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## MALAWI'S SEARCH FOR FOOD SELF-SUFFICIENCY

### Part II: Productivity and Participation

by J. Gus Liebenow

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The two-pronged program of achieving self-sufficiency in food production and of increasing agricultural export earnings to pay for the program of modernization requires at a minimum a considerable increase in productivity. The accomplishments in Malawi with respect to food production will be dealt with in detail in the section on diversification. Some index of the accomplishments in the agricultural export sector, however, is revealed in the data provided by Shankar Acharya of the World Bank. Acharya notes that Malawi, by increasing export volume despite a decline in the terms of international trade, was able to quadruple the purchasing power of its exports over the period from 1954-1956 to 1975-1977.<sup>1</sup>

Malawi	1954-56	1964-66	1975-77
Export volume	29	77	118
Terms of trade	111	97	113
Purchasing power	32	74	133

While Malawi's achievement was comparable to that of the Ivory Coast and Kenya, it was in sharp contrast with Tanzania, Sudan, and Ghana, which failed even to double their purchasing power over the same period.

Given the high density of population relative to the availability of arable land, a high priority has been assigned both to increasing the amount of land under production and to increasing the yield per acre for smallholders and estates. Some estimates are that upward of 68 percent of the arable land is already under cultivation; nevertheless, some progress is being made in bringing additional acreage under cultivation. The expansion of sugar and rice schemes, for example, has utilized irrigation in bringing otherwise marginal swamp and flood plain land into production. The number of hectares of rice cultivation grew from 119 in 1968 to 3,468 a decade later. Similarly the number of hectares involved in sugar irrigation schemes rose from 2,275 in 1968 to 9,199 in 1978. Conversely, the introduction of flood control measures and the draining of swampland along the margins of rivers have brought about a resettlement on land not thought to be arable in the past.

The expansion of acreage has also been accelerated as the gravity-fed water system has brought piped water for drinking and cooking

purposes from high mountain streams to lower lying areas, thus making them more attractive to human settlement. Other government programs in mountainous areas unsuitable for food production have increased the land's economic value through reforestation and other improvements of direct benefit to rural cultivators. Furthermore, the lake areas of Malawi—which encompass roughly a sixth of the republic's domain—are being exploited on an increasing scale for fishing, irrigation, and electrical power purposes.

More can still be done. "Intensive cultivation" in Malawi falls short of Cameroon, for example, where maize and other food crops are grown up to the very margins of the road and in any other vacant plot of ground. In the very arid regions, Malawi could well experiment with dry climate food crops, such as tuna cactus and olives, as well as nonfood plants. Finally, as the new rail and road linkages expand beyond Lilongwe into the relatively neglected Northern Region, the present estimates on arable land may change considerably. Caution must be exercised, however, since the erosion of land which has been newly cleared of its forest and ground cover can be substantial. Experience elsewhere in Africa dictates that the method of clearance, the type of cultivation employed, and other aspects of use must be treated as almost *sui generis* to the soil type, contour, rainfall spread, and other conditions of the individual plot. The heavy demands maize makes upon soil fertility (compared to cassava) must also be considered.

In addition to expanding the area under cultivation, increasing soil fertility is the second aspect of Malawi's efforts to increase productivity. In the 20 years since 1960, there has been a dramatic rise in use of fertilizers by smallholders, going from 183 short tons in 1960 to 10,834 short tons by 1967 and over 43,939 short tons by the end of the 1970s.<sup>2</sup> Unfortunately, the increase in productivity must be weighed against the increased costs of imported chemical fertilizers. Although the Nkula Falls fertilizer plant, which utilizes local dolomite, will reduce imports, increasing emphasis will have to be placed on green manuring and use of animal wastes to supplement the use of chemical fertilizers.

Changes in cultivation techniques must also be considered. Traditionally, cultivators have used a short-handled hoe (*jembe*) and followed a slash-and-burn method of clearing fields. Altering

technology by resorting to tractors and other forms of mechanical cultivation is not financially practical for the majority of smallholders—even those in farm clubs. Mechanical cultivation at this stage would, moreover, increase the prospects of rural underemployment and constitute a further drain on foreign exchange both in the initial capital outlay as well as in purchase of fuel and spare parts. The Ministry of Agriculture has therefore, in recent years, been encouraging the use of draft oxen for cultivation and rural transport. Since this is essentially a labor-intensive approach and provides an additional source of animal fertilizer, the extension service is giving this a high priority.

A further technological innovation available to smallholders is the small mechanical sprayer for insecticides. The introduction of new techniques of cultivation, however, has had to be approached with caution. Tie-ridging, for example, in which the seed is planted on waffle-type mounds surrounding pockets where rainwater is trapped has had dramatic results in many areas. It is an effective approach to the vagaries of rainfall, ranging from too much to too little. Its use in areas of sandy soil, however, would be counterproductive since the ridges and the young plants would be washed away in the first torrential downpour.

The greatest problem in changing technology is the acceptance of crop rotation and diversification. Given the scarcity of arable land and the strong preference of over 90 percent of the population for maize as the staple (rice is the main staple in the lakeshore area of the north), the soil has suffered significant degeneration over the years. The Ministry of Agriculture has recently used the advancement of credit, tied to specific crops, as a way both of encouraging crop rotation and controlling plant diseases.

