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Malawi's Agricultural Development: A Success Story?

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Abstract

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At a time when attention was focused on Africa's poor agricultural performance, Malawi demonstrated a capacity not only to feed itself, but to produce a surplus for export. During the periods covered in this paper, its agricultural growth exceeded that of most African countries and compared favorably with 'success stories' on the continent. This research focuses on Malawi's recent performance, with particular attention on trends in the provision of essential agro-support services: credit; extension and farmer training; and input supply and marketing. Trends in these services are examined first at the national level and then at the district level. While overall trends indicate substantial progress, district level data reveal extensive unevenness. Moreover, at the farm level, census data on farmer training and technology utilization show fewer benefits to female operators and smaller farmers.

Important elements of developmentally oriented infrastructure and services have been put in place and are functioning better than in most African countries. This is important in terms of longer-term agricultural development prospects. There is ample evidence, however, that Malawi's progress has not spread across different segments of the farm population or Agriculture Development Districts. Both the unevenness and overall progress have been heavily influenced by donor-support.

Introduction

Malawi is one of a handful of African nations that have combined economic progress with political stability since independence (Lamb, 1984, p. 295). Although it is still one of the low-income countries, its economic growth is among the highest within that subset of nations. Much of this growth has been in agriculture, thus contributing to Malawi's image as a 'success story' in Africa (Meier, 1984). It has demonstrated a capacity not only to feed itself, but to produce a surplus for export.

Malawi has not yet attained a level of agricultural self-sufficiency. It is a

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fact, however, that the government has focused public policy on agriculture and invested substantial shares of its own and donor resources to that end. Governmental institutions serving agriculture are in place and functioning reasonably well. Peasant shares of agricultural production have improved, and the real value of peasant output has grown. Farmers have responded to policy and infrastructural improvements, although to this point development has not involved a broad segment of the farm population.

Several of these achievements have been challenged by skeptics and critics (Kydd and Christensen, 1982; Kydd, 1985). Questions have been raised about the accuracy of the supporting data, the actual role governmental institutions played in the agricultural transformation and, perhaps more importantly, the depth of the transformation itself. Critics question whether it has been concentrated in the commercialized estate sector or reached more than a small segment of smallholders. Critical attention is now being focused on the inter-district variations in farmer access to agricultural inputs, effectiveness of extension, and the benefits of technological change more broadly.

The objectives of this paper are to examine, as far as available data will permit, Malawi's overall agriculture development, provide some suggestions as to how this success has been promoted and, finally, examine the breadth of that success. The focus of will primarily be on the provision of several essential agro-support services: credit, farmer training and extension, and input supply and marketing. The analysis, which draws on both published and unpublished reports, as well as insights provided by various key-informants, will examine trends at the national level, and then at the Agricultural Development District (ADD) and farm levels.

Malawi Agriculture in the African context

Trends in agricultural production across Africa are not encouraging. Over the last two decades food production has not kept pace with population growth, resulting in a negative per-capita growth rate (Due, 1986, p. 22). While overall patterns mask a few 'success stories', the disquieting aspect of African agricultural development is that there are relatively few such cases. Malawi is one, as can be seen in Table 1, which covers the period through 1984. On several frequently cited development and agricultural production measures, Malawi has performed well relative to adjacent countries, and even to two prominent 'successful' African cases (Ivory Coast and Kenya) and sub-Saharan countries generally.

Malawi is still defined as one of the "poorest of the poor" (Weiss and Jennings, 1983), falling below the African average GDP per capita. Still, its economic growth has been steady, inflation is relatively low, and its agricultural performance is among of the best in Africa, increasing by an annual average

TABLE 1

Selected economic and agricultural indicators for Malawi and other African countries

	GNP per capita		Average annual rate of inflation 1973–84	Population growth 1973–84 (%)	Average annual growth rate of agriculture 1973–84 (%)	Index of food production per capita, 1982–84 (1974–76=100)
	GNP per capita 1984 ($)	Average annual growth 1965–84				
Malawi	180	1.7	9.4	3.1	2.5	100
Adjacent Nations						
Tanzania	210	0.6	11.5	3.4	NA	100
Mozambique	NA	NA	NA	2.6	NA	73
Zimbabwe	760	1.5	11.4	3.2	1.1	69
Zambia	470	−1.3	10.4	3.2	1.0	74
'Success' Cases						
Ivory Coast	610	0.2	11.7	4.5	3.3	110
Kenya	290	1.9	10.8	4.0	3.5	82
Sub-Saharan Africa						
'Low-Income Countries'	210	−0.1	12.1	2.9	1.4	92
'Middle-Income Countries'	680	2.4	20.1	3.0	0.1	92

Source: World Bank (1986).

