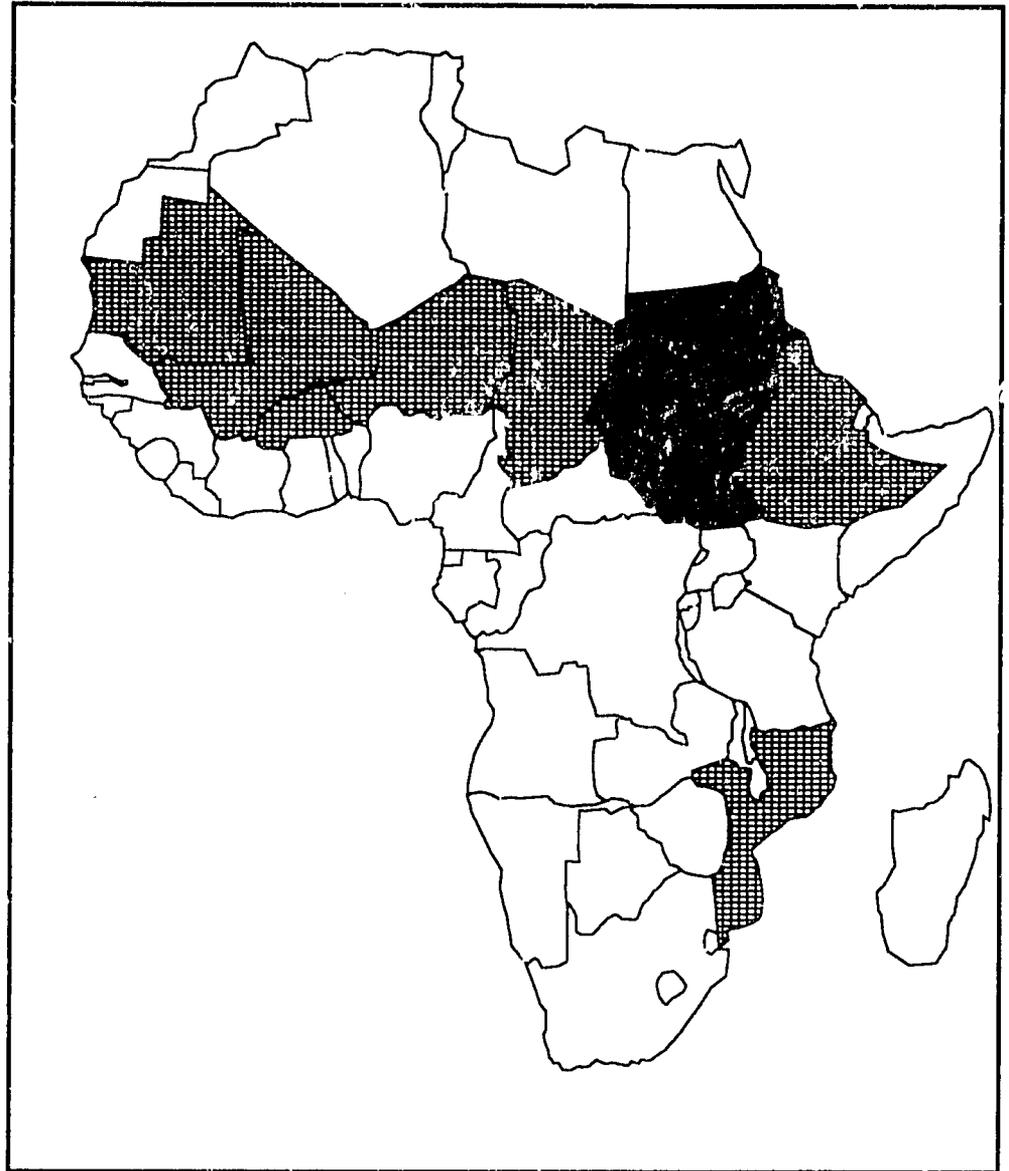


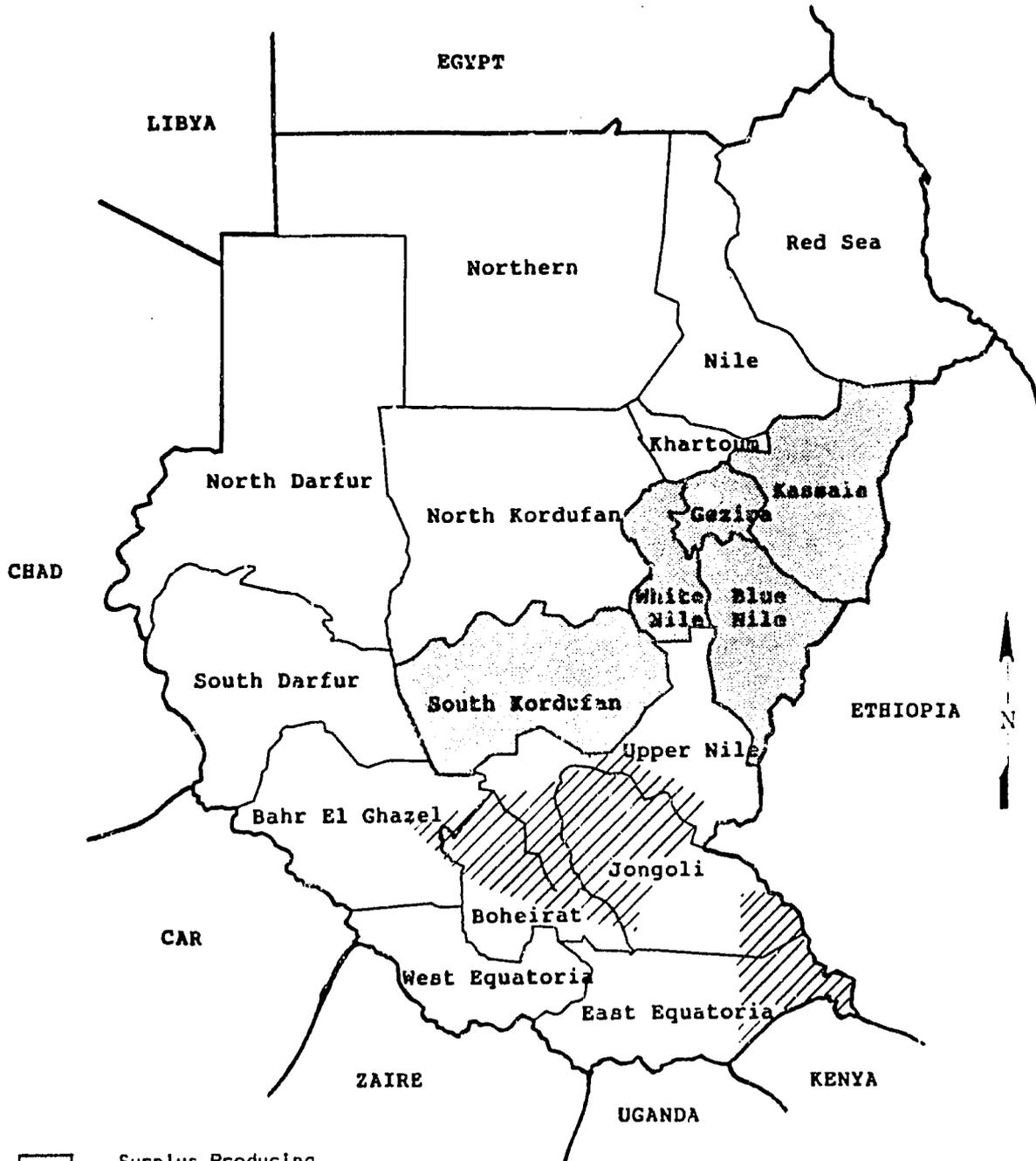
Report Number 6
November 1986

FEWS Country Report SUDAN



Africa Bureau
U.S. Agency
for International
Development

Summary Map



-  Surplus Producing Provinces
-  Population Potentially At-Risk in Southern Sudan

SUDAN

Excellent Harvest Likely; Problems in the South

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

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

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INTRODUCTION

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

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

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

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

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

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

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

SUMMARY

The number of people at-risk, in the Southern Region of Sudan, is in dispute. Estimates range from under 600,000 to 3,000,000. Current agricultural production in Sudan will exceed the country's total food requirements, and could pass last year's record. Contrary to early speculation, the total area under cultivation (at least for four main crops) actually declined only 7.5% from last year's record. Increased yields per hectare of sorghum (+11%) and millet (+32%), however, are projected to bring total production of those crops to last year's levels. Crop yields will be at record levels for the northern half of Sudan, with the exception of southernmost South Kordofan Province and En Nahud district in western North Kordofan Province. Satellite imagery supports the early estimates of excellent production made by the Government of Sudan and of early yield projections made by NOAA. Reports and fears of large scale crop destruction by locusts have not come to fruition. In part this is due to the availability of resources to combat locusts; but it is primarily due to the lack of gregarious breeding by either Migratory or Desert Locusts during the summer.

