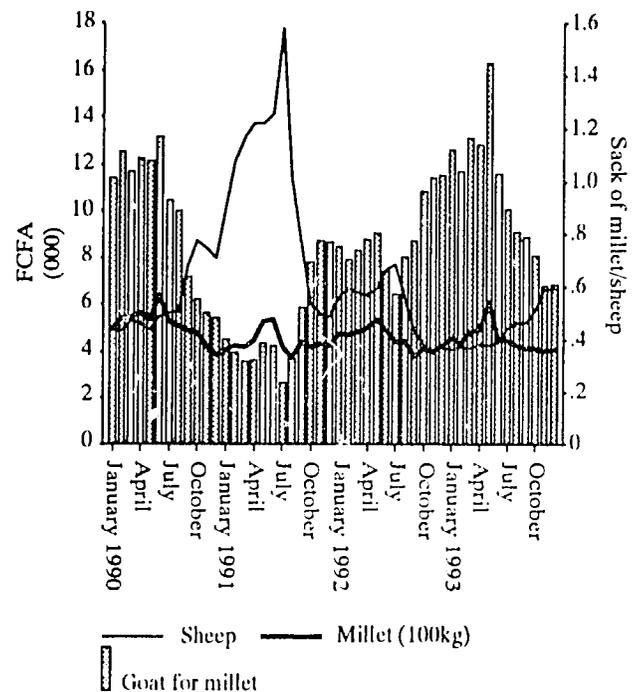
between sheep and millet have become increasingly poor since millet prices started to decline in June. The downward trend from May to December resembles the pattern seen in late 1990. Low millet yields in much of the Sahel, combined with poor pasture conditions, are expected to render these terms of trade

Figure 9. Chad: Western Sudanian zone—nominal white sorghum price



Note: 1. No price data was collected in the western Sudanian zone during early 1993 due to civil unrest.
2. Towns included are Pala, Moundou, Doba, and Sarh.
Source: GOC/ONC

Figure 10. Chad: Sahelian zone sheep to millet terms of trade



Note: Average of 33 markets.
Source: SAP/Chad

even less favorable to pastoralists in the coming months, further increasing their vulnerability to famine.

The government is heavily in arrears for payment of civil servant salaries. The loss of salary shifts this group from slightly to moderately vulnerable.

VULNERABILITY UPDATE

The 1993/94 season began with no extremely vulnerable population groups and few groups falling into moderate or highly vulnerable classifications. Grain distributions reduced vulnerability in affected areas of Kanem, Ouaddai, Batha, Biltine, and Logone Oriental prefectures.

The poor 1993/94 harvest has created large groups of people affected by varying degrees of vulnerability to famine, especially among the farming populations and agropastoralists in the Sahelian zone. An emergency distribution of 485 MT of food has begun in Batha Prefecture with cereal from prepositioned food security stocks. Indicators of increased vulnerability include crop failure, absence of cereal reserves, migration of families and whole village populations from areas without food and drinking water, drying of deep wells, and earlier than usual reliance on survival strategies including, harvesting wild plants and uncovering termite mounds to recover buried cereal stores. In addition, target areas for migration in the southern part of Sahelian and Sudanian zones will grow more vulnerable due to the increased demand for marginal food production and stocks.

In their October analysis of vulnerability in the Sahel, the EC-funded SAP project listed 14 cantons in Batha, Biltine, and

