

Sudan has the agricultural potential to feed a continent

by Marcia Merry

In terms of physical resources, Sudan ranks high as one of the world's top 10 "natural" breadbasket regions. It is the largest country in Africa, and is strategically located as a cultural bridge between the Arab Middle East and the African continent, and a geographical bridge between Mediterranean and central Africa, along the Nile River system.

Yet, the case of Sudan offers a stark picture of how rich economic development potential has been systematically looted and blocked by foreign powers. Ruled directly by Great Britain from 1898 to 1956, Sudan's economy has not recovered. Since that time the International Monetary Fund (IMF) has subverted economic development, and the flames of civil war, stoked by foreign intelligence interventions from the United States, Britain, Israel, and the United Nations, have thwarted development programs.

In 1990, the government of Gen. Omar Hassan Ahmed El Bashir initiated its "National Economic Salvation Program — 1990-1993," which stated as its chief goal: "reallocation of the meager resources left to achieve the objective of self-dependency, particularly in view of the mounting economic pressure put on the revolution by many external powers through reduced external assistance and suspension of aid flows."

After two years, key parts of this emergency program succeeded to the point that this year Sudan began supplying grain to the World Food Program, and shipping food aid directly to Bosnia, Afghanistan, Zambia, Zimbabwe, and other points of need. By carefully diverting certain limited agricultural inputs, such as irrigated area and fertilizers, away from quick cash crops and into staples, Sudan has achieved a grain surplus. The nation has also, for the first time ever, begun to pump and refine its own oil.

IMF blood money

However, these gains, won through great exertions, are far below the existing potential, because of the dominance of the IMF. On the eve of the Persian Gulf war, in October 1990, when Sudan opposed the positioning of U.S. troops in the Gulf (although it opposed the military entry of Iraq into

Kuwait), the IMF "decertified" Sudan from its membership in that body, and decreed that no foreign entities should offer loans, financing, or assistance of any kind.

When, over the intervening period, Sudan managed to redeploy internal resources to survive, the IMF began insisting on a large monthly payment toward "arrears." As of 1993, the IMF claimed a debt from Sudan of \$1.4 billion, and set arbitrary amounts of monthly payments due. In its most recent move, the IMF cut off Sudan's voting rights.

Throughout Africa, the IMF is forcing 23 nations to follow its economic "restructuring" schemes — the term for looting populations to the point of collapse.

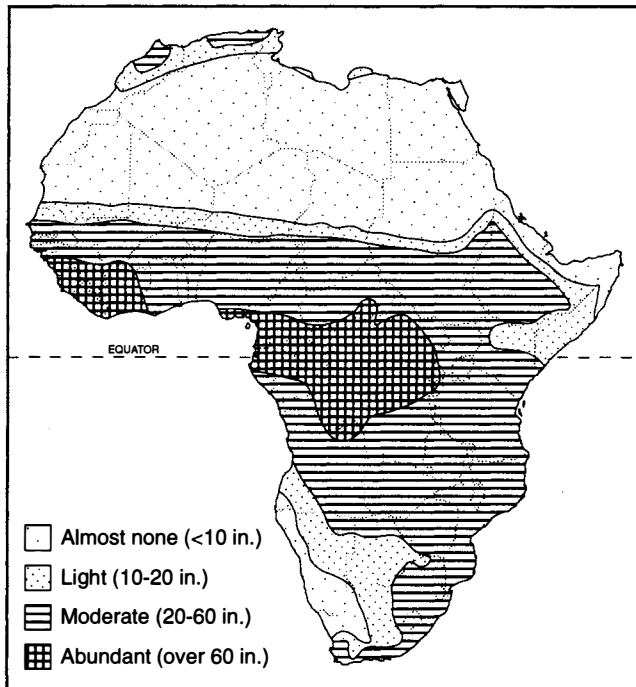
Rich physical endowment

The food shortages in Africa stem not from lack of agricultural potential, nor even from drought, floods, or other weather disasters. The continent boasts some of the world's most outstanding "natural food belts," notably including Sudan. If advanced farming methods and a food reserve policy were put in place, not even such disasters as the "drought of the century," which hit southern and eastern Africa in 1992, could cause such devastation. The decline of food output is the result of deliberate blockage of agriculture infrastructure and technology development.

The prerequisite for expanding output of food is to expand energy inputs per unit area of production, and/or to bring new areas into food production. For example, if the inputs per unit area of sorghum in the 50 nations of sub-Saharan Africa were comparable to the United States, then instead of the current level of 14 million tons of sorghum produced annually in this region of about 17 million hectares, about 63 millions of tons of sorghum could be harvested, which is a 450% increase! (U.S. average yields are 3,400-4,000 kg/HA; African yields are 800-900 kg/HA.)