Issues

- o Continued monitoring of winter breeding of Desert Locusts, along the Red Sea coast and the interior of the Arabian Peninsula, is necessary to assess and plan for any threat that might materialize during the next growing season.
- o In the Southern Region, mobility is restricted during the rainy season. With the onset of the dry season, fighting could extend into rural areas previously isolated from the conflict, displacing rural people and their herds. This could lead to a repetition of the events of 1969-1972, during the previous civil war, when a very large number of people are believed to have died during long treks to, and from, safe havens.

Key Indicators

- o Preliminary government estimates of this year's agricultural production will be refined monthly until July 1987 when final estimates are published. Farmer surveys and surveys using satellite imagery will insure the best measure ever of Sudanese agriculture.

PESTS

The threat of widespread gregarious breeding of Migratory and Desert Locusts, forecast in June by the Food and Agricultural Organization (FAO) did not materialize. Locust plagues are weather driven and, contrary to fears expressed in June, weather in winter breeding areas did not lead to swarms which escaped to breed, during the summer, in the central grasslands of Sudan. Nor have

reports of locust swarms in Eritrea Region of Ethiopia, throughout the summer, implied any major threat to Sudanese agriculture. And in September and October swarms from Eritrea would not be threatening to Sudan as prevailing winds would direct them to the east or south. Grasshopper and locust infestations have been localized and contained by existing resources. While some limited damage has occurred, it was primarily in areas expected to have great surpluses.