Map 10. Chad: Food Aid Need and Supply

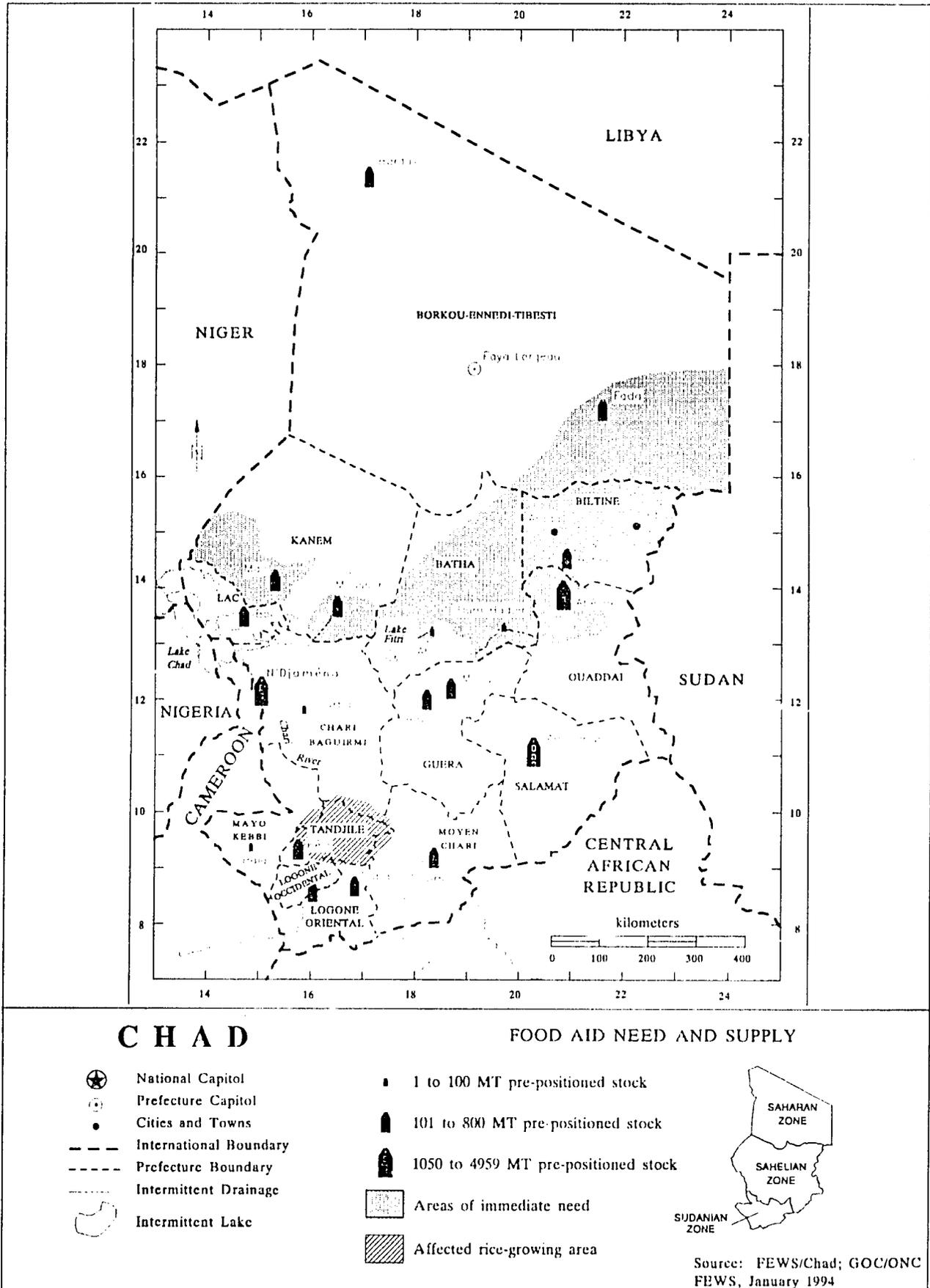


Table 14. Chad: Populations in immediate need of emergency food distribution

Prefecture	Number of people in need	Cereal needs (MT)
Kanem	101,536	6,580
Batha	115,882	7,457
Biltine	65,552	4,248
Ouaddaï	18,185	1,178
B.E.T	11,000	712
Total	312,155	20,175

Note: Cereal needs based on 60 percent of 141 kg cereal/person/year for nine months.

Source: Government of Chad, Ministry of Agriculture and Environment

Kanem prefectures as being in "food difficulty," which corresponds roughly to the FEWS highly vulnerable category. Many additional cantons in six prefectures were classified as experiencing "economic difficulty," or moderate vulnerability in FEWS terms. SAP estimated 1994 Sahelian emergency food needs at 11,000 MT. In mid-December, the Government of Chad (GOC) issued an urgent appeal for emergency food aid. In this appeal, 312,000 people in four Sahelian prefectures and one Saharan prefecture have been targeted as extremely vulnerable and in need of 20,175 MT of cereal for nine months (see Map 8 and Table 14). Another 553,000 people in four Sudanian prefectures, seven Sahelian prefectures and one Saharan prefecture were designated as highly vulnerable by the GOC and would require distribution of about 16,000 MT of cereal for four months of the 1994 hungry period, June through September (see Table 15).

The GOC estimates large numbers of people falling into the extremely vulnerable category that SAP would classify as highly or moderately vulnerable. In addition, the GOC analysis puts one sub-region (11,000 people) of the Saharan zone into the extremely vulnerable category. A critical implication of the GOC analysis is that food distribution requirements of 36,000 MT would exceed the national food security stock and require importation of emergency cereal to meet 1994 food needs. The security stock, soon to be increased from 13,000 MT to 18,000 MT, would be sufficient to meet food distribution needs under the SAP scenario.

An evaluation team is currently assessing the food situation in the four southwestern prefectures to ascertain the degree of vulnerability and the numbers of people who will require food aid. Wild tuber harvest in these areas is beginning six or seven months earlier than the traditional harvest during the lean period. GOC is expected to provide more details concerning the vulnerability and numbers of people requiring food aid in

Table 15. Chad: Population in need of food distribution during the four month hungry period

Prefecture	Number of people in need	Cereal needs (MT)
Saharan zone		
B.E.T	7,800	225
Sahelian zone		
Kanem	58,904	1,696
Batha	32,231	928
Ouaddaï	58,094	1,673
Chari-Baguirmi	52,363	1,508
Guera	38,455	1,108
Lac	21,352	615
Biltine	19,115	551
Total	288,313	8,303
Sudanian zone		
Tandjilé	13,800	3,974
Logone Occidental	4,000	1,152
Logone Oriental	7,000	202
Mayo-Kebbi	79,936	2,302
Total	264,930	7,630
Zonal totals	553,243	15,933

Note: 1. Cereal needs based on 141 kg cereal/person/year for four months.