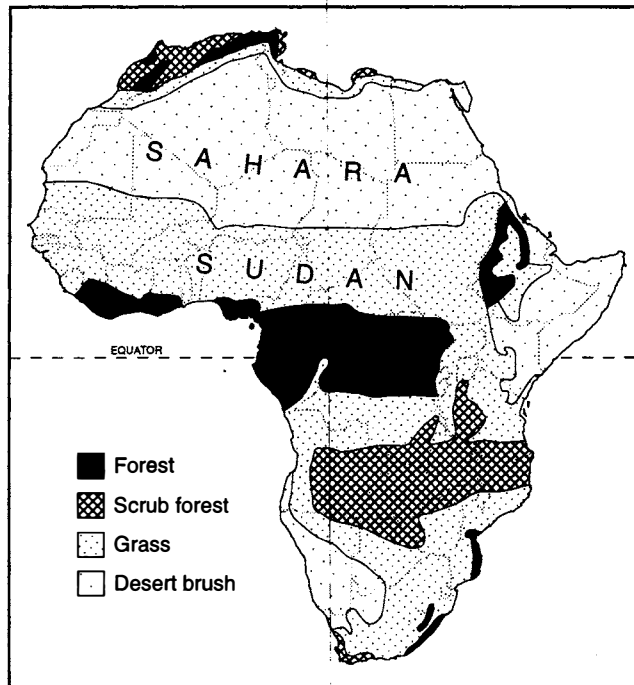
The low yields in Africa directly reflect the low inputs per hectare of fertilizer, pesticides, mechanization, and irrigation. The average fertilizer input per hectare in Africa as of 1990 was about 11 kg/HA, in contrast with a U.S. average of 95 kg/HA. Over the last 20 years, the index of food output

FIGURE 1
Relative rainfall in Africa



Source: George F. Deasy, et al., *The World's Nations*, New York: J.B. Lippincott, 1958.

FIGURE 2
Types of dominant natural vegetation in Africa



Source: George F. Deasy, et al., *The World's Nations*, New York: J.B. Lippincott, 1958.

per capita has fallen sharply from 110 in 1970 (based on 1980 as 100) down to 90 today.

Figures 1 and 2 show selected features of the physical geography of Africa, giving an idea of the vast agricultural potential. There is a notable absence of rugged mountain chains; most of the continent is an upland plateau, with an elevation of 660-3,000 feet in the north, and 3,000-6,000 feet in the south, edged all round by a coastal strip, and no piedmont.

Africa has extensive arable land. Out of a total land area of 2.13 billion hectares, an estimated 970.2 million hectares is potentially useful for agriculture — 172.3 million hectares of arable and permanent cropland, and 797.9 million hectares of permanent pasture. For comparison, South America's total land area is 1.753 billion hectares, with 116.2 million hectares of arable and permanent cropland, and 447.3 million hectares of permanent pasture.

Figure 1 shows the relative amounts of rainfall. The Sahara and the Somali-Ogaden Deserts stand out prominently in the north for "almost no precipitation," along with the Namib Desert in the far southwest. However, beneath much of the Egyptian and Libyan deserts, and also in the western Sahara, there are water deposits of significant quantities, some dating back to riverbeds of 5,000 years ago. Remote sensing from satellite reconnaissance has located many such

potential aquifers. Though much of the water is "fossil water" and is therefore not being replenished by rainfall, still the natural underground reservoirs could have a role in a transition period, probably 50 years or less. In 1992, Libya inaugurated its Great Man-Made River project, which pumps and transports this Saharan water to the coast.

A broad band of moderate rainfall of 20-60 inches sweeps across west Africa, to central Africa and southward. Depending on the terrain and seasonal distribution of the precipitation, these amounts are favorable to a wide variety of rainfed crops.

Finally, this moderate rainfall zone is banded by lighter rainfall along the north, northeast, and southwestern edges, and in the center, shades into the heavy rainfall belt in the heart of Africa — the huge Zaire (Congo) River basin.

Figure 2 shows the dominant natural vegetation types and indicates a profile of agriculture in each regime. Desert brush covers the vast northern Sahara region, the Somali Desert in the Horn, and the Kalahari Desert in southern Africa.

Overall, Africa is drier and has less run-off than North America. In volume, the Zaire River ranks second only to the Amazon River among world rivers, but the continent has less water generally. Africa has 4,184 km³ of total run-off, of which only about 3% is "withdrawn" for various uses, for an average per capita utilization rate of 244 m³ annually. In

contrast, North America has a total run-off of 6,945 km³, with about 10% withdrawn for utilization, giving an average per capita use rate of 1,692 m³. Except for the lower Nile River, few of the other African river systems have been developed to their potential for productive use.