The rat population has become worrisome to Sudanese officials. It threatens both standing crops and stored food grains, especially in the western Regions.

RAINFALL AND VEGETATION

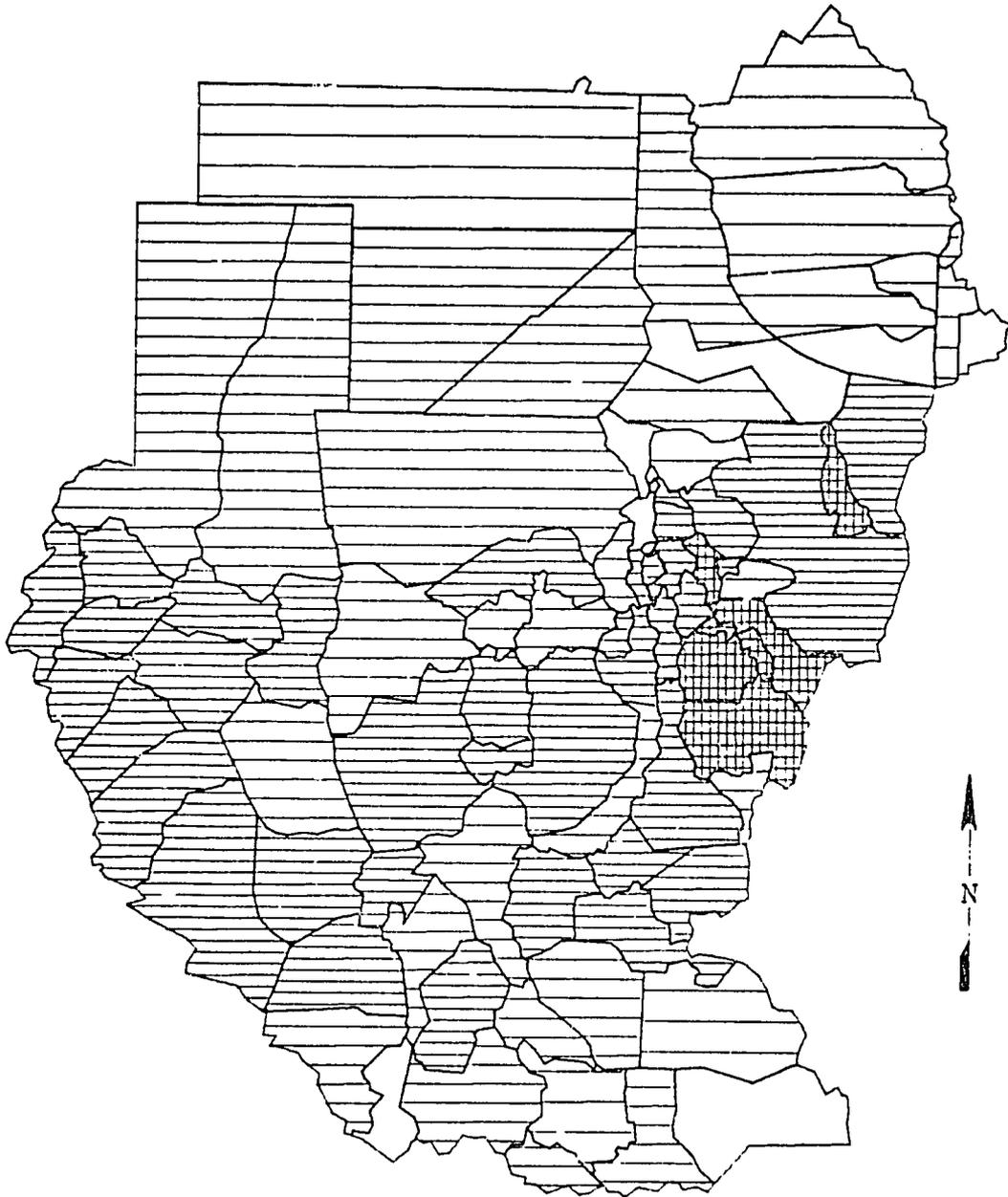
The most recent assessments of rainfall provide a picture of agriculture less optimistic than recent government estimates and satellite imagery. Recent Landsat images (Nov. 1, 1986) of parts of eastern Central Region (from the Gezira down to southern Blue Nile Province) show exceptional crop growth and area under cultivation. Based on this preliminary assessment it is possible that early government estimates of record production are, in fact, conservative.

Average vegetation indices, for each district in the Sudan, have recently been calculated by NASA for the period September 21-October 10, 1986. Every district in Sudan shows a higher average vegetation index compared to the average for the same period over the past five years. (See Map 2) This probably reflects both exceptional yields and the late crop cycle reported this year.

CROP PRODUCTION

If current estimates of agricultural production are correct, then total agricultural production will generate a surplus for the nation and could reach last years record. Based on Ministry of Agriculture (MOA) estimates, the surplus for the country will be 401,000MT. Based on earlier estimates made by NOAA/NESDIS/AISC (based on rainfall estimates) the total national surplus will reach 108,000MT. In Table 1 estimates of regional and provincial production are presented based on NOAA yield estimates, and the summary MOA statistics are appended for comparison. Detailed MOA statistics, by province, have not yet arrived for comparison with NOAA figures.

Vegetation 1986 Vs 5 Year Ave.