Source: Government of Chad, Ministry of Agriculture and Environment

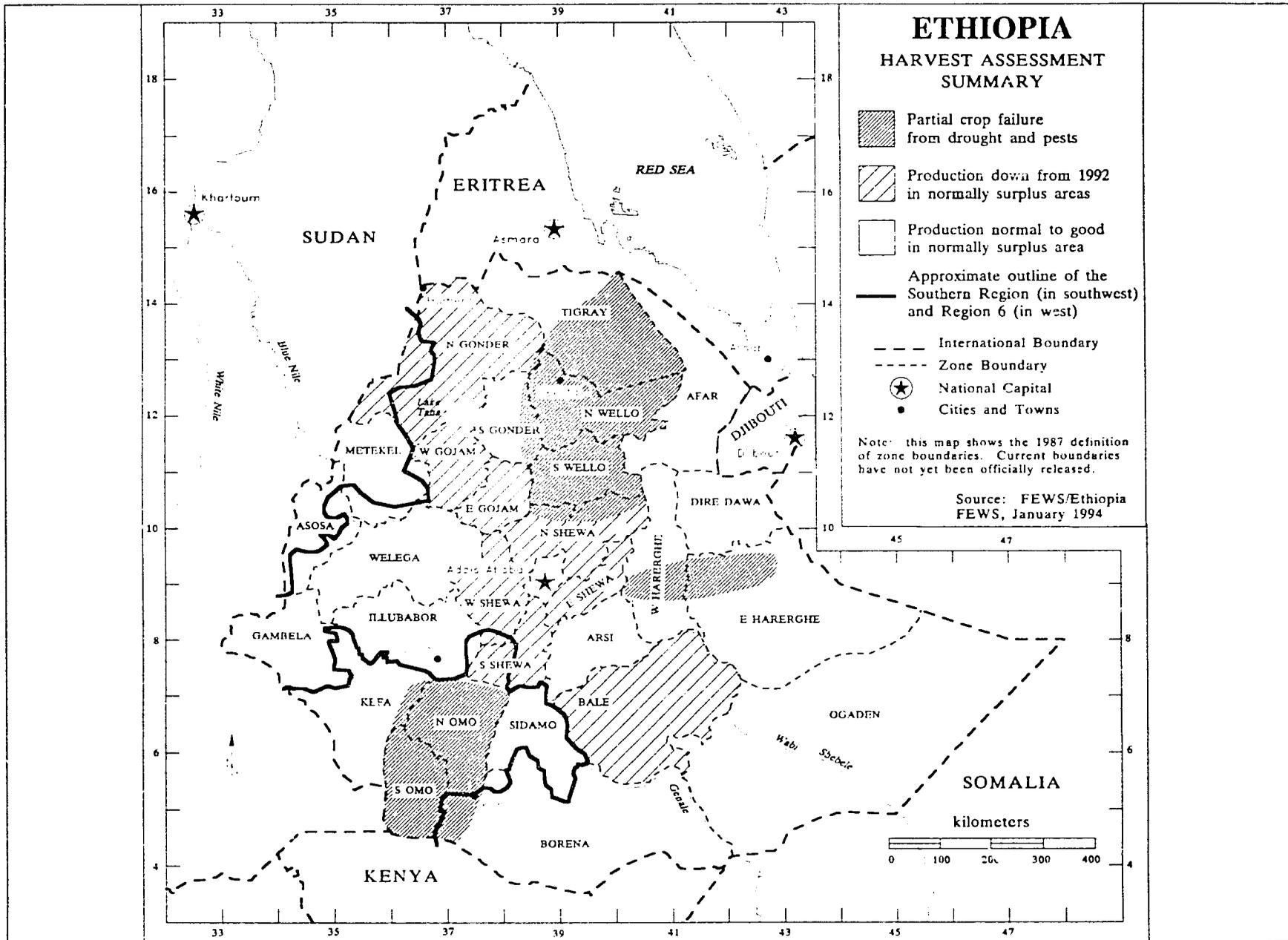
B.E.T. SAP evaluation missions have just returned from Lac, Kanem, Batha, and Biltine prefectures. Their findings may lead to reclassification of moderately vulnerable cantons to highly vulnerable.

CONCLUSION

Poor cereal harvests and poor pasture conditions across much of the Sahelian zone have left large numbers of people vulnerable to famine. People in the southwestern prefectures have become more vulnerable following a failed rice crop and low sorghum yields. The degree of vulnerability and required food aid is under evaluation in all affected prefectures. The GOC is requesting 36,000 MT of cereal to meet 1994 food needs but 18,000 MT of security stocks may prove sufficient. Cereal importation will be necessary to replenish and maintain emergency food stocks.

Map 11. Ethiopia: Harvest Assessment Summary

ETHIOPIA



ETHIOPIA

One Million Metric Ton Food Gap and Regional Emergency Needs Despite Fair Overall Harvest

Based on a report released by USAID/Ethiopia on December 17, 1993

SUMMARY

The 1993 meher (main) season has, at a national level, been disappointing but not disastrous. Production is down from last year in all the surplus areas except Arsi. The center, west, and northwest areas of the country have been wet, hampering cultivation and causing waterlogging. A 25 percent decline in fertilizer use compared to last year has affected production in the surplus production areas.

In the less productive regions of the northeast, east, and far south, drought has been the major cause of crop losses. Coarse grains (maize and sorghum), the major staple crops of the poor, have been badly damaged by mid-season dry spells. Many areas experienced unusually high levels of pest infestation due to weather conditions conducive to breeding. Control measures for nonmigratory pests have been inadequate.

The United Nations Food and Agriculture Organization and the World Food Programme (FAO/WFP) estimate the total meher harvest of cereals and pulses at 6,938,000 metric tons (MT), about six percent less than last year's record. Factoring in population growth, this implies a drop in per capita production from 123 to 115 kg, and an import requirement for 1994 of slightly over one million MT.

Regionally, there are severe crop failures and resulting emergency food needs in Wello, southern and eastern Tigray, Harerghe, Omo and eastern S. Gonder. About 3 million people are estimated to be in need of emergency food aid during 1994 due to such natural causes, and a further 1.4 million for "man-made" reasons (the displaced, returnees and ex-soldiers). The RRC (Relief and Rehabilitation Commission) has provisionally estimated the emergency food need of these groups at 567,000 MT; subtracting stocks and carryover, they are requesting 450,000 MT.

Beyond these emergency requirements, there is an urgent need to focus on long-term solutions to the structural food gap.

FACTORS AFFECTING FOOD AVAILABILITY

Harvest Outcome

Meher (main) harvest

Farmers suffered this year from poorly timed occurrences of too much rain, and too little rain. Drought stress in northern

and eastern Ethiopia and waterlogging in the west have damaged crops. Severe drought stress caused a total harvest failure in some areas (see Map 11).