Sudan's potential for food output

Sudan is the largest nation in Africa, with close to 1 million square miles, much of it with gentle terrain. It is equal in size to the United States east of the Mississippi River, which makes it about 120% of the size of the 12-nation European Community.

Extending from just below the Tropic of Cancer, all the way south nearly to the Equator, this span of latitudes allows Sudan great agro-ecological diversity, ranging from wheat and other grains in the north/north-central region, to fruits, vegetables, and fiber crops, through to coffee and tropical products in the south. **Figure 3** shows the agriculture land use zones, and **Table 1** lists the area available for agriculture use, by zone.

Figure 4 shows how the average rainfall bands vary from 25 millimeters a year in the desert north, bordering Egypt, through to 400 mm in central Sudan — similar to the North American prairies — down to 1,100 mm a year in the south, where there are swamps and rain forests.

From south to north, the great Nile River courses through Sudan — **Figure 3** shows its channels. With its tributary system, the Nile is the longest river in the world, running over 4,130 miles from the uplands in the Horn of Africa and central Africa, through Sudan and Egypt, into the Mediterranean Sea. Egypt and Sudan have a water-sharing agreement for the existing river volume, which could itself be increased by at least 10% with dams and canal improvements on the White and Blue Nile feeder systems.

Sudan has at least 200 million acres which could easily be cultivated, about half the cultivated acreage-base of the United States. This size acreage could potentially produce crops sufficient to feed almost all of Africa. Sudan has another 218 million acres suitable for forestry, and 57 million acres for pasture.

However, at present, only 17 million acres out of the potential 200 million arable acres are cultivated — only 8.5% of the potential acreage base. Of these 17 million harvested acres, 12.5 million are rainfed cultivation, and 4.5 million are irrigated. Because annual rainfall is highly variable — up to 40% variation — the annual output of rainfed agriculture is highly variable.

Therefore, the outlines clearly show which agricultural improvements are called for that could result in national food self-sufficiency in staples. Other factors being equal, the biggest drawback is the sparse population, only about 23 million residents and another 2.5 million refugees, in an equivalent area where 150 million live in the United States, or 300 million in Europe.

Below is the summary of agricultural improvements needed:

1) *More irrigated agriculture.* In the short term, production of sorghum and other food staples on irrigated acreage must be increased, by reducing plantings of cotton — whose marketing for export is controlled by world agriculture cartels, which impose unfavorable terms of trade. In the longer term, Sudan needs to expand irrigation acreage for a chosen “balance” between food staple crops and export cash crops. At present, 70% of sorghum (*dura*), the nation's grain staple, is produced in rainfed conditions, which are highly variable.

In 1989, for example, instead of 3 million tons of sorghum, only 2 million tons were produced because the rainfall was 50% below the long-term average. In 1990, Sudan suffered a severe food shortage because of the low rainfall, combined with only cash crops in its Gezira irrigation zone; this continued into 1991.

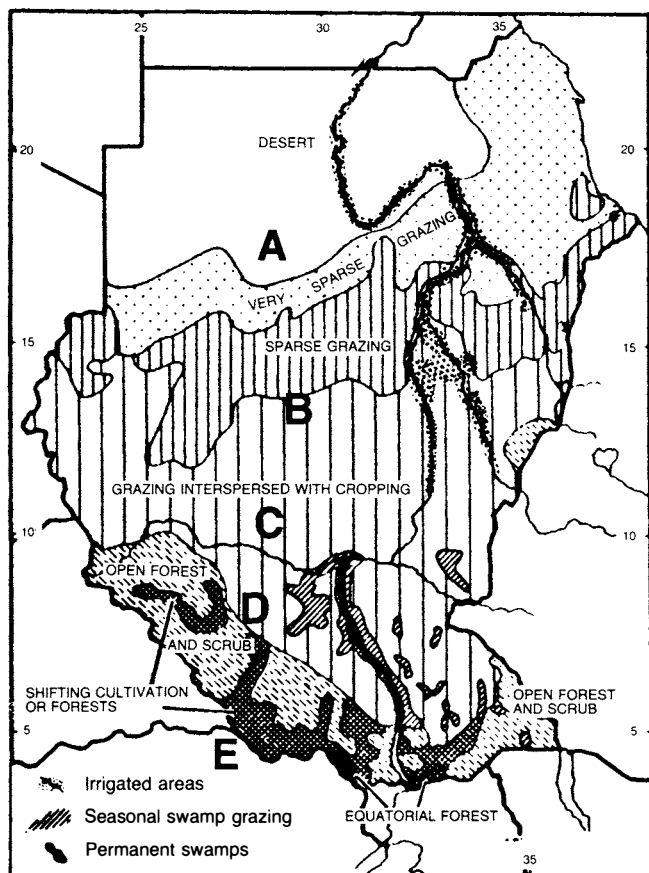
Since then, after the government began a food self-sufficiency program by diversifying the Gezira irrigated area, and expanding planting elsewhere, crop output has climbed and stabilized. By April 1991, close to 800,000 additional tons of grain were produced, celebrated in Khartoum as a “harvest of joy” (see *EIR*'s two-part interview with Ambassador Abdalla Ahmed Abdalla, Feb. 5 and 12, 1993).