Change In Vegetation Indices Compared To A
5 Year Average, Sept. 21-Oct 10

CHANGE

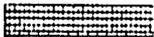
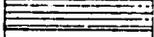
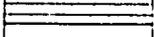
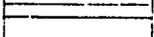
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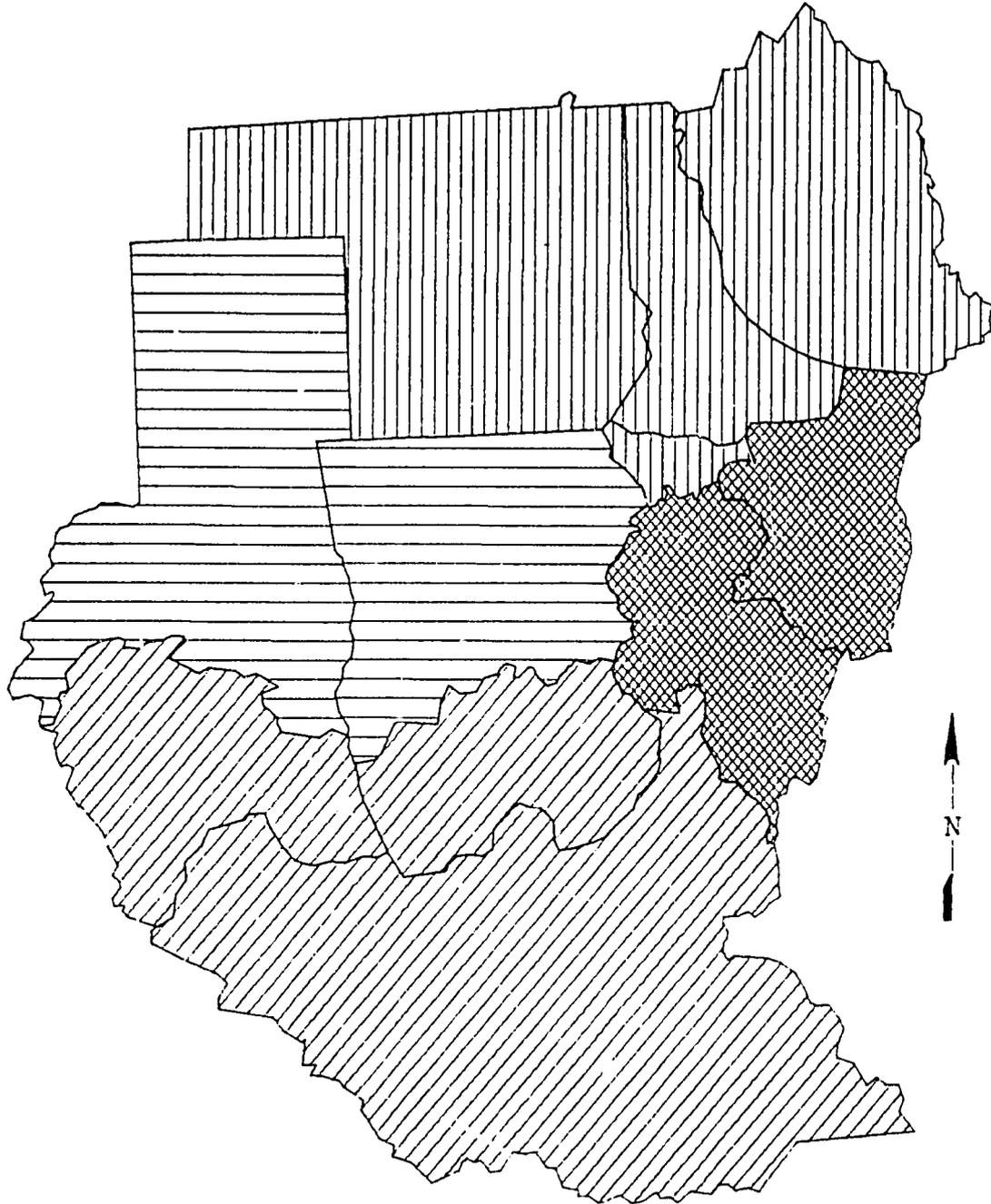
Table 1: Production Estimates for the 1986 Agricultural Season (Crop Year 1986-87), by Province and Region for Major Grains (000's Metric Tons).

Region/ Province	1987 (EST) Population	Cereal Production		Sorghum Caloric Equivalents	
		Gross	Net	Surplus(Deficit) Total	/Capita (kg)
Central Region	4,585,190	1,702	1,356	715	156
Kassala	1,736,797	946	761	511	294
Khartoum	2,179,281	29	23	(295)	(135)
Nile	696,375	28	21	(79)	(113)
Northern	459,828	56	40	(19)	(41)
N. Darfur	1,691,499	103	83	(164)	(97)
N. Kordufan	1,888,561	171	138	(138)	(73)
Red Sea	824,453	23	19	(102)	(123)
S. Darfur	2,061,539	291	235	(66)	(32)
S. Kordufan	1,441,261	314	253	43	30
SUBTOTAL					
Northern Sudan	17,564,784	3,663	2,930	407	23
Southern Region	5,675,835	274	217	(298)	(53)
TOTAL	23,240,619	3,937	3,146	108	5
MOA TOTAL		4,299	3,439	401	17

Sources: NOAA/NESDIS/AISC yield estimates for millet and sorghum; Government of Sudan (GOS) historical production estimates for wheat, maize and rice; 1985 (GOS) area estimates for millet and sorghum; 1983 GOS census results extrapolated to 1987; GOS consumption requirements by region; crop specific seed, post-harvest loss factors, and caloric values developed by ABT Associates. MOA estimates from Oct. 16, 1986 "Situation and Outlook".