Exceptionally heavy weed and pest infestations resulting from these weather conditions further depressed yields and highlighted the extremely poor access to herbicides and pesticides. Migratory pests (including locusts and army worms) were effectively controlled by the Ministry of Agriculture (MOA), but chemical control for nonmigratory pests such as stalk borer and grasshoppers was either unavailable or unaffordable. General herbicide use was negligible. Significant quantities of crops are thought to have been lost to these highly destructive pests.

Fertilizer use was 25 percent lower than last year--this is particularly disappointing as a significant rise had been envisaged. Fertilizer purchases are mostly limited to more profitable, high production areas and are out of reach for the majority of subsistence farmers. This factor may account for about 27 percent of the six percent reduction from 1992/93 harvest production levels.¹

Improved security in most areas allowed increases in the total area under agriculture. FAO reports that considerable tracts of new land were cultivated in the west, and areas planted with sorghum and maize increased in the west and the lowlands of the center and south. Second, and late plantings were successful in many areas due to the unusually late extension of the rainy season, which further increased the total area cultivated. While this compensates to some extent for the very poor yields, production is still expected to be below 1992/93 harvest production.

Summary by crop

Maize, the most important staple grain crop, suffered most from alternate excesses and shortages of rain. The Ethiopian Grain Trade Enterprise (EGTE, formerly the Agricultural Marketing Corporation) estimates national maize production will be 34 percent lower than in 1992/93. Drought has been the main problem in Arsi, the Southern Region, Harerghe, E. Shewa, and parts of Wello and Tigray, and maize failed completely in parts of S. Shewa, N. Wello and Harerghe. Maize crops in the western production areas (Jima, Illubabor, Welega, and E. Gojam) suffered from continuous rain between the *belg* (sec-

1. At a return of 5:1, FAO estimates that the 30,000 MT drop in fertilizer use represents 150,000 MT of grain production foregone; this is about 27 percent of the gap between FAO's estimates of the 1992/93 and 1993/94 *meher* harvests.

ondary) and *kiremt* (main rains—during *meher* season) seasons which seriously hampered land preparation and caused waterlogging of plants (yellowing of plants, and small graincobs). The reduction in fertilizer use also affected maize yields in surplus areas. Hail damaged some crops in the west.

Sorghum is generally more drought resistant, but has been subjected to similar stresses. The aggregate national production is higher than maize and 16 percent higher than the 1992/93 crop, according to EGTE estimates. However, there have been significant local losses in Harerghe and the northeast, due to mid-season drought and pests (especially the parasitic weed *striga* and stalk borers).

Conditions for barley and wheat, which are grown at higher altitudes, have been better. Excess rain and stem rust damaged crops in Arsi and the lower lying parts of Bale. Stem rust attacks were limited because it generally attacked crops late in the growing cycle. Wheat is mainly an urban consumption crop, whereas barley is mainly consumed within farming areas (home consumption and local marketing).

Teff is primarily an urban consumption commodity and a rural cash crop. It is the only major grain crop which is generally in good condition, except in areas where virtually all crops failed (N. Wello, eastern and southern Tigray). The main *teff* producing areas are Gojam and parts of Shewa. Planted in June or July the *teff* crop generally missed the worst effects of the mid-season drought. In many areas, late-planted and short-cycle *teff* benefited from the extended season rains in October.

Grasshopper damage to *teff* crops in Arsi and Bale is not expected to have a significant impact on production. Very late rains during harvesting in the west and center of the country have caused some loss in quantity and quality. Losses may increase significantly if December rains in Gojam have been as heavy as recent reports suggest.

Millet crops have had an exceptionally good year, but represent a very small proportion of Ethiopia's total cereal production (about three percent this year). Grown in limited low-altitude areas of Gojam, Gonder, and parts of Tigray and Welega, it is used largely for home-brewed beer.

Pulse crops make up around nine percent of total food production by tonnage and are significant cash crops in most growing areas. This year, poor yields were a result of erratic rainfall patterns. In the highland (*dega*) areas, horsebeans and field peas have suffered from excess rain and heavy weed growth. The chickpea harvest has not yet been assessed. In the lowlands, last year's good prices prompted farmers to plant greater areas of haricot beans this year, but excess rains followed by drought stress during the flowering and seeding stages have produced poor yields. Despite the larger area, EGTE estimates the total pulse harvest to be about 10 percent lower than the 1992/93 harvest.

Non-grain food production is impossible to quantify on the basis of available data. Field observations from FAO, MOA, and elsewhere suggest that the important sweet potato crop has been badly damaged by weevils in the south, particularly Omo and Konso. No assessment is available of this year's production of *ensete* (false banana – a major staple in the southwest).

Area Summaries

The high-production areas of Gonder, Gojam, Shewa, Arsi, and Bale account for nearly 75 percent of national grain production. Only Arsi is expected to have a good harvest, possibly exceeding the 1992/93 production.

Areas of high production

Arsi — Rainfall was plentiful and fertilizer use has been about normal. The drought in lower-lying areas is unlikely to have a significant impact on the area's overall production. Arsi remains the largest surplus production area.

Bale — Wheat production is expected to be somewhat lower than 1992/93. Crops were damaged by excessive rain and insecticide use was lower than last year due to price increases.

Gonder — Production totals in Gonder will be lower than last year. The harvest has been depressed by heavy rains, stalk borer attacks, and weeds. In southeastern S. Gonder a dry spell in July and August, combined with severe grasshopper attacks, depressed maize and sorghum yields.

Gojam — The 1993/94 harvest is expected to come close to last year's despite some exceptionally heavy rainfall and waterlogging. Unusually late rains and residual soil moisture enabled some farmers in W. Gojam to produce second crops of barley and pulses. Fertilizer use in Gojam was about the same as 1992.