Fragmentation, as a feature of customary land tenure practices (discussed in Part I) has also been a factor in inhibiting more rational use of the soil by smallholders. Although most cultivators organize their work schedule to accommodate the fact that plots may be widely distributed, fragmentation does complicate the more efficient use of insecticides, fertilizers, draft oxen, and other innovations. Although the Agricultural Ministry has been encouraging land demarcation and consolidation, thus far this has only taken place in the Lilongwe District under the Land Development Program supported by World Bank financing.<sup>3</sup> Registration and consolidation are

not only in line with the disposition of the government toward private ownership, but it provides a form of collateral in credit negotiations. The government, however, is approaching this problem in a cautious fashion since its reception in the Lilongwe area has been unenthusiastic. As one official in the Ministry of Agriculture and Natural Resources noted:

*Malawi's system of land allocation is implemented in accordance with the wishes of the people of the particular area. The government is moving in this direction slowly, taking into account the fact that when effecting any form of change in the tenure system, resentment, fear and suspicion could well attend to any sweeping reforms which lead to abolition of customary or traditional land rights. It is also generally felt that landslide agrarian reforms are extremely complex to be enacted all at once as the country's population attach different values to land and have also different forms of inheritance. We also believe that successful reforms cannot be implemented without active initiation and participation of the rural population on both the formulation and implementation of land reform measures.<sup>4</sup>*

Despite official caution on this issue, it was apparent to several expatriate observers that informally some of the more prosperous and better educated smallholders (including government officials) have been approaching traditional chiefs and getting larger tracts of consolidated land assigned on a long-term lease basis. In effect, once one has paid the nominal annual rent, the land is under the control of the renter rather than the community. While this does not affect the equality of distribution problem, the larger farms do tend to be more efficient. It is the hope of government that achieving greater productivity in food production and economic growth generally will offset the social discontent of the poorest of the poor who are unable to acquire land with sufficient fertility and available water.

#### **Diversification of Food and Agricultural Production**

Closely related to the objective of increasing agricultural productivity, the government of Dr. Banda has pursued a broad program of diversification of food and agricultural production. Diversification is viewed collectively as a way of achieving self-sufficiency in food, enhancing smallholder income, increasing export earnings, and providing import substitutions. Ancillary to this multiple strategy, diversification has pro-

vided Malawi with the opportunity to achieve a modicum of industrialization—and alleviate potential urban unemployment. It does so through the creation of supply-and-demand industries such as textile factories, rice and grain mills, fruit canning factories, and small industries related to the manufacture of hoes and other farm implements. Diversification, moreover, insulates the export sector against the drastic fluctuations in global pricing of agricultural commodities which has left so many less-developed countries with highly vulnerable economies. Finally, diversification protects the individual smallholder against the resulting disaster when plant diseases, minimal rainfall, and world prices may affect certain crops more than others.

#### **Evaluating Production Increases**

Making assessments of the success or failure of agricultural production in any African country is, at best, an imperfect art. The most reliable pool of statistics in the total picture is the data on exports, which, of course, covers only part of production. Even there, however, a certain amount of intercountry exchange of commodities is never recorded, such as the acts of smuggling whereby producers seek either higher prices or more stable markets on the other side of the border.

Two other elements in the composite picture must be left in the category of educated guesses. The first is the crops that are sold or bartered within the locality of the farming unit. This exchange sometimes takes place within formalized village markets which meet on a regular calendar rotation basis. On other occasions the exchange takes place at temporary roadside stalls. The second and larger element in the educated guess category is the yield from subsistence cultivation. Since most Africans live in rural areas, it can be assumed that a very high proportion of the food consumed by farmers is produced on local homesteads and never enters the exchange economy. Depending upon the rate of urban growth, subsistence production may account for as much as 50-90 percent of the total food grown in a country.

Aside from export data, the only other systematic pool of statistics on agricultural production in many African states is contained in the recorded crop purchases by state marketing boards. In Malawi, the current Agricultural Development Marketing Corporation (ADMARC) is the successor to the board created under colonial rule.<sup>5</sup> ADMARC figures are significant with respect to agricultural production since—in theory at least—it has enjoyed a monopoly over the

purchases of all crops presented for sale. Its several permanent stores and its 800 seasonal buying posts do, in fact, purchase most of the commodities sold by smallholders. Hence, fluctuations in purchases are reasonable reflections of increases and decreases in national production.

The thrust of the argument below is that much of the increase in agricultural production has occurred since independence (1964) and is a response to the new roads, marketing facilities of ADMARC, the provision of fertilizers, extension of government credit, and other actions of the Banda government. Since many of the crops now purchased by ADMARC were either nonexistent in Malawi or marginal before 1964, it can be assumed that government encouragement to innovation and expansion must be a key factor in the upward trend of the ADMARC data. Two common-sense assumptions are involved here. First, while smallholders may reduce their food intake somewhat in order to meet school fees and other expenses, it is doubtful whether there would be a substantial disposal of the subsistence crops needed to feed the smallholder family. The history of recurrent drought and famine remains too vivid in Malawian memories. Thus, the ADMARC purchases are crops over and above those retained in the subsistence sector. Second, it also defies common sense to assume that the farmers would not be using fertilizers and other inputs to improve production in subsistence as well as in cash farming. Thus, both sectors have probably expanded. In any event, although malnutrition may exist in certain areas, there are no reports of famine in Malawi that would serve to undermine these common-sense assumptions. Finally, the dramatic increases in ADMARC maize purchases since 1964 reflect increases in the yellow hybrid variety, whereas the dietary preference of most Malawians is for the more traditional white maize, which is grown as part of the subsistence economy. Hence, the ADMARC purchases figures—while not covering total increases in production—do provide significant indicators of increases since the Banda government assumed office. With those preliminary remarks, it would be useful to analyze the data relative to the most significant crops.

*Tobacco and Tea.* During much of the colonial period, the estate sector in terms of value of exports was dominated by the production of two crops, tobacco and tea, with cotton fibers, legumes, and other crops playing minor roles.<sup>6</sup> Since independence the government has attempted at least to maintain production of

crops that Malawian farmers grow well. Hence, between 1964 and 1975 the estate sector exports of tea more than tripled in value (from K6.6 million to K21 million) and doubled in volume (from 26 million lbs. to 53 million lbs.). (One kwacha = US\$1.18.) Malawi tea enjoys a good reputation on world markets and commands a good price generally in the London market even though the price is subject to drastic yearly fluctuation.