2.5% for the period, 1973–84 (Table 1). Still, growth in agriculture is not quite keeping pace with population growth, which at 3.1% is high by world standards.

Setting for agricultural development

In order to place prevailing conditions and prospects for agricultural development into perspective, it is necessary to note some basic features of Malawi agriculture. It is, first of all, small, densely populated, and heavily dependent on agriculture for both foreign exchange earnings and employment. With 65 persons per km^2, it is one of the more densely populated African countries, thus precluding the possibility of expanding production by increasing farm size. The combination of high population growth and density, and the high proportion of cultivable land already in production (estimated at 70–90%), virtually ensures that continued increases will likely come from technological change. The 24% decrease in average farm size and the almost 50% increase in population density between the 1968–69 and 1981 agricultural censuses are clear indications of increasing pressure on a limited stock of land. Presently, the average Malawi farm consists of 1.17 cultivable hectares, which is relatively small in light of estimates that 1.25 ha are the required minimum for meeting basic subsistence needs.

Overall, 30% of farm households are headed by women, and a sizeable portion (40%) of the smallest (0.5 ha or less) farms are operated by women. It is

estimated that these small farms have few options as far as expansion is concerned. Further complicating the agricultural picture in Malawi are conditions in surrounding countries where conflicts and tensions have seriously affected Malawi's external transportation. Return migrants from employment in South Africa are relocating in rural areas and taking employment on estates. At the same time, rural-to-urban migration represents nowhere near the problem it does in other African countries. However, off-farm employment in rural areas is limited and remains a major problem. To a large extent, employment is limited to working on estates or in small businesses. For the near term, at least, agriculture will be the primary source of rural employment, whether in the smallholder sector or on estates.

As implied above, the agricultural sector in Malawi is differentiated into a smallholder (peasant) sector and an estate (commercial, cash-crop) sector, with the latter occupying about 5% of the farm land. While there are only about 1200 estates, compared to 1.26 million smallholder farm households, they account for a disproportionate share (21% in 1984) of agricultural sector growth (Kydd and Hewitt, 1986). The smallholder-estate classification is important insofar as it also dictates what crops can be grown and influences access to inputs and institutional services. With the government's policy of promoting export crops on estates, these farms have been actively engaged in hiring smaller farmers and more recently have been encroaching on crops traditionally grown by smallholders. The paucity of data on estates leaves unresolved many questions about agricultural employment, beneficiaries of government investments, and allocation of government resources. It seems likely, however, that the estate sector will be influential in determining the course of agricultural development and rural employment.

Evidence for Malawi's agricultural success

Government agricultural policy has emphasized food self-sufficiency and promotion of agricultural exports. A key element of this thrust has involved moving farmers from a more traditional mode of production to more intensive commercial agriculture and expanded use of modern forms of inputs. There has been a concomitant emphasis on providing farmers with credit for purchase of inputs, increased availability of inputs and marketing facilities, higher product prices, and extension and training to improve farmers' overall information levels and skills.

Credit

Improved technologies are invariably purchased off the farm (Mellor, 1966, p. 290). Some farmers purchase inputs out of savings, but most are dependent on credit, and small farmers are more dependent than the larger. A primary

component of agricultural development efforts in Malawi has been the provision of credit, in kind, payable through farmers groups (clubs) which assume responsibility for repayment and farmers' adherence to certain restrictions on the use of loans.