Shewa — Crop production is likely to be significantly affected by reduced fertilizer application. Unusually heavy rainfall, causing poor cultivation, waterlogging and stunting of crops affected W. Shewa and northern E. Shewa. Overall, crop production is expected to be well below 1992/93 levels.

In other western areas, almost 10 months of rain resulted in delayed and inadequate land preparation, unmanageable weed growth, and waterlogging. Although there was an increase in area planted (due to the cultivation of new agricultural land, plus second crops of *teff* and pulses), yields have been markedly reduced and production is expected to be lower than in 1992.

Areas of low production

Areas with the worst problems are concentrated in the normally deficit and marginal areas, many of which have had a very poor season.

Northeastern Highlands — Eastern Tigray, N. and S. Wello, and the bordering area of N. Shewa are again facing problems of food availability and access, primarily due to drought induced crop failures. The normally productive Raya and Kobo plain (northeast Wello/ southeast Tigray) has been badly affected.² In eastern and southern Tigray the rains began well but stopped in mid-season. Central and western Tigray fared better, despite some erratic rains and damage by pest and hail.

Overall, the region's harvest has been below 1992/93 lev-

2. This is likely to have a significant impact on the market supply to neighboring areas, rather than the subsistence of Raya and Kobo farmers.

eis. The numbers of people in need of food aid are fewer because failures have been in less densely populated areas (the Relief Society of Tigray (REST) suggests some local purchases in western Tigray may be feasible).

North Wello — North Wello has suffered a major failure of main season crops, with total and near-total crop failures in the lowlands and heavy losses (perhaps 50 percent) in central highland areas. There are already reports of declining nutritional status in the west, towards eastern S. Gonder. The situation is most critical in the northwest (Sekota area, former Wag Awraja), where food supplies are reportedly already running low and people are migrating in search of assistance earlier, and in higher numbers than usual.

South Wello — Satisfactory crop production in some areas.

East and West Harerghe — Increases in area planted have been outweighed by poor rain distribution and pest attacks. In the more productive middle and high altitude zones, main crops benefited from good rains in September and October. Late-planted crops have done well, but mid-season drought has caused heavy crop losses in the more marginal lowlands. Crops in East Harerghe suffered from local losses and depressed yields. In Asebot and Mieso *werechas*, maize has failed completely. Sorghum yields are put at a maximum of 200 kg/ha (about 12 percent of 1992 yields in the same area). Stalk borer and *striga* have caused extensive damage.

Gonder — The lowlands of S. Gonder, towards the border with S. Wello (see Map 11), are chronically drought prone and food insecure. This year has been particularly difficult due to a combination of poorly timed rains (late starting and late ending), hail, and pest attacks (mainly stalk borers and grasshoppers). Tef and finger millet crops have been badly damaged by late heavy rains. Local food shortages are anticipated.

Omo and Konso (Southern Region) — This area has been adversely affected by inadequate rainfall and intense pest infestations. The sweet potato crop has been badly damaged (perhaps halved) by insects. The 1993 *belg* harvest was fairly good in North Omo, but stocks are now depleted and the *meher* harvest will be very poor. The 1994 *belg* harvest will be important as stocks will need to be replenished.

Quantitative Production Estimates

Estimating crop production is exceptionally difficult this year, as adequate data are unavailable. The Ministry of Agriculture's estimate of the previous year's production, normally used as the baseline for the annual FAO/WFP assessment, has not been finalized. The CSA (Central Statistics Authority) is again making no agricultural assessment this year due to the absorption of all its resources in the planned population census. The RRC has made its yearly survey of agricultural conditions, but it does not attempt to quantify production.

Currently, two provisional production estimates are available; the FAO/WFP assessment mission report and the EGTE assessments. The EGTE field assessments were made in October, and the FAO/WFP's in November. Their methodologies are similar, but their conclusions are quite different (see Table 16).

The FAO estimates total gross *meher* production of foodgrains (cereals and pulses) at 6,938,000 MT. This is six percent lower than the 1992/93 record, but above the six-year

post famine average (1985-90), and the second largest harvest among FAO assessments. The EGTE estimate of 5,708,000 MT is 11 percent below its 1992 estimate. The FAO/WFP figures are widely accepted as a basis for planning, and are used in the consumption calculations later in this report. The EGTE estimates are given for comparison. For a more detailed breakdown by crop, see Table 17.

Pasture Conditions

Pasture and water availability have been generally good, with the exceptions of S. Omo, the neighboring edge of Borena, the northern and southern Harerghe lowlands (inadequate rainfall), and Afar (flooding of the Awash River may have severely limited pasture availability). Field reports suggest that this has been a very good season for livestock in most areas, with good reproduction rates. Livestock prices are generally strong compared to last year, and in relation to cereal prices.

The general revival of the pastoral economy will boost the food security of animal-owning groups through the production of animal products such as milk, improved short-term purchasing power in the grain markets, and asset rebuilding.

Current Food Stocks

Steady, low cereal prices (especially of maize, despite the expected production shortfall) are evidence of available commercial stocks from last year's excellent harvest. Experienced observers of the Ethiopian grain markets expect stocks to run low and prices in the major markets to rise during the first quarter of 1994. Traders in some areas do not expect significant price rises before the second half of 1994, while local markets in some of the drought affected areas are already showing price increases.

In *belg* producing areas, which receive a secondary crop from the February-April rains, stocks are reported to be nearing their end even where the main harvest was good (N. Omo).

Government stocks comprise the EFSR (Emergency Food Security Reserve), currently standing at 59,000 MT, and the EGTE stock was forecast to amount to 123,916 MT of foodgrains (plus 2,512 MT of oilseeds) as of December 31, 1993.