The export of all types of tobacco has also expanded since independence, partly reaping the windfall of the 15-year United Nations boycott of the Smith regime in Rhodesia. Tobacco exports increased sixfold in value (from K8 million to K50 million) while not quite doubling in volume. This increase, incidentally, was accomplished by tripling the yield per acre of both flue-cured and burley tobacco. The actual acreage under production (122,000 acres) remained almost constant from the year 1954 through 1975.

*Maize.* As is true of other southern African states, maize is the staple of roughly 90 percent of the population of Malawi. It is estimated that the per capita consumption is 530 pounds a year, with over 3,444,000 acres devoted to this single crop in 1981. During the last decades of colonial rule and the period since independence, it has become the principal crop of Malawian smallholders. Since independence in 1964, the volume of ADMARC purchases has increased dramatically as Malawi has attempted to achieve self-sufficiency in food. In the 17 years preceding independence, for example, there were only 5 years in which purchases by ADMARC's predecessor exceeded the 30,815 short ton figure for 1964. In the 17 years since 1964 only twice have the ADMARC purchases of maize fallen below the 30,000 ton mark, and indeed during 12 of the years the purchases were double the 1964 figure and in 5 of the years purchases were actually triple. In the two years preceding the drought year of 1980, moreover, the purchases attained 127,900 short tons and 90,833 respectively.

With the use of fertilizers, new hybrid seed varieties, and crop rotation, the average yield per hectare has risen to 1,117 tons.<sup>7</sup> Maize production is central to the storage program initiated by Dr. Banda which spared Malawi the full impact of the 1980 drought in eastern Africa. Unfortunately, maize is a rapid exhaustor of soil, and to the concern of Malawian officials, the expanded production has brought under cultivation a considerable amount of marginal land. Moreover, the lower-yielding traditional maize, as

opposed to the hybrid varieties, does not respond well to fertilizers. On the other hand, it does store better in the bins maintained in the homesteads and is more resistant to blight and rot. It is, in addition, preferred over hybrids because it has the right consistency for making the traditional *nsima*, or maize mash.

**Groundnuts.** The groundnut crop is of significance both with respect to the Malawian diet and to efforts to achieve a policy of crop rotation. Although only mildly encouraged during the pre-1964 era, ADMARC purchases in most years since independence has been double or even quadruple the 1964 figure of 17,400<sup>8</sup> short tons. Export earnings have been even more impressive due to the reputation that the Malawi Chalimbana variety enjoys as a high quality confection nut in the world market. The 1975 figure of K6.5 million export earnings, for example, is three times the 1964 earnings.

In keeping with Dr. Banda's objective of increasing small farmer income, most groundnuts are grown on smallholder farms. The impact upon the health of Malawians is also evident when one compares the declining export figures for the years 1975 to 1980 with the escalating purchases by ADMARC (an average of 36,000 short tons in the years since independence). Officials conclude that much more of groundnut production in recent years (an estimated 75 percent) is being consumed locally, thereby adding a significant source of vegetable protein, carbohydrates, and oil to the Malawi diet. In addition, since groundnuts are nitrogen-fixing plants, the additional nitrates have considerably improved soil fertility in Malawi. Finally, increased production of the manipintar and the malimba varieties has spawned new industries in Malawi as the nuts are processed into vegetable oil and cattle cakes. Because of the obvious value of groundnuts, Agricultural Extension personnel are concerned that farmers need to be better educated with respect to plant diseases and the need for proper spacing of plants on the tie ridges.

**Rice.** Another food crop which has literally skyrocketed since independence is rice. Although it is the staple of most of the Lakeshore people in the north, it was only a minor cash crop during the colonial era. In the last 15 years before independence, 1949-1963, the average yearly purchases by ADMARC were 4,450 tons. Rising slightly during the first 7 years after independence of 5,900 tons per annum, the next 10 years witnessed a dramatic rise to an average yearly

ADMARC purchase of 22,600 tons. As with groundnuts, much of the increased rice production in the north never entered the cash market, but is consumed directly on the farms where it is produced, thereby meeting the nutritional needs of Malawians themselves. It has also provided a valuable export earner—particularly in the drought year of 1980, when Zambia imported a considerable amount of Malawian rice.

Most rice production is still the result of rainfed cultivation. Increasingly, however, with the help of the Taiwan Agricultural Mission, which began work on rice projects in Malawi in 1965, some 12 irrigation projects, covering over 16,000 acres and involving more than 6,000 smallholders, have increased production. Malawi's climate and rainfall are such that two rice crops can normally be harvested in a single year, taking advantage not only of the rainy season but also of dry season irrigation by utilizing the waters of the Shire, Domasi, Nkhate, and other year-round flowing rivers. Weirs regulate the flow of water in the gravity-fed irrigation canals, which accounts for the low operational costs.

The Chinese technicians who launched the schemes are impressed with the 22-25 bag yield per acre (roughly 3,520 to 4,500 pounds). Upon completion of the demonstration phase, in which both smallholders and employed technicians are trained, the Chinese have turned the projects over to the smallholders, each of whom is responsible for a 0.5 to 1.5 acre plot. In keeping with Dr. Banda's emphasis on diversification, the farmers participating in the rice schemes have been required to plant fruit trees, vegetables, and winter maize in order to hedge against world price fluctuations, drought, and other problems. This also provides the smallholder with an additional source of income, and a better balanced diet.

In addition to increased risk of exposure to bilharzia, one expatriate critic was skeptical about costs. He suggested that the financial outlay in preparing the irrigated rice fields, training and supervising technicians, and acquiring and maintaining the power-tillers and other equipment are considerable. They would, he insisted, prevent replication of these projects by the Malawian government. As long as the Taiwan government sees some political or trade advantage in providing this form of cooperation, however, the criticism remains largely academic.