Between 1978 and 1985 the amount available in credit has expanded by a little more than 500%, or from K.2.642 million to K.15.975 million (approximately US$10.7 million at 1985 exchange rates). In addition, the average amount of credit per farmer club and club member is also increasing. For example, between 1982 and 1985 the average credit allocation per club grew by 53%, and the average loaned per member by 38%. These average increases exceed the 9.4% annual rate of inflation (Table 1). Credit is presently being utilized by 10–15% of the smallholder farm population, a figure considered to be low in relation to need, but high for African nations. For purposes of comparison, estimates are that 5% of farms in Africa receive credit, while in Asia and Latin America the level approaches 15% (Braverman and Guasch, 1986, p. 1254–1255; Gonzalez-Vega, 1984, p. 4). Thus, by comparison with other African nations Malawi is reaching a relatively large proportion of farmers with credit.

Extension and farmer training

Heavy emphasis is placed on farmers' utilization of new agricultural inputs. The main vehicle by which this transformation is to occur is the extension service working through farmer clubs to disseminate new information and farming techniques. Malawi's extension service has undergone dramatic growth. Although figures from different sources vary somewhat, the best estimate shows that in 1977–78 there were 1010 field-level technical assistants (TAs). More recent data (1985) indicate about 1680 TAs, a 66% increase. The more recent figure yields a farm assistant-to-farm household ratio of 1 : 827 (McDonald, 1985). This ratio is close to the 1 : 600–700 figure being suggested as a target in agricultural development circles. It is clearly more favorable than the extension staff–farmer ratios in most African and other low-income countries (Orivel, 1983; Khan, 1986).

Extension, however, is only one determinant of agricultural production, and increased numbers of TAs only imply a larger volume of contact and potential for information transfer. Findings from the *Annual Agricultural Survey, 1982–83* (Malawi, no date) reveal the extent of extension contact via several different commonly used vehicles. About 4% of farmers reported they had a field visit by a TA in the preceding year, slightly more attended a farming demonstration (6%) or were paid a personal visit (8%). A little over 20% of the farmers participated in a group meeting, a currently emphasized contact ve-

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K., kwacha = US$0.67 (1985).

hicle under the modified Training and Visit system being implemented in Malawi. The contact levels generally seem to be above African standards; for example, 3% of farmers reported extension contact in Nigeria (Orivel, 1983), while 2–3% was the estimated level of contact for farmers in Zaire (Christensen, 1981).

Training programs designed to provide more intensive instruction and skills training complement extension contacts. For this purpose, the Ministry of Agriculture maintains two types of farmer training facilities, *day centers* (DCs) and *residential training centers* (RTCs), both of which involve farmers in demonstrations, lectures and discussions of typical farm situations. The DCs conduct 1-day meetings, while the RTC programs span 1–2 weeks. The coverage of these training courses can be gauged from looking at the most recent agricultural census data (Malawi, 1984), which show that 23% of male farm household heads had attended DCs and 5.2% had attended an RTC course. Again, while the proportions may not be impressive for a particular year, they represent higher levels of training contact than those found in most African countries.

Farmers' clubs

Several years ago, the Government of Malawi began promoting farmer groups and clubs, primarily as a means of facilitating farmers' contacts with extension. The basis of this approach was the realization that because of staff limitations, and the failure of information to diffuse from 'model farmers' to the general farm population, farmers would have to be reached in groups with similar interests, conditions and farming problems. Clubs are voluntary, but their formation is being encouraged by field assistants. Ideally, each club is to have 20–30 members, both men and women and small and large farmers.

The group approach facilitates interaction between extension personnel and farmers. Even more importantly to get credit, farmers *must* function as a club, which in turn ensures regular extension contact and 'certification' by extension that appropriate cultural practices are utilized by club members. There is currently a boom in formation of farmer clubs, from 6654 clubs in 1982–83 to 8148 in 1984–85. Over this same period the number of farm households reached by clubs has gone from 156 703 to 211 770, incorporating 18.6% of farm households.

Input supply and marketing

Reliable access to input supply and marketing is another important factor in expanding production. The Agricultural Development and Marketing Corporation (ADMARC), a national marketing parastatal, has been expanding its network of outlets over the past decade. These outlets purchase most major commodities from farmers, and serve as suppliers of major inputs. While it is possible to market commodities locally, and there are a few private outlets for some chemicals, for all practical purposes ADMARC is the sole supplier of modern forms of agricultural inputs and the major marketing outlet.