In 1992, the sorghum harvest and other crops were so



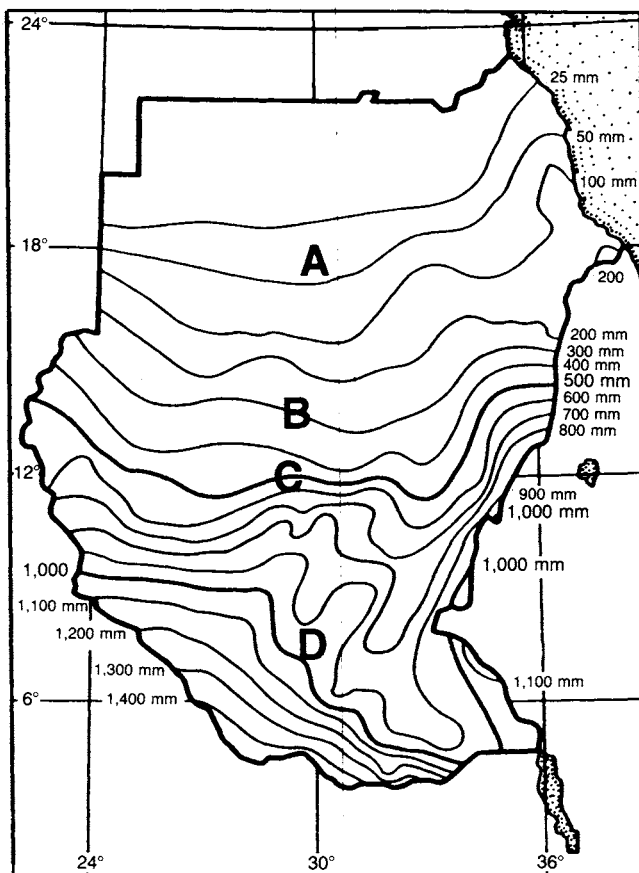
The pineapple harvest. Sudan is one of the world's top 10 “natural” agricultural regions, but its potential has been systematically blocked by foreign powers, since its direct rule by Great Britain in the first half of this century.

FIGURE 3
Sudan's diverse agro-ecology: land use zones



Note: The letters on the maps refer to the ecological zones described in Table 1.

FIGURE 4
Sudan's average annual rainfall



Note: The letters on the maps refer to the ecological zones described in Table 1.

TABLE 1
Sudan's agricultural resource areas in differing ecological zones
 (millions of hectares; estimated by the Sudanese Agriculture Ministry)

| Ecological zone | Total area | Pasture area | Cultivated area | Total area available for agriculture | Forested |
|---|--------------|--------------|-----------------|--------------------------------------|-------------|
| A. Desert | 71.9 | — | — | — | |
| Semidesert | 48.6 | 9.7 | — | — | |
| B. Savanna (sandy, low rainfall: 300-400 millimeters) | 32.4 | 28.6 | 3.8 | — | |
| C. Savanna (higher rainfall: 400-800 mm) | 35.9 | 31.9 | 4 | 32 | |
| Subtotal—Northern Sudan: | 188.8 | 70.2 | 7.8 | 32 | |
| D. Savanna (high rainfall: 800-1,300 mm) | 34 | 22.7 | — | 11.4 | |
| E. Flood area | 24.2 | — | — | — | |
| Mountainous | .6 | — | — | — | |
| Forested | | | | | 24.2 |
| Subtotal—Southern Sudan: | 58.8 | 22.7 | N.A. | 11.4 | 24.2 |
| Total Sudan: | 247.6 | 92.8 | 7.8 | 43.4 | 24.2 |

large that Sudan pledged 100,000 tons of sorghum for 1993 food relief to Somalia — two months' worth of rations for 4 million people. As of the turn of the year, 15,000 tons had been delivered by Sudan to the World Food Program.