**Sugar.** Although it has been primarily an estate crop, the dramatic increase in sugar production has had direct as well as indirect impact

upon the Malawian economy and most Malawians. Until 1970, Malawi was a new importer of sugar, since the 36,049 short tons of cane sugar could not meet consumer needs. By 1975, sugar production had tripled, and since 1976 it has not fallen below the 100,000 short ton mark. Indeed, in 1980-81, Malawi produced 145,000 tons for domestic and foreign markets, with additional acreage coming into production under schemes financed by private companies (e.g., Lonrho) and European aid programs. Overnight, Malawi has become the tenth largest of 29 sugar-producing states in Africa. Practically all the production is done on estates in the central and southern regions. The one-third to one-half of the production retained for direct local consumption or for bakers and other processing industries has made a significant impact upon the carbohydrate needs of Malawians. Ethanol made from sugar may also meet some of Malawi's fuel needs. With the generally high price of raw sugar and molasses at the global level, and the generous quotas assigned by the United States (at least until the U.S. in 1982 withdrew the African quotas), and EEC countries, sugar had substantially alleviated some of Malawi's balance of payments problem.

*Traditional staples.* While the export figures do not tell the whole story, it would appear that increases in maize, rice, and groundnut production may have come at the expense of traditional staples which had been encouraged during the colonial period. Exports of beans, peas, and other pulses have experienced very erratic patterns during the first decade and a half of independence. From a high of 30,000 short tons of pulses exported in 1965, for example, the last four years have averaged closer to 7,400 short tons. Even more curious has been the history of sorghum and millet, staples in many parts of Malawi before maize consumption was encouraged by missionaries and colonial administrators. These have virtually disappeared as important purchases by ADMARC, but they may still be important in the subsistence economy and localized marketing.

Equally disappointing has been the demise of cassava as an export and domestic crop. For the 8 years preceding 1973, annual exports averaged 29,500 tons. By 1975 cassava exports had abruptly dropped to 3,109 tons, and they have declined steadily since. ADMARC purchases have also fallen off. One must hope that cassava has survived in the subsistence economy since it is an excellent "starvation" crop; it requires very

little rainfall to mature and takes far less out of the soil than maize. In addition, the leaves provide an excellent source of vegetable protein.

*Coffee.* From the turn of the century until about 1935 coffee had been a fairly lucrative estate crop in Malawi. At the latter date, disease and a fall in world prices led to its virtual demise both as an export and domestic food crop. It was not until the eve of independence that coffee production was renewed with enthusiasm, and smallholder production almost entirely displaced estate cultivation. Going from an annual average purchase of 4.5 tons between 1941 and 1950 (most of which was consumed locally), coffee purchases by ADMARC rose to an annual average of 178 tons during the period 1958-1973. By 1974-75 it had reached an annual average of 779 tons, the bulk of it being sold by smallholders.

Like Malawi tea, the *arabica* coffee grown in Malawi is an exceptionally high grade, which is a popular blending coffee in the English market. While the world prices in recent years have been good and have provided Malawians with an additional source of income, the volatility in future prices may be discouraging to smallholders as they find that doubling the output may bring in only half the revenue. The costs for disease control, moreover, may prove to be very costly for smallholders.

*Other New Cash Crops.* Before turning to two other food sources which lie outside the plant world, it is useful to refer to other efforts at agricultural diversification. Several cash crops, such as cashew and macadamia nuts, fall largely into the luxury food category insofar as local consumption is concerned, but they are of increasing importance to Malawi's export earnings. President Banda himself in recent years has been urging smallholders to grow more cashew nuts, and the Ministry of Agriculture and Natural Resources has distributed free of charge several thousand seedlings to countless small farmers in an effort to stimulate production of trees which, with very little care, will bear fruit for 30 years. The Malawian cashew is not only a confectionary nut of high quality, but the oil in which the nut is floating in the cashew shell also has considerable value in the plastic and other industries.

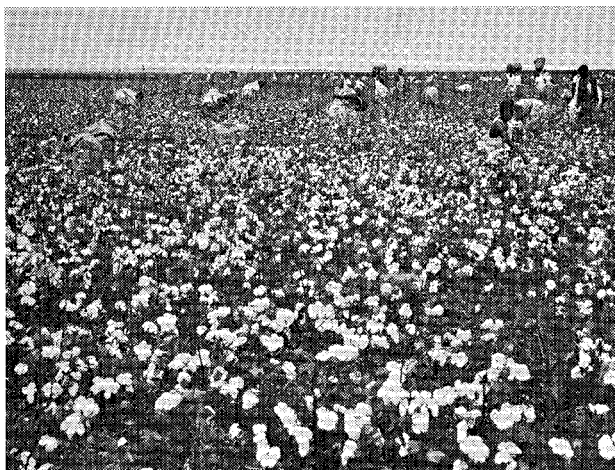
Even more startling has been the increase in production of macadamia nuts, which have exceedingly high value in small volume. The macadamia nut tree, which originated in Australia but was hybridized in Hawaii, starts to bear fruit after five years and may continue to do so

for a hundred years. Starting with the planting in 1969 of a thousand acres of seedlings in the northern and southern regions, by 1980 over 21 tons of nuts were processed and packaged within Malawi itself. Most were exported to the United Kingdom and other foreign markets. By 1985 an estimated 132 tons of salable kernels will be processed by the Malawi Tree Nut Authority.

Of the other food crops grown in Malawi, there are none that evidence consistent growth either for domestic or export purposes. Wheat production, for example, has remained both small and constant and, until the recent interest of urban Malawians in wheat bread, was grown almost entirely to satisfy the dietary preferences of tourists and expatriates. Another minor crop, sunflower seed, has been somewhat erratic in its export value since its production was encouraged in the late 1960s.