In-country food aid stocks are estimated by FAO/WFP at 80,000 MT (total of grains and supplementary foods). Undelivered 1992/93 pledges of 39,000 MT are also included in the FAO/WFP calculation, giving a total food aid carryover to 1994 of 119,000 MT (106,000 MT cereals plus 13,000 MT supplementary foods).

Projected Trade and Aid Supplies

The FAO/WFP team made the following forecasts of commercial trade for 1994:

- Cross-border exports: 45,000 MT of cereals (mainly to Eritrea) plus 20,000 MT of pulses, compared to a total estimate of 35,000 MT in 1993.
- Cross-border imports of 50,000 MT (mainly sorghum from Sudan), around the same level as last year.
- Commercial cereal imports through Assab and Djibouti

Table 16. Ethiopia: Estimates of 1993/94 *meher* grain production

Region		FAO/WFP estimate cereals + pulses = grains (000 MT)			EGTE estimate cereals + pulses = grains (000 MT)		
(1) Tigray	—	298	20	318	441	16	457
(3) Amhara	East Gojam	—	—	—	244	35	279
	West Gojam	—	—	—	448	25	474
	North Gonder	—	—	—	372	60	431
	South Gonder	—	—	—	217	53	289
	North Shewa	—	—	—	271	67	337
	North Wello	—	—	—	144	16	161
	South Wello	—	—	—	178	37	215
	Total	1,932	391	2,323	1,593	293	2,156
(4) Oromiya	Arsi	—	—	—	592	35	627
	Bale	—	—	—	86	4	92
	East Harerghe	—	—	—	72	4	77
	West Harerghe	—	—	—	80	4	84
	Illubabor	—	—	—	138	6	145
	Jima	—	—	—	79	6	85
	East Shewa	—	—	—	359	25	383
	North-West Shewa	—	—	—	181	25	206
	West Shewa	—	—	—	362	7	359
	Borena	—	—	—	14	2	16
	East Welega	—	—	—	195	7	202
	West Welega	—	—	—	8	0	8
	Total	2,940	199	3,139	2,166	124	2,293
(5) Somali	Total	20	0	20	—	—	—
(6) ---	Mateke	40	0	40	31	1	31
	Assossa	—	—	—	6	0	6
	Benshangu	—	—	—	—	—	—
	Total	40	0	40	37	1	38
Southern	Special Weredas	11	1	12	—	—	—
	N. Omo	—	—	—	35	5	40
	S. Omo	—	—	—	1	—	2
	(N. + S. Omo)	81	6	88	—	—	—
	Kefa (old Region?)	103	11	115	—	—	—
	Keficho	—	—	—	84	8	92
	Maji	—	—	—	2	0	2
	Kembata	—	—	—	112	6	118
	Hadlya	—	—	—	91	5	97
	Gurage	439	29	455	212	13	226
	Bench	—	—	—	9	0	9
	Sidama	185	11	195	27	1	27
	Total	820	58	878	573	40	613
(12) Gambella	Total	20	0	20	—	—	—
	State farms	129	—	129	120	—	120
	Settlements	65	15	80	—	—	—
National totals		6,256	682	6,938	5,234	474	5,706

Notes: 1. Totals are from unrounded numbers.

2. — = areas not assessed or not assessed separately.

3. Regional comparisons with previous years are not possible, due to the change in administrative boundaries.

Source: EGTE

should amount to a maximum of 100,000 MT. This is based on the actual level of cereal imports before 1989/90 commercial imports (private and government) for the four years since then have been nil.³

On the basis of the FAO/WFP assessment figures and the government appeal of December 13, 1993, food aid proposals,

to date, include:

- The Commission of the European Union (EC) — 150,000 to 160,000 MT, comprising 50,000 MT of program aid, 80,000 MT of aid through NGO channels (project and relief aid), and a possible 30,000 MT for the EFSR.

3. Samia Zekaria Gutu, "Cereal, Pulse and Oilseed Balance Sheet Analysis for Ethiopia: Update", WFP Ethiopia Discussion Paper No.4, August 1993.

- The WFP currently plans to appeal for a total of 150,000 MT, in addition to 45,000 MT of scheduled project food aid.
- USAID Ethiopia is requesting 115,000 MT of Title II emergency food aid. In addition to its planned regular program of 60,000 MT. Further quantities may be available under Title III, subject to TGE's satisfying the program's conditionality. All food aid figures at this stage are provisional.

FACTORS AFFECTING FOOD ACCESS

Projected Consumption Needs

Table 18 shows the gap, at a national level, between net domestic grain production and consumption needs for 1994. A regional breakdown is not available because there are no reliable population estimates for the new administrative units. The table shows a mean per capita production for the whole country. The geographic distribution of food production and access is very uneven.

Note that the FAO/WFP "status quo" figure of 135 kg of cereals and pulses per person per year represents about 1,460 calories per day. Note also that the grain production deficit shown here (net domestic production minus consumption needs equals 1.063 million MT) is a different calculation from the FAO/WFP import requirement (net total availability including stocks, minus total utilization including nonfood uses equals 1.025 million MT). There is no contradiction between the two figures.

Economic Factors

Cereal prices are fairly low and stable, but are expected to rise during early 1994. Livestock prices are generally strong. Physical access to markets has improved this year in areas such as Harerghe and Borena, due to the more stable security situation. There are also signs of a revival of small-scale private trade in response to peace and liberalization, which should further spread the market supply networks.