In 1992-93, through a combination of irrigated grain output in the Gezira region, and decent precipitation in the rainfed agriculture zone, grain production was above 5.5 million tons, allowing a surplus of 1.5 million tons.

2) *Resumption of water infrastructure development.* The priority projects required for irrigation, and also for power and for safe public water supplies, must be constructed. In the short term, pumps and diversion channels should be installed to lift up groundwater that is beneath the arid lands in the northwest and other regions. Satellite reconnaissance has located water beneath the Sahara Desert, and also indicates the presence of water in many other locales in the Horn of Africa, such as Ethiopia.

In the medium term, the project to heighten the Roseires Dam, for more water and power from the Blue Nile, must be completed.

The top priority water project is to resume and complete the Jonglei Canal. Sudanese nationalists in the 1970s moved to construct a straightened drainage channel for the swamps of the upper White Nile, in order to augment the downstream Nile River flow for both Sudan and Egypt. Diminishing the swamps would open up new farmland in southern Sudan, eliminate dozens of pests, and allow easy travel and transport. The 380 km-long project — called the Jonglei Canal, after the province in which it is located — was begun in the late 1970s. However, after over 180 kilometers of the canal were built as of 1984, the project was killed by opposition from the World Bank, the International Monetary Fund, and a Saudi Arabian petrodollar group, the Arab Authority for Investment and Agricultural Development. Subsequently, needless harvest failures became frequent occurrences.

3) *Transportation improvements.* Rail development and priority road paving are essential. In the long term, the Jonglei Canal will provide a throughway for road transport, an aircraft landing strip, and a waterway. A rail connection westward across Chad to Maiduguri in Nigeria has been planned since the nineteenth century, and this trans-Africa route would serve as a corridor for development

Even to upgrade track and rolling stock on existing rail lines would make a vital difference in distributing food relief and providing inputs for agriculture. Rehabilitating the Sudanese Railway was the one remaining development project supported by the World Bank, but a go-slow order was put into effect. In recent years, Sudanese government officials appealed repeatedly for help in fitting out the railway for use in food relief and other deliveries, to which the only response, as of 1991, was Britain's offer of some second-hand railcars.

4) *Power and agriculture inputs.* Oil development, for nationalized fuel and fertilizer supplies, would have a major impact on agriculture output, and the economy generally. As

of 1993, Sudan was pumping and refining a certain amount of its own oil. Expansion of petroleum resources, plus development of other vital resources in the region, are required. Recently, potash deposits have been identified in the Red Sea basin, both by Saudi Arabia and by Egypt.

5) *Food security.* The facilities and logistics must be built to gather in harvests and to store and transport food, so that even when bad weather occurs, there is food security, and no need for mass dislocation and misery. Food irradiation facilities at strategic sites would vastly reduce food losses from rot and pests.

Agriculture has been suppressed

The former Sudanese ambassador to the United States, agriculture specialist Dr. Abdalla Ahmed Abdalla, reported in 1991 at a conference in Washington, D.C. on measures for food self-sufficiency that Sudan was taking. He began by posing the question: "Why is a country with such resources — land, water, diverse ecology, and independence for 36 years — why should it fail to provide security for its people?" Why should it be that over the past 20 years, Sudanese agriculture output has been stagnating, even declining, and leading to food *insecurity*? He listed many causes, the first being the colonial heritage.

The British colonial agriculture policy for Sudan was cotton production for export. "King Cotton" meant that all crop research, infrastructure, training, and marketing emphasized cotton. In 1925, the British started the Gezira irrigation scheme — what grew into the largest irrigation project south of the Sahara, and devoted exclusively to cotton. In 1902, when the British established an agriculture research facility in Sudan, it focused solely on productivity and quality of cotton.

When Sudan gained independence in 1956, there was not one single research station concerned with food. The British left behind not one single paved road. There was only one railroad, and it was designed for special military and export purposes, and *not* to serve the rural areas, to build the nation.

Despite this impoverishment, Dr. Abdallah stressed that Sudan is blessed with resources, the most important being human resources. "There is the water potential and the land potential, which is very large," he said. "We are only now utilizing about 10% of our land resources, of arable land — good lands. And we have the human resources. Sudan is 23 million people. Although it is not a very crowded area, there is the human resource. And it is not only a human resource, it is also a relatively enlightened human resource, if you compare it to many other African countries, to developing countries, in spite of its poverty level. The people are to some degree very enlightened people. And they can take technology. They can realize policies. They are politically aware people, and people who are easily motivated. They can be mobilized. We had problems with government, but as people, they are a great human resource in the Sudan."