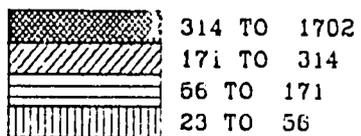
Given the limited grain movements that take place between the north and the south, the surplus available in the northern half of the country could reach as high as 699,000MT. Based on NOAA's preliminary yield results, however, TABLE 1 projects a surplus of 407,000MT for northern Sudan and a surplus of 108,000MT, if the Southern Region is included. (See Maps 3,4 and 5)

1986 Crop Production (Est.)

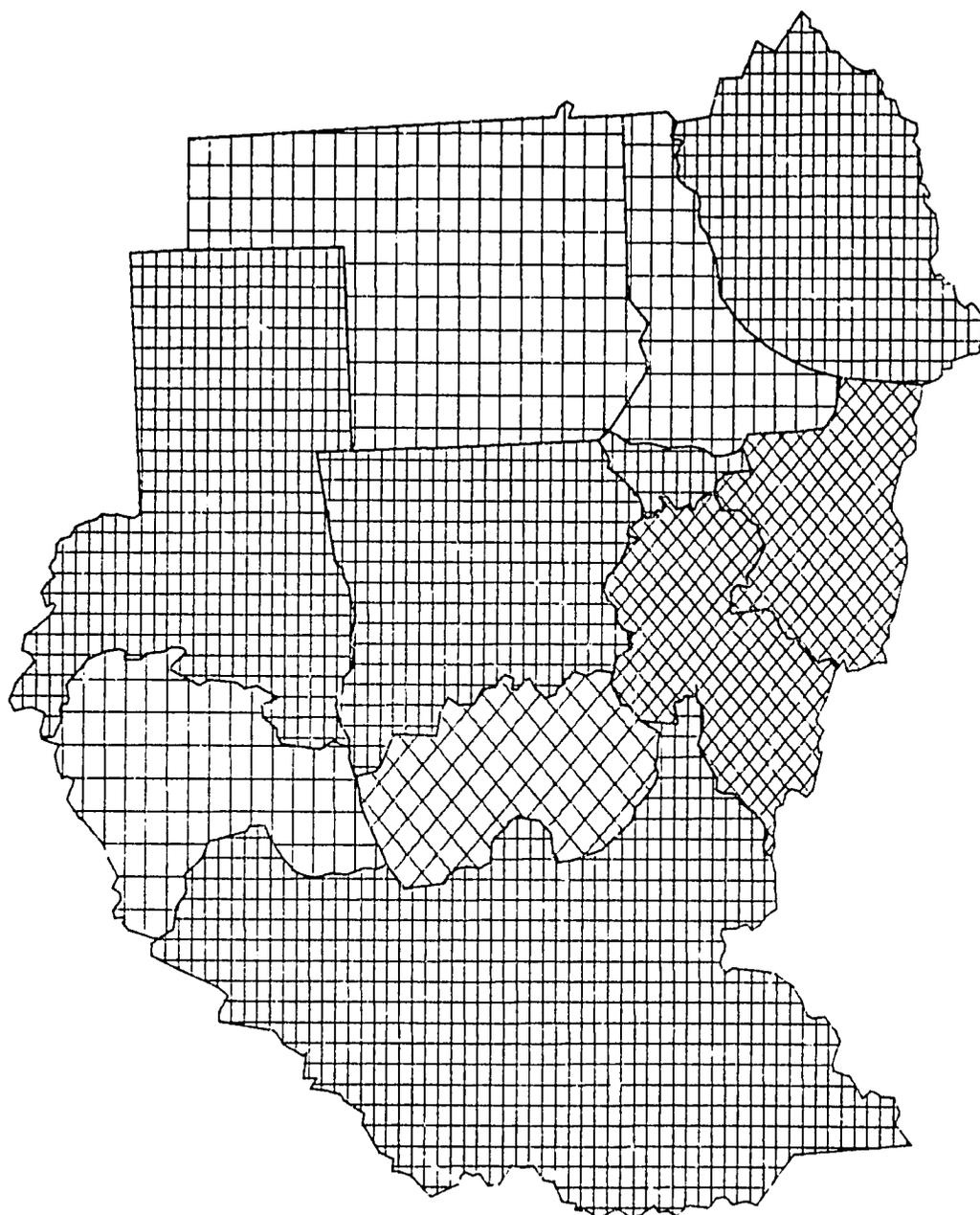


Estimated 1986 Main Season Production Of Food
Grains (Sorghum Equivalents)