One final nonfood crop that should be mentioned is cotton, which could be of considerable importance to smallholder families. At this stage, vagaries in rainfall and the high costs of insecticides for dealing with boll weevil and other pests, have tempered the enthusiasm of Malawian farmers and officials alike. It still looms large in terms of Malawi's overall efforts at economic self-sufficiency, since it is hoped that locally produced textiles may reduce the dependence of Malawi on the imported cotton cloth which is central to the clothing needs of both women and men.

*Livestock.* Two nonplant sources of food which have increased since independence are livestock and fish. As noted earlier, African veterinary services during the colonial period remained



*Cotton harvest* (Photo courtesy Malawi Information Department).

largely underfunded and understaffed. The convenient argument presented was that the presence of the tsetse fly in much of East and Central Africa as well as the potential spread of East Coast Fever, tickborne diseases, and hoof-and-mouth disease dictated against expansion of African-owned herds for fear of endangering the healthier herds of European-owned cattle in the protectorate and in neighboring settler territories. It was not until four years before independence that the first livestock markets and abattoirs for African herdsmen were established.

Livestock falls into two categories. The smaller animals, such as goats, pigs, and sheep, are being purchased regularly at the 36 government markets and slaughtered in order to enhance the population's protein intake.<sup>9</sup> The bulk of commercial production takes place on urban-oriented commercial farms. Smallholder ownership and consumption is, however, on the rise.

In contrast, cattle, whose numbers had increased from 267,900 in 1948 to 396,145 on the eve of independence, more than doubled, to 870,400 by 1979. While these are almost entirely in the hands of smallholders, the number of owners is estimated to be less than 10 percent of the smallholder group, indicating a sharp social disparity in this form of wealth. The consequences of cattle herding insofar as protein intake of Malawians, smallholder cash income, soil management, and export earnings are concerned, are decidedly mixed. On the positive side, increases in beef production, particularly where the stallfeeder schemes have produced fatter animals for market, have enhanced the nutritional intake of Malawians. The same is true of the dairy schemes, which are mostly in the



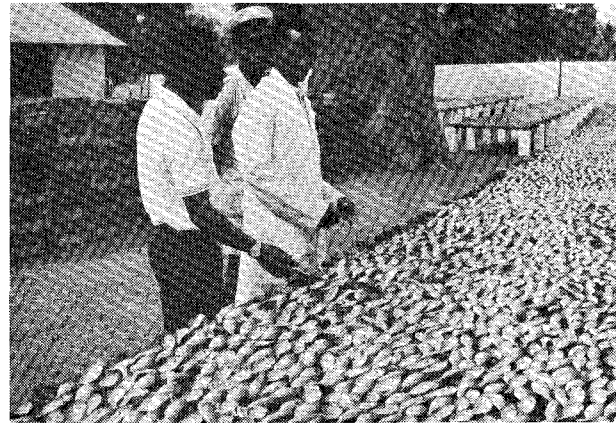
*Traditional Malawian animal shelter.*

urban areas. Expansion of the cattle industry has, in addition, provided leather, manure for farms, and other side benefits. Ownership of cattle, moreover, does serve as a form of economic security in the case of crop failure. The rising price of beef means that many farmers have a form of mobile investment that can readily be converted into cash in order to pay children's school fees or to purchase essential domestic goods.

In strictly economic and agronomic terms, on the other hand, expansion in the size of herds has neutral, if not negative, consequences. Much of the cattle—especially among the people of the northern and central regions—fits more into the prestige economy rather than representing either cash-wealth or potential protein. Cattle are exchanged at critical points in the human life cycle (marriage, birth, death, or divorce) or are consumed during ceremonial occasions. For the most part, however, they remain largely on the hoof rather than being a source of food, although estimates are that roughly a tenth of the cattle each year are slaughtered for food. In a country where the availability of arable land and water for human purposes already poses problems, the overgrazing—especially in the south—that results from the expansion of herds can only aggravate this situation. Hence, there are serious political and social problems which the government will have to address soon with respect to cattle herding.

*Fish.* Fish today constitutes the most important source of animal protein in the Malawian diet: an average annual per capita consumption of 34 pounds, which is 6 times that of beef. Hence, it is remarkable indeed that so little was actually done during the colonial period by way of exploiting the fish potential of Lakes Malawi, Chirwa, Malombe, and Chiuta as well as the Lower Shire and other rivers. Four years prior to independence, only 6,400 short tons of fish were commercially caught in Malawi waters. With the introduction of trawl net fishing after 1964, production of fish began to climb steadily, reaching a yearly average of 83,000 short tons during the period 1971-1975, with a value of K8,772,000 for 1975 alone.

Like the soil, however, the fish of Malawi's lakes are not an inexhaustible resource. From 1975 onward the dangers of overfishing have become alarmingly apparent, especially at the lower end of Lake Malawi. Although the lake has over 600 species of fish, only a few, such as chambo



*Fish processing at Mongochi.*

and kumpango, are used as table fish. Lake Malawi provides considerable export earnings for Malawi through the sale of prized ornamental fish, which in 1975 netted earnings of K296,000.

Not all the lake areas are suitable for fishing. The northern half of Lake Malawi, for example, is too deep (2,500 feet below surface level) and hence too cold for most fish. Increasingly government is turning to fish-farming schemes, using the waters of rivers and streams as well as irrigated fish ponds to expand production. With the assistance of technicians from Israel, Japan, and Taiwan, as well as UNICEF staff, Malawian rivers and fish ponds around the country are being stocked with indigenous fish and prawns as well as imported Chinese carp. One long term problem with the irrigated fish ponds is that they provide further competition for the use of water with the rice and sugar schemes and with those who would harness the Shire and other rivers for additional hydroelectric power.