Cash crops (both food and nonfood) are important income-generators for many poor farmers. Both coffee and *chat*, the major cash crops in Harerghe, are doing well. Good production is expected for coffee, due to the biennial variations in yields and the boost to prices from the devaluation of the Ethiopian Birr (US\$1 = 6 Birr). Teff, as noted above, has had a generally good year but not in the areas where the income is most needed. Pulses and other cereals are also important income sources, as are oilseeds. Noug and rapeseed (two of the major oilseeds, grown in the west, northwest, and parts of the northeast) were planted over large areas due to good prices last year, but yields are poor because of excessive rain and hail damage. Production of flax, grown mainly in Arsi and Bale, has been fairly normal.

Labor markets appear quite active. Early migration from the drought affected northern farming areas has been reported, but it is difficult to judge the success of these migrations (i.e., the demand for labor). Rural wage rates are reported to be around six Birr (about one USD) per day in Tigray and much lower

Table 17. Ethiopia: Comparison of EGTE 1992/93 and 1993/94 harvest estimates by crop

	1992/93 meher	1993/94 meher	Percent change
Teff	1,108,426	993,793	-10
Wheat	1,052,257	930,661	-12
Barley	1,043,060	1,041,163	0
Sorghum	833,350	970,234	16
Maize	1,550,314	1,018,438	5
Millet	153,072	160,026	-34
State farms	176,922	119,769	-32
Total cereals	5,917,401	5,234,084	-12
Pulses	526,818	473,597	-10

Notes: 1. 1993/94 state farm production includes: maize 72,783 MT; wheat 44,666 MT; sorghum 2,320.

2. Foodgrains = cereals + pulses.

Source: EGTE.

Table 18. Ethiopia: Projected consumption needs and per capita balance

Estimated June 1994 population ¹	54,780,000
FAO estimated 1993/94 harvest (grains) production ²	6,322,000
Estimated per capita production	115 kg
Total Consumption Needs for 1994	
Need based on 135 kg/person ³	7,395,300
Need based on 180 kg/person ⁴	9,860,400
Production deficit using 135 kg/person need	1,063,300
Production deficit using 180 kg/person need	3,538,400

Notes: 1. FAO Special Alert No.242; projected from CSA estimate, at official growth rate of 2.9 percent growth per year.

2. Ibid. Comprises cereal and pulse production estimate for the 1993 main season, plus notional forecast of 500,000 MT for *belg*, minus 15 percent for post-harvest loss, seed and nonfood uses such as brewing (no deduction for animal feed).

3. "Status quo" consumption rate used by FAO/WFP 1993 assessment, *ibid*. Note that the FAO/WFP 1992 assessment used the same consumption figure for grains, but added 22 kg (in cereal equivalent) for consumption of *ensete*, roots, and livestock products, giving a total per capita rate of 157 kg. All figures in this table refer to grains (cereals and pulses) only.

4. Target consumption rate: represents the TGE target of 2,000 kcal per person per day, assuming grains provide 86 percent of consumption.

Source: FEWS/Ethiopia

(three to four Birr) in N. and S. Wello. The availability of urban casual employment is much higher in Tigray than N. and S. Wello. Labor migrants from northern Tigray to Humera in

N. Gonder are apparently finding work, but this is seasonal agricultural labor.

The collection and sale of wood, charcoal, and fodder are common income strategies for the poorest groups in most areas—no unusual levels of supply or price drops in these commodities have so far been reported.

VULNERABILITY UPDATE

The *FEWS 1993 Vulnerability Assessment* identified the resource poor and drought prone farming communities as the largest food-insecure group. These people have been hit hardest by crop failures and production shortfalls. The RRC has provisionally identified just over 3 million farmers and agropastoralists who will need food assistance for part or all of 1994.

A further 1.4 million people classed as food-insecure for “man-made” reasons (i.e. the internally displaced, demobilized soldiers and returnees) will need assistance for part of the year. According to RRC estimates, the total number of people in these vulnerable categories has fallen by nearly 500,000 in the last year.

Although the main harvest and per capita food availability in the country are significantly lower than in 1992/93, the number of people included in the government request for emergency food aid is only slightly higher (see Table 19), and the total quantity of emergency food aid requested is lower than last year. These adjustments are largely due to the progressive reintegration of the displaced and demobilized. These changes also reflect the government’s policy to shift the country gradually away from dependence on emergency food distributions and towards more developmental aid.

Table 19. Ethiopia: RRC assessments of populations needing food aid, 1992–94

People affected	Natural factors	Man-made factors	Total
1992	4,500,000	1,661,385	6,161,385
1993	2,371,158	1,859,929	4,231,087
1994 est.	3,040,000	1,376,000	4,416,000

Source: RRC

The numbers of people affected by natural factors may rise sharply in some areas if the 1994 *belg* harvest fails.

CONCLUSIONS

Substantial emergency food aid is needed to support the populations in drought affected farming areas and to forestall a possible slide towards increased vulnerability.

Displaced and demobilized groups represent an additional, though declining, claim on humanitarian resources. Despite the dramatic regional crop failures this is not a particularly bad year for Ethiopia as a whole, yet there is an estimated 1 million MT grain import requirement, only half of which can be classed as emergency needs. The huge structural deficit, reflecting the continuing failure of agricultural productivity to keep pace with population growth, is strikingly clear this year.