000'S METRIC TONS

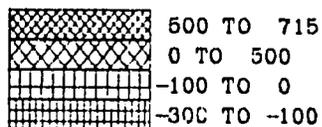


Regional Surplus/Deficits

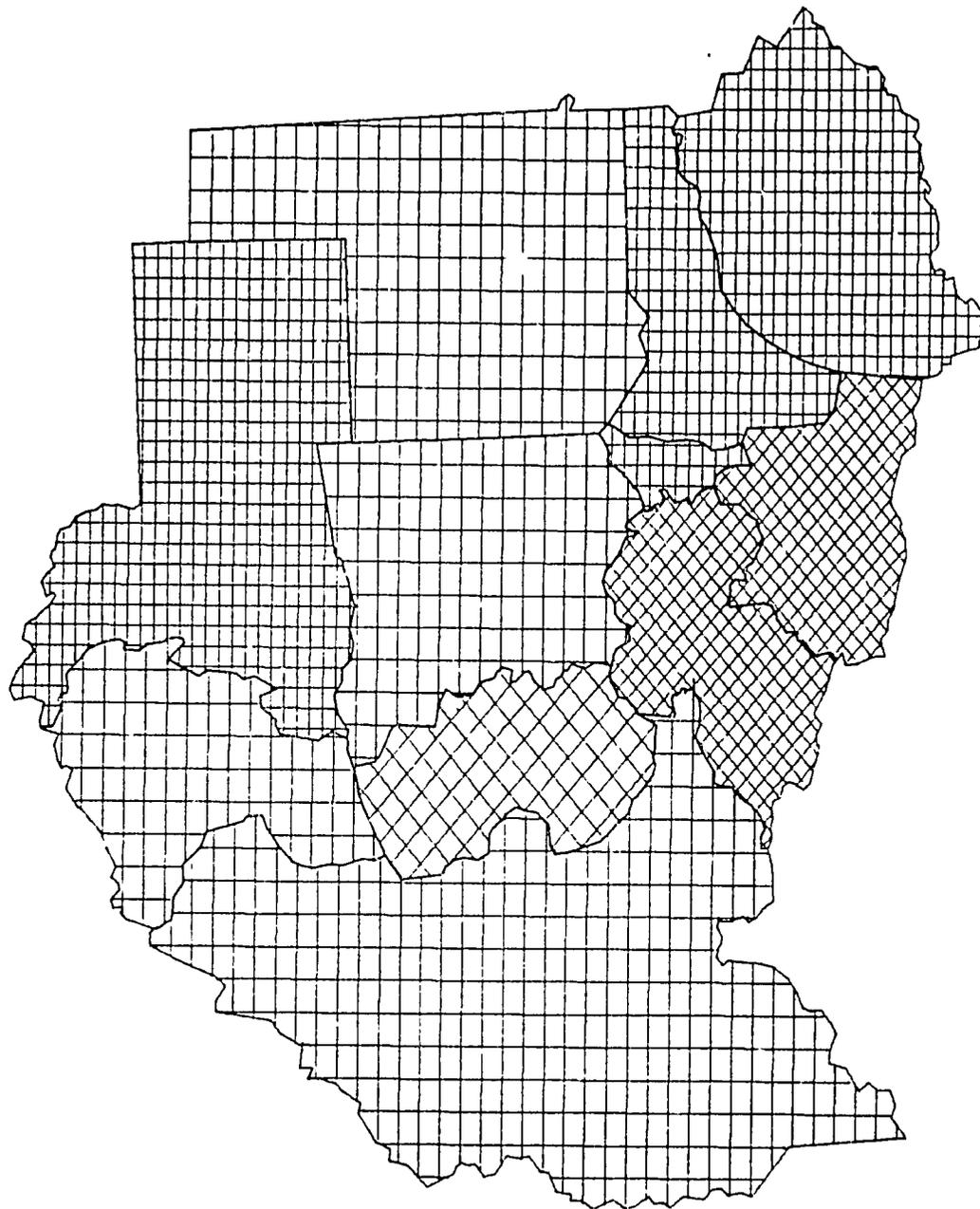


Estimated Regional Surpluses Or Deficits From The 1986 Harvest

000'S METRIC TONS

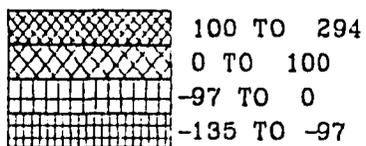


Per Capita Grain Surpluses



Estimated Per Capita Surpluses Of Deficits, By
Region, From The 1986 Harvest

000'S METRIC TONS



Regional or provincial surpluses in northern Sudan do not guarantee that those populations have access to grain supplies. Indeed, even in those areas having the greatest surpluses there will be people who require food assistance. This was reflected in the high levels of undernutrition found in all provinces by SERISS (see Population At-Risk).

PEOPLE AT-RISK

The population at-risk, next year in Sudan, is only partly a consequence of residual effects of the 1984-85 drought. While 1986 agricultural production should reach last year's record, no appreciable decline in malnutrition, from that found during 1986, is expected. Even with massive food distribution programs, childhood malnutrition is at high levels throughout the country.

Analysis now being performed, on the socioeconomic data collected during the May-June Sudan Emergency Recovery Information and Surveillance System (SERISS) quarterly childhood nutrition study, should help identify the risk factors and structural determinates of hunger in Sudan. In northern Sudan, childhood malnutrition was at an estimated level of 12% (below 80% of a weight/height standard), even with the distribution this year of 313,200MT of food aid in areas of greatest need. Two to three percent would be acceptable. For example, in Ethiopia, after an equivalent food aid program, childhood malnutrition in the worst affected region declined to about four percent, an excellent result.