The approach to increased fish production emphasizes the importance of small-scale entrepreneurs in Malawi's development plans. The schemes referred to above are primarily in the hands of small fishermen, working under the direction of trained assistants from the Department of Fisheries. The key to the successful exploitation and marketing of fish resources, however, has been the improved preservation techniques employed by Maldeco, the parastatal dealing with fish purchasing and distribution. In touring its plant at Mongochi on the southern shores of Lake Malawi, one is impressed with the variety of preservation techniques employed, ranging from sun-drying to smoking and refrigeration of fish for both export and the domestic markets. Although under normal circumstances, 95 percent of the fish is consumed



within Malawi, in 1980 a considerable portion of the catch was exported to Mozambique and Zambia to help overcome the drastic food shortages in those countries arising from the drought.

#### **Food Storage and Preservation**

Reference to fish marketing leads naturally into a discussion of another vital element in Malawi's strategy of attaining self-sufficiency in food. This is the emphasis on better storage and preservation of basic food commodities—particularly maize. One estimate is that 30-50 percent of the harvested grains in sub-Saharan Africa falls victim to rot and wilt diseases or is consumed by insects and rodents. In many respects, it was the shortage of adequate grain storage facilities in Tanzania during the bumper crop year of 1979 that compelled the government to export much of that year's surplus. Consequently, during the drought the following year, Tanzania was forced to import \$83.3 million worth of grain (some as outright gifts) in order to stave off famine. Although it is acknowledged by several Malawian officials that some precautionary importing of grain took place during the 1980 drought—largely to replenish its reserves—

*Grain storage silos at Lilongwe.*

Malawi survived the drought in far better shape than most of its Eastern African neighbors. This is widely attributed to the emphasis President Banda had placed during the preceding decade upon grain storage.

The culmination of Malawi's grain storage program is clearly visible on the Lilongwe skyline. I refer to the complex of 48 silos which, when completed in 1982, will hold 180,000 tons of maize (or 2.2 million bags). This is the largest single grain storage facility in Africa, and it should not only provide Malawi with self-sufficiency in food, but it should also permit Malawi to resume its traditional role of providing grain to many of its neighbors—Zambia in particular. Malawi virtually stopped the exporting of maize in 1974. In the three years preceding the ban, Malawi had exported an average of 38,000 short tons a year to its neighbors. The 1974 ban constituted an effort to build up grain reserves to the point that there would be no repetition of the events following the 1970 failure of the rains, which forced Malawi to import large quantities of maize at highly inflated prices. Although some of the ADMARC stores and many of the traditional grain storage bins in the rural homesteads



were dangerously reduced in 1980, the overall picture constituted a vindication of Banda's policies on grain reserves. Indeed, the reserve program, under which ADMARC sells back grain through its buying posts when famine threatens, has echoes of Malawi's traditional past. In the pre-European era, the chiefs, who enjoyed the privilege of tribute offerings during the years of good harvest—were obliged to redistribute their largess during years of famine and pestilence.

The ADMARC storage facilities represent close to 10 percent of national maize production, and the stockpile is "rolled over" each year as the preceding year's harvest is sold and replenished by the new maize. As one travels through the countryside, the importance attached to traditional wooden or bamboo storage bins is readily apparent. Unlike many countries where the more expensive metal silos have replaced traditional wooden bins, the latter have proved to be highly effective low-cost substitutes in storing the non-hybrid varieties of maize, which are more resistant to mildew and rot. As an added protection, the stored maize is normally left in the husk.

In addition to the storage and preservation of fish, discussed above, ADMARC has experimented in the Mulanje district with a canning factory for fruits, vegetables, and other commodities intended for the domestic market. One food "storage" technique, by the way, which the government is attempting to discourage is the conversion of grain into alcohol for drinking purposes (grain alcohol is, however, being used for its supplemental fuels programs). Alcoholism does not appear to be the problem in Malawi that it is in South Africa, for example, where unemployment, the drabness of urban life, and the political situation have been contributing factors to a serious social problem.

#### **Stimuli to Participation:**

*Transport and Marketing.* One of the key strategies to smallholder involvement in economic growth must be a commitment to improve the mechanisms whereby the food and other commodities that farmers produce actually enter the domestic and the foreign markets. This requires, at a minimum, an improvement in transportation, as well as the introduction of marketing arrangements to facilitate the purchase and sale of the commodities.

As indicated in Part I, the transportation infrastructure inherited by the government of H.

Kamuzu Banda was one of the more underdeveloped in Africa. The northern region was virtually excluded from any real semblance of participation in the territorial economy aside from the recruitment of migratory laborers. Feeder roads beyond the all-weather main roads in the central and southern regions were few and all but impassable during the rainy season and several months into the dry season. At independence there were less than 200 miles of macadamized road, much of it in or around the administrative and commercial capitals of Zomba and Blantyre. The main rail link to the outside world through Beira continued the southward orientation of the economy and found Malawian imports and exports competing for transshipment with the better organized mercantile and industrial interests of Southern Rhodesia. And once the Mozambique liberation struggle had escalated, Beira's usefulness to the Malawians was considerably reduced.

The causal linkage between transport and development was early recognized by Dr. Banda. In a speech to Parliament on July 7, 1966, for example, President Banda commented:

*We cannot talk of increased agricultural production without improved means of communications. Therefore 25 percent of the available funds have been allocated for this purpose and the greater part of this money will be devoted to improving the country's system of roads which are essential if the increasing volume of agricultural products is to reach the markets of the world cheaply.*

Indeed, within a decade of those remarks, the miles of tarred road within Malawi had quadrupled, significantly linking the so-called "Dead North" to the rest of the country. The building of a system of all-weather feeder roads, spanning outward from the main north-south spinal road, is a key factor in the increased production discussed previously under the policy of crop diversification. Especially crucial to the exploitation of the fish resources of Lake Malawi is the lakeshore road which skirts the Malawian shore of the lake.