FEWS Vulnerability Index

Level of Vulnerability	Conditions of Vulnerability	Typical Coping Strategies and/or Behaviors	Interventions to Consider
SLIGHTLY VULNERABLE	<p>Maintaining or Accumulating Assets</p> <p>and</p> <p>Maintaining Preferred Production Strategy</p>	<p>Assets/resources/wealth: either accumulating additional assets/resources/wealth or only minimal net change (normal "belt-tightening" or seasonal variations in) assets, resources or wealth over a season/year. i.e., coping to minimize risk.</p> <p>Production Strategy: any changes in production strategy are largely volitional for perceived gain, and not stress related.</p>	Developmental Programs
MODERATELY VULNERABLE	<p>Drawing-down Assets</p> <p>and</p> <p>Maintaining Preferred Production Strategy</p>	<p>Assets/resources/wealth: coping measures include drawing down or liquidating less important assets, husbanding resources, minimizing rate of expenditure of wealth, unseasonable "belt-tightening" (e.g., drawing down food stores, reducing amount of food consumed, sale of goats or sheep).</p> <p>Production Strategy: only minor stress-related change in overall production/income strategy (e.g., minor changes in cropping/planting practices, modest gathering of wild food, inter-household transfers and loans, etc.).</p>	Mitigation and/or Development: Asset Support (release food price stabilization stocks, sell animal fodder at "social prices", community grain bank etc.)
HIGHLY VULNERABLE	<p>Depleting Assets</p> <p>and</p> <p>Disrupting Preferred Production Strategy</p>	<p>Assets/resources/wealth: liquidating the more important investment, but not yet "production," assets (e.g., sale of cattle, sale of bicycle, sale of possessions such as jewelry).</p> <p>Production Strategy: coping measures being used have a significantly costly or disruptive character to the usual/preferred household and individual life-styles, to the environment, etc. (e.g., time-consuming wage labor, selling firewood, farming marginal land, labor migration of young adults, borrowing from merchants at high interest rates).</p>	Mitigation and/or Relief: Income and Asset Support (Food-for-Work, Cash-for Work, etc.)
EXTREMELY VULNERABLE or AT-RISK	<p>Liquidating Means of Production</p> <p>and</p> <p>Abandoning Preferred Production Strategy</p>	<p>Assets/resources/wealth: liquidating "production" resources (e.g., sale of planting seed, hoes, oxen, land, prime breeding animals, whole herds).</p> <p>Production Strategy: Seeking nontraditional sources of income, employment, or production that preclude continuing with preferred/usual ones (e.g., migration of whole families).</p>	Relief and/or Mitigation: Nutrition, Income and Asset Support (food relief, seed packs, etc.)
FAMINE	Destitute	Coping Strategies Exhausted: no significant assets, resources, or wealth; no income/production.	Emergency Relief (food, Shelter, medicine)

Key Terms

At Risk — FEWS Reports use the term “at risk” to describe populations either currently, or in the near future, expected to have insufficient food, or resources to acquire food, to avert a nutritional crisis (i.e., progressive deterioration in health or nutritional condition below the status quo). “At risk” populations require specific intervention to avoid a life-threatening situation. Food needs estimates are sometimes included in FEWS reports. Famines are the culmination of a slow-onsetting process, which can be extremely complex. The food needs of specific “at-risk” populations depend on the point in this process when the problem is identified and the extent of its cumulative impact on the individuals concerned. The amount of food assistance required, from either internal or external sources, depends upon many considerations.

Vulnerability — FEWS Reports use the term “vulnerability” to indicate relative susceptibility to food insecurity of groups of people or areas. In FEWS usage, vulnerability is always characterized by its degree: slight, moderate, high, or extreme. Extreme vulnerability is synonymous with “at risk.” Vulnerability is a dynamic concept that incorporates both chronic and current conditions. Chronic vulnerability involves long-term conditions that predispose a particular group or region to food insecurity. Current vulnerability highlights short-term changes in food security status and their implications. Vulnerability analysis involves three levels of concern: food availability, food access, and food utilization. These levels are linked by a common analytical framework that interprets all relevant information for its food security impact on the diversified income generating possibilities of different groups of households.

ITCZ — The Intertropical Convergence Zone (ITCZ) is equivalent to a meteorological equator; a region of general upward air motion and relatively low surface pressure bounded to the north and south by the northeast and southeast Trade Winds, respectively. The upward motion in the ITCZ forms the rising branch of the meridional Hadley Circulation. The ITCZ moves north and south following the apparent movement of the sun. It is at its most northerly position in the summer months. 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, with local convective activity organized by westward moving “Easterly Waves.”

NDVI — Normalized Difference Vegetation Index (NDVI) images are created at the laboratory of the National Aeronautics and Space Administration (NASA) Global Inventory Modeling and Monitoring System (GIMMS). The images are derived from Global Area Coverage (GAC) imagery (of approximately seven kilometers 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 orbit satellites remotely sense the entire Earth and its atmosphere once each day and once each night, collecting data in five spectral bands. Bands 1 and 2 sense reflected red and infrared wavelengths, respectively, and the remaining three bands sense emitted radiation in three different spectral bands. The NDVI images are created by calculating $\frac{(\text{infrared} - \text{red})}{(\text{infrared} + \text{red})}$ 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.

METEOSAT — METEOSAT-based Rainfall Estimates. FEWS uses estimates of current rainfall based on cold cloud duration as measured by thermal infrared radiometers on the METEOSAT satellite. The estimates are calculated every 10 days by the Department of Meteorology at the University of Reading in the U.K. Cold cloud duration correlates well with thunderstorm generated rainfall and, thus, is suitable for use in the semi-arid Sahel. The method works best on level terrain; hilly areas may produce local enhancements or rain-shadow areas that are not detected. In level areas the method has an accuracy of “rain/no rain” of at least 85 percent (based on a comparison with ground data). At a dekadal (ten-day) scale, 80 percent of rainfall amounts under 60 millimeters (mm) are accurate to plus or minus 10 mm, while rainfall over 60 mm is accurate to plus or minus 20 mm. This accuracy is acceptable for use in the FEWS-monitored region given that the method provides near-real-time coverage for a large area at a resolution of less than 10 kilometers.

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