The number of people at-risk in northern Sudan during 1986 was estimated by donors during the year at 3,087,000. Given the relatively high levels of childhood malnutrition found in May and June (while emergency food aid was being distributed and after last year's record harvest) there is no reason this number should decline in 1987. It is clear that this childhood malnutrition is not primarily an emergency situation but a chronic condition due to the structures in Sudanese society.

Southern Region

The number of people nutritionally at-risk in rural southern Sudan is variously estimated to range between 2,000,000 and 3,000,000. FEWS Report #4 was able to identify only 561,000 people at-risk including approximately 250,000 displaced people in northern Sudan and 105,000 refugees in Ethiopia (since increased to about 130,000).

A common rule of thumb used by relief organizations to estimate food need, where lack of data precludes analysis, predicts a possible worst case scenario of 443,000

people requiring 100% assistance (80,000 Metric Tons), 886,000 people requiring 50% assistance (80,000 Metric Tons), and 1,772,000 people requiring 25% assistance (80,000 Metric Tons). If this were the case, 240,000 Metric Tons of food aid could adequately provide the needs of 3,100,000 people at-risk--assuming that aid is distributed in an optimal manner. This can be considered an upper limit on the number of people at-risk out of a total population of 5.6 million in the Southern Region.

There are 130,000 Southern Sudanese who are refugees in Ethiopia and approximately 250,000 who are displaced to the northern half of Sudan (although off the cuff estimates have been made of twice this number settled in Khartoum alone). These people are part of any estimate of people nutritionally at-risk.

Current information on food availability in the countryside is limited by the security situation and the lack of historical baseline data on both food production and population. But a number of risk factors and reports point to the potential for large numbers of people to become at-risk, primarily due to poor security and drought.

A recent U. S. newspaper report from Africa points out that relief organizations may have overstated the nutritional problems in the south. In Wau, a city often pointed to as being in a precarious status, the situation is reported as not as bleak as previously painted. The primary problem is high food prices, not food availability. For rural southern Sudan, the estimates of people at-risk by relief organizations, it is reported, were made using the kind of rule of thumb mentioned above.

There were reasons to believe there might be large numbers of people at-risk. Poor rainfall in May, August and September 1986 was said to have reduced potential early season crop yields in parts of southern Sudan by up to 75%. Warfare, general anarchy, and the rainy season, have restricted the movements of commodities and livestock, and the ability of people to plant, cultivate and harvest. There has been a lack of security for rural people and there were reports of the confiscation of on-farm food stocks and animals by the contending parties. In the absence of warfare, however, it is unlikely that the early season rainfall deficit would have provoked large estimates of people at-risk due to the existence of on-farm stocks and large livestock resources.

There are two areas where warfare, a potential reduction in crop yields, and population size could combine to give

rise to large populations at-risk. (See Summary Map) One of these is in the southeast corner of the region where the ICRC operates the Nasua feeding center. Approximately 100,000 people are believed at-risk in this area.

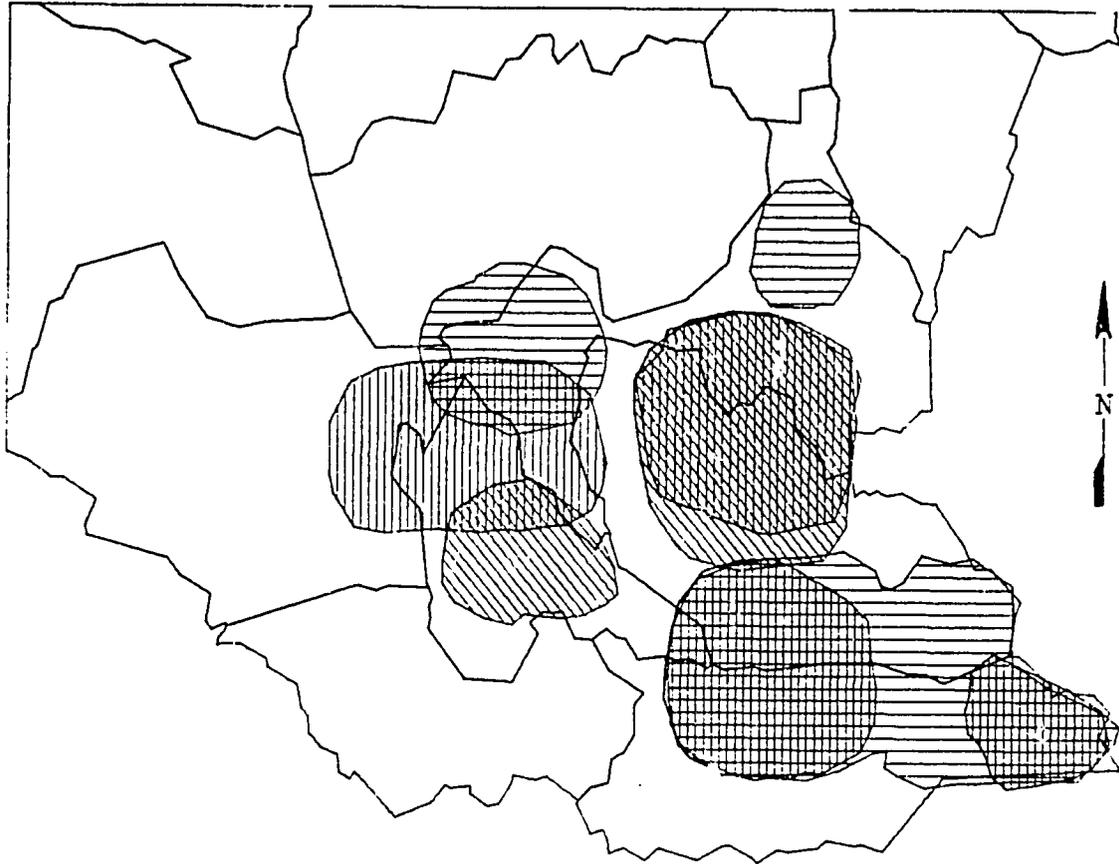
A larger area is potentially at-risk if warfare extends there during the dry season, which is just beginning. Up to three million rural people live a primarily semi-pastoralist existence in a roughly triangular area in the center of the Southern Region (see Summary Map). During the rainy season, also the time of greatest nutritional stress, most of these people farm and keep their herds at their homesteads. During the dry season their herds are combined and dispersed to other areas for grazing. Crop harvests are usually sold, with people's grain requirements then purchased during the rest of the season. Open warfare during the dry season could lead to the abandonment of homesteads and migration of people with their herds. Herds would be moved away from traditional grazing areas and people would have limited access to grain supplies for purchase. A situation could arise that replicates the large scale movements that occurred in 1969-72 during the last civil war when large numbers of people died enroute to and from safe havens.