Two other developments bear the imprint of H. K. Banda: the establishment of the new capital at Lilongwe and the construction of the rail link to the Mozambique port of Nacala. These were among the several goals he set for his country during his 11 months of imprisonment by the British prior to independence. The new capital, as suggested previously, has corrected in



*ADMARC maize storage warehouse* (Photo courtesy Malawi Information Department).

part the southern emphasis of the colonial period. The road and rail network from the new capital have accelerated involvement of smallholders in the economic growth of the past decade and a half. Equally, the Nacala rail link has not only facilitated this northward orientation of the economy, but it has forged a more positive link with socialist Mozambique. The leaders of the latter country appreciate that the port of Nacala could not sustain operations if it were dependent on revenues from production in northern Mozambique alone. Extending the Malawian rail link onward to the Zambian border (a \$75 million project, which is Canada's largest overseas aid program) will now open up another vast region of Malawi to agricultural development. Once the Zambians complete the link westward, Malawi's agricultural products will have greater access to the cities of food-short Zambia.

The marketing structure which has brought smallholders into the mainstream of agricultural growth is actually an inheritance from the colonial period. ADMARC, as the successor to the Farmers Marketing Board, enjoys a wide measure of latitude in its financial and administrative transactions. ADMARC long enjoyed an

exclusive license to purchase most of the commodities grown by smallholders. The bulk of its purchases (180,000 tons in 1979 at a value of K27,811,000) were in the area of maize, groundnuts, tobacco, cotton, cassava, and paddy rice. It also purchases sunflower seed, wheat, coffee, and a number of pulses, cereals, and other horticultural products. In addition to the 72 main storage depots (which can store over 350,000 tons of produce) ADMARC administers over 800 seasonal produce-buying centers appropriate to the harvesting of various crops. In this way, farmers in the remotest areas of Malawi—particularly the north—have close and convenient access to the purchasing operations.

ADMARC has a broad spectrum mission with respect to both the smallholder and the estate sector as well as a specific obligation to smallholders. It provides both sectors various forms of financial and technical assistance (mostly with respect to tobacco); and it is responsible for the storage, fumigation, and transporting of a wide range of export crops. Many of its nonpurchasing services, however, are directed almost entirely to improving the position of the smallholder. These include the distribution, free of charge, of improved or specialized seed, such as cotton and

both Western and Oriental tobacco. ADMARC also sells, at subsidized prices, fertilizer, pesticides, and small farm implements, such as insecticide sprayers, oxcarts, ploughs, and hoes.

While most Malawians and expatriates I interviewed were enthusiastic about the innovative role of ADMARC, there were two areas of concern. The first applied to the fact that ADMARC had complicated its administrative structure by being engaged in direct continued production rather than merely stimulating cultivation by smallholders or estate owners. ADMARC, for example, owns and manages a 577 acre tung estate and factory in the Northern Region; produces cashew and macadamia nuts in competition with the other producers it has encouraged; owns and operates a fruit and vegetable canning factory in the Mulanje district; and air expresses fresh fruits and vegetables (such as peppers, melons, and green beans) to Europe and the Seychelles from the farm it established near Chileka International Airport. Some of ADMARC's critics feel that its direct involvement in production not only complicates its administrative decision-making, but also diminishes the country's commitment to private enterprise, particularly where new agricultural activities could be turned over to smallholders at an earlier stage. It was felt by one commentator, for example, that the direct involvement activities limited ADMARC's capacity to develop agro-industrial enterprises, which are vital in making sure that the expenditures on processing agricultural commodities remain in the country and assist in resolving the Malawian unemployment problem.

The second criticism is directed at ADMARC's pricing policies. Fortunately, this is a problem the government itself recognizes and was prepared in 1981 to alter to the benefit of the smallholder producer. Traditionally, ADMARC at the beginning of each planting season has announced the prices that it will pay for a given commodity at harvest time. The price, which is supposed to reflect both global and domestic demands, is calculated not only to give a fair return to the farmer but also to meet the needs of lower income groups in the urban areas. It should also provide stabilization funds to protect farmers against drastic global price fluctuations as well as a profit to ADMARC to enable it to engage in its broad support services for the agricultural sector.

ADMARC prices have varied little over the years, and since the figures on production

indicate an expansion of activity with respect to most crops, it has been taken as *prima facie* evidence that the price is fair. Unfortunately, this has been difficult to test, since the smallholder has no knowledge of global conditions and the alternative markets are simply not there even if the farmer had been free to sell his produce to anyone other than ADMARC. The neighboring countries of Tanzania, Zambia, and Mozambique have highly controlled currencies, and the availability of reasonably priced consumer goods in those countries is far less than it is in Malawi itself. Indeed, the contrasts with pricing and marketing arrangements for crops in those countries makes the Malawian system look infinitely better.<sup>10</sup> Nevertheless, the Malawian government realizes that the rising costs of fertilizers, oxen, building materials, and other things the smallholder requires for farming are drastically diminishing the hopes he may have for educating his children, building a new house, or starting a new business. If the government, moreover, wishes to prevent the drift to the city, with all its social, political, and economic problems, then it must soon address the question of smallholder income. The option of Malawian farmers finding employment as mine laborers outside the country is one which the present government would like to reduce or eliminate—assuming that the pressures of nationalism in Zambia, for example, do not in fact eliminate that option for them. Fortunately, the government recognizes the need for action with respect to re-examining the pricing arrangements of ADMARC.