ADMARC operates a highly decentralized network of an estimated 1274 distribution and buying points (ADMARC, 1986). Although it is not known how rapidly they are being established, ADMARC's goal is to have all farm households within 10 km of a facility by 1990. In the most recent agricultural census (Malawi, 1984), 76% of rural households reported already being within 8 km of an ADMARC depot and 18% within 2 km. The evidence thus suggests that the marketing and input distribution system is well developed and decentralized. Problems do arise, but most reported problems are not a matter of large scale breakdowns.

Fertilizer is the major production input purchased from ADMARC. While the price of fertilizer (highly subsidized) doubled between 1977–78 and 1984–85, the price paid for maize increased by 131%. There has been an emphasis on fertilizer imports, and fertilizer sales to farmers through ADMARC have been gradually expanded. Between 1976–77 and 1983–84 fertilizer sales to smallholders increased an average 14% per year, about the same annual level of expansion as in the previous decade (Kydd and Christensen, 1982). From 1980 to 1984 fertilizer sales to smallholders increased from 49 142 t to approximately 67 000 t. Similarly, based on the total land being cropped by smallholders, fertilizer usage increased between 1980 and 1985 from 37 kg/ha to 50.3 kg/ha.

A more critical look at Malawi's agricultural development

As the previous section illustrates, Malawi has demonstrated progress over the 1973–84 period. In terms of extension contact levels, extension–farmer ratios and formal credit distribution, it ranks above most other African countries. Fertilizer supplies have increased annually, and for several cash crops prices have stayed ahead of input price increases and inflation. Other such indicators could be presented to justify the impression that Malawi is faring better than most African countries. On the key indicator, overall agricultural production, as seen in Table 1 earlier, it certainly ranks higher than sub-Saharan countries.

Still, Malawi has come under criticism, partly because many of the key trends fluctuate from year to year, but also because of its narrow base of development. The following section explores this latter criticism by examining evidence of uneven development across ADDs within the country and across different segments of the farm population. The focus here will be, as in the previous section, on the broad area of agro-support services which have come under severe criticism in African agriculture (Henderink and Sterkenburg, 1985).

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t, metric tonne = 1000 kg.

Credit problems

The farmer club strategy was intended to channel credit to farmers as well as facilitate credit repayment since the club assumes responsibility for repaying loans. Since credit and club membership are linked, farmer clubs have spread rapidly in all districts. Even considering the rapid formation of clubs mentioned earlier, still only 18.6% of all smallholder farmers are involved in clubs. In some areas they have been formed but are awaiting credit. Table 2 shows, for four selected ADDs, the number of clubs and the average credit per member. Credit levels vary considerably across clubs in these four districts, from an average of K.91.6 per club member in Lilongwe to a low of K.30.4 in Ngabu. Figure 1 presents trend data on volume of credit, by ADD, for the period 1977–78 through 1984–85. As indicated above, there has been a dramatic increase in credit over this period for Malawi as a whole. District changes, however, vary considerably, from a rather small 3% average annual increase in Ngabu ADD to a more than 300% average increase in Blantyre ADD. As large as some of these increases have been, there is still relatively little credit per farmer or farm household. Considering those who received credit through one of the better funded ADDs (Mzuzu) the amount per member is only K.91.6 (approximately US$60, 1985), or slightly more than required to plant a half hectare of maize. Of course, most club members get a smaller amount, and most farmers do not belong to clubs.

Credit, as was pointed out earlier, is utilized by 10–15% of the farm households. However, this figure varies as well. In Lilongwe district a fourth of all farm families are receiving credit and in Ngabu about 20%, figures that are considerably above the national average. The available evidence thus seems to illustrate variability across districts in the proportion of farmers receiving credit, in addition to variations in size of loans. To a large extent this variability is a function of availability of external funding for credit through the donor-funded

TABLE 2

Farmer club trends in four selected districts and Malawi, 1984–85

District	Clubs	Members	Members per club	Average loan per club (in K.)	Average loan per club member (in K.)
Lilongwe	2422	68 322	28	2536.4	89.9
Ngabu	539	11 681	21	659.4	30.4
Mzuzu	574	23 035	40	3676.5	91.6
Liwonde	1009	26 381	26	1096.0	41.9
Malawi	8148	211 770	25	1960	75.4