Great reductions in potential crop production were forecast in June by NOAA/NESDIS/AISC, due to poor rainfall in May and June, for Upper Nile, eastern Bahr El Ghazel, Jongoli, and Eastern Equatoria Provinces. Poor rainfall in Eastern Equatoria, Upper Nile, and eastern Bahr El Ghazel Provinces during August and September mitigated against any recovery in at least those areas with earlier rainfall deficits. (See Map 6)

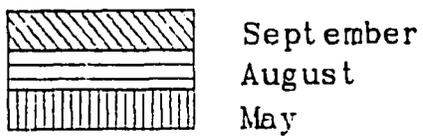
Reports of churchmen received in June supported the satellite assessment by predicting crop losses of 75% in Upper Nile Province, 75% in eastern Bahr El Ghazel Province, and 25% in Eastern Equatoria Province. There is no reason to accept these figures as final, for replantings could have regained some of the ground lost early in the season. Nonetheless, continuing moisture stress as revealed by the NOAA analysis seems to insure a significant loss of production.

Last year (1985) net grain production in southern Sudan was estimated (based on limited data) at 238,000 Metric Tons. The Sudanese government estimates normal consumption of grains in the Southern Region at 91 kg/person, leaving a shortfall in the Region's production of 284,000MT. Root crops, wild foods, livestock, and food stocks may have substituted for part of this shortfall. The drought of 1984 also affected Southern Sudan, to an

Southern Sudan Crop Stress



Areas Of Limited Rainfall, Or Areas Showing
Vegetation Stress On Satellite Images.



unknown extent, although satellite images show vegetation that year to be less than both 1985 and 1986. It is therefore likely that the rural population has limited grain stocks due to the drought in 1984, and the short-fall in production in 1985. Net grain production in southern Sudan this year will probably fall below that estimated above, based on the limited current and historical information available.

The Provinces of Jongoli and Upper Nile have been characterized as being subject to "endemic famine" as seasonal hunger, peaking now at the end of the rainy season, is the rule for the pastoral people in the area.

Transportation of commodities is limited. All transport links are subject to attack. Normal food movements into food deficit areas are interdicted. Barge traffic on the White Nile is rare and subject to attack from the riverbanks, although a number of barges departed Renk for Malakal at the end of October. Rail traffic has been non-existent, although the arrival of a train should soon be reported in Aweil, Bahr El Ghazel Province. The limited road network, already degraded by rainfall when the rainy season finally began, is still subject to attacks even with the use of convoys. Recent convoys have successfully reached Juba in Eastern Equatoria Province from Uganda and convoys are expected in Wau from the west via a roundabout route.

The International Committee of the Red Cross (ICRC), in recognition of the rural food situation, has set up one rural refuge just across the Kenyan border in Eastern Equatoria Province. It was set up to serve a population of 3,000 people, but actually serves 30,000 people. The ICRC believes, based on this experience, that the demand for food aid in rural areas is higher than anyone has suggested. Journalists' reports describe the nutritional situation in this camp as "as bad as was seen in Ethiopia during the height of the drought".

Eyewitness accounts of the rural situation after June 1986 are non-existent, partially due to the lack of mobility during the rainy season. Reports prior to June emphasize the displacement of traditional people to other rural areas. Reports, since June, of displaced rural people in cities, probably grossly understates the total number of rural people that have been displaced due to drought and the security situation.

Based on the projected current grain shortfall, and the security situation, an estimate of 2,000,000 people nutritionally at-risk in the area could become reasonable if fighting expands in the countryside during this dry season. This number would require a maximum of 300,000 Metric Tons of food aid grain per year for a nutritionally adequate diet.