*Credit Facilities.* Access to credit for smallholders is another integral feature of Malawi's strategy of agricultural development. First, credit is the most important instrument for meeting the financial needs of smallholders for seed, fertilizer, oxen, and farm implements. It is equally apparent, however, that credit facilities also serve as a device for achieving agricultural innovation by virtue of its linkage to the extension arm of the Ministry of Agriculture and Natural Resources.

This linking of credit to extension creates a more positive image of agricultural innovation today than was true during the colonial era, when an innovation was supported by punitive measures. Moreover, those who were to enforce the rules and impose the penalties for failure were the very extension agents who were responsible for the educative aspects of agricultural innovation, a combination that turned out to be self-defeating. The individual cultivator often complied, not out of conviction that it was in his best interest to do so, but because he would suffer

financial and other negative consequences if he did not. As one Malawian official put it: "We did not need those obnoxious rules to make us plant; failure of a harvest and the threat of starvation constitute punishment enough!"

In formulating its present smallholder credit program, the delivery of credit is a direct function of the Ministry of Agriculture itself. In this way, the agricultural extension agent is linked in the minds of the cultivator with the provision of a positive benefit. It is the extension agent who is approached for credit, and it is he who facilitates delivery either to the smallholder or to the chairman of a farm group. Equally, the ministry has attempted to shield the agent from involvement in the coercive pressure that might have to be applied to secure repayment of a loan. It has done so by shifting the burden of collecting to the community credit groups through which most of the credit is channeled. It is the chairman and other officers of the credit group who directly receive and pass along the credit, supervise the planting of crops subsidized by credit, and undertake repayment at the end of the harvest.

Formation of credit groups is stimulated by preferential terms: groups are charged only 10 percent interest; individual smallholder creditors must pay 15 percent interest. The formation of such groups, however, as well as the recruitment of new members and elections of officers, is left entirely to the community initiative. Once the group is formed, the extension agent deals only with the chairman. Credit groups may not exceed a hundred members each. This limitation, the ministry feels, maintains the intimacy required to have community peer pressure serve as an effective instrument in achieving both innovation and the repayment of credit. The success of the strategy is revealed in the remarkable 95 percent recovery rate of credit from the groups as opposed to a far lower recovery rate from individual smallholders.

The efforts of government to support the smallholder as a group stands in sharp contrast to the British emphasis on the "advanced farmer." The latter, because of his apparently progressive attitudes on innovation, was given permission to grow crops otherwise reserved for European farmers, and he was provided with marketing facilities not otherwise available to

other cultivators.<sup>11</sup> Although, insofar as individual credit is concerned, the government does favor the prosperous smallholder over those who constitute more of a risk on repayment, the credit group system has softened the tendency toward class stratification inherent in the colonial government's strategy.

Under the group credit system, the agricultural field assistant (roughly one for every 500 families) is able to spend far more time in holding small instructional meetings; in touring the area to give advice to individual farmers; and in working with the representatives of ADMARC in encouraging the introduction of new crops. The field assistant typically received some training at Colby College in agricultural extension work. With a modicum of education plus association with the credit program, most agents have the prestige needed to be effective. The group credit approach, moreover, enlarges the population upon whom he can make an impact.

The greater share of credit loans, which may be as small as K100, have gone to the production of maize and tobacco. Increasingly, however, allocation of credit is used as a stimulus to the production of other food crops such as rice and groundnuts or nonfood commodities such as cotton. In many instances the objectives of diversification, crop rotation, and hedging against monoculture are served by linking the planting of groundnuts and maize as a condition for granting a credit loan. The ministry is not limited, moreover, to dirt cultivators. Credit has also been advanced to fishing groups who need funds to purchase small boats and fishing gear.

In a given year, the magnitude of farm credit available varies, but in 1981 roughly K5.6 million was allocated for this purpose. Most of it was in the form of short-term loans, averaging about K90, used to buy fertilizers, insecticides, and small sprayers. Increasingly, however, medium-term loans are being made to encourage the purchase of draft oxen, farm carts, ridgers, ploughs, and larger insecticide sprayers. Thus far, the offering of long-term credit for more substantial innovation is in the experimental stage, although the government would like to encourage the more successful credit groups to buy grain mills and other major capital equipment.

(August 1982)

NOTES

1. Shankar Acharya, "Development Perspectives and Priorities in Sub-Saharan Africa," *Finance and Development*, Vol. 18 (March 1981), p. 18.
2. *Malawi Statistical Yearbook, 1979*.
3. A total of 710,450 acres, or 287,500 hectares of land has been demarcated, with a third of it registered to recognized heads of family groups.
4. Mr. Gilbert Chirwa, mimeographed paper, c. 1980.
5. Many of the ADMARC figures cited in this study are derived from National Statistical Office, *Compendium of Agricultural Statistics, 1977* (Government Printer: Zomba, 1977). More recent data are derived from ADMARC and various government publications.
6. Malawi's tea industry began in Blantyre in 1891, the inspiration of Church of Scotland missionaries. It was regarded as a substitute for coffee, cotton, and tobacco which had been afflicted with various plant diseases.
7. In the southern region, this was only exceeded by yields of 2,831 tons in Zimbabwe and 1,332 tons in Swaziland. Malawi's yield was considerably higher than in Zambia, Tanzania, Angola, and Mozambique. Source: SADCC Conference working papers, 1980.
8. Groundnut yields per hectare average 627 tons. Ibid.
9. The annual census has remained relatively constant. In 1979, there were 650,000 goats, 197,300 pigs, and 68,900 sheep.
10. See, for example, Alan Rake, "Tanzania: Pricing and Marketing Policies Slated," *African Business*, June 1981, pp. 25-26.
11. Cf. Martin Chanock, "Agricultural Change and Continuity in Malawi," in Robin Palmer and Neil Persons, eds., *The Roots of Rural Poverty in Central and Southern Africa* (London: Heinemann, 1977), p. 404.