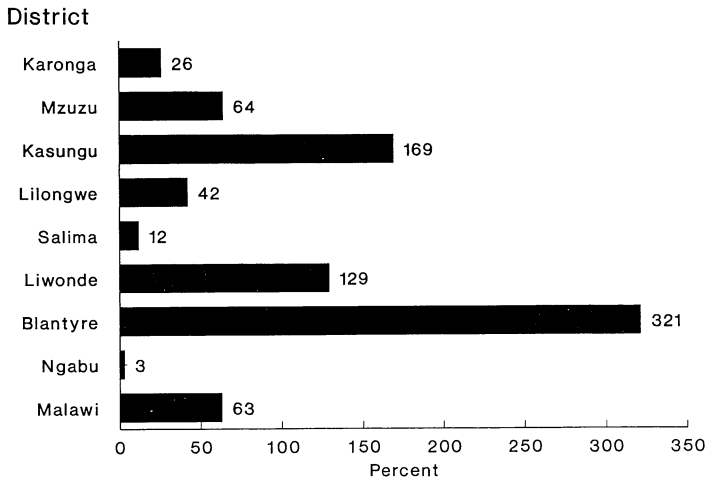

Fig. 1. Average annual percent change in farm credit, by district, 1977–78 to 1984–85.

National Rural Development Programme (NRDP), presently (1985) covering only about 30% of the population.

It should also be pointed out that while the farmer club strategy is conducive to high loan repayment (95–98% in 1985), it involves some obvious trade-offs. It is inevitable that a certain amount of selectivity would enter into who ultimately gets membership in a club. There is speculation that farmers who are defined locally as potential risks do not have access to clubs. In many areas this includes smaller, labor-poor farmers, and thus, by definition, female-operated farms which tend to be small.

In addition to the general issue of access to club membership, there is also the more fundamental question of how the club strategy influences extension's role and responsibility. In one ADD, for example, it was pointed out that field assistants concentrate a disproportionate amount of time on club members, and particularly on those getting credit or eligible for credit. A related charge is that this approach has produced a commercial cash-crop emphasis with subsistence crops getting less attention from extension. Unquestionably, credit and extension are linked, and this linkage is subtly shaping the distribution of benefits from agricultural development.

Extension and training problems

As indicated earlier, the overall ratio of extension field staff to farm households is more favorable than in other African countries. Once again, however, there is sizeable inter-district variability in the ratios of extension assistants to farm households, and also of assistants to cultivated land. To illustrate, in

Ngabu ADD one field assistant is responsible for 346 farmers, less than half the national average of 815, while in Blantyre ADD the number of farmers for each assistant is almost four times as high as in Ngabu (1419). Similar disparities are observed on the extension staff-to-hectare ratio as well, with field assistants in Kasungu district responsible for about five times as many cultivated hectares (1590) on average as in Karonga district (370). The differences are not a result so much of either neglect or design, but of the availability of external donor funding to support these activities through the NRDP.

Farmer training is the other vehicle for establishing farmer contacts and imparting agricultural information and skills to producers. Data to examine the breadth of such contacts is contained in the most recent Malawi agricultural census where a question was asked whether farmers had 'ever' participated in a training course. The responses show substantial interdistrict differences. For example, in Liwonde ADD relatively few male operators (10%), farm wives (5%) or female farm operators (6%) had attended a training course. In other ADDs, Ngabu, for example, the proportions who have participated in training are 2–3 times above those levels. Overall, the ADD data illustrate the considerable disparities in access to training. In all districts, however, it is clear from the data that farm wives, and particularly female heads of farm households, were much less likely than male farm operators to attend a training course. In fact, females who are the principal operators on their farms showed the lowest levels of involvement in training courses; nationally 8% of female operators participated in training, compared with 23% of male operators.

The data obviously beg the question of quality of farmer training. It is clear from discussions with individuals at the district level and from periodic district reports that training targets are frequently not being met. Farmers are showing resistance to attending courses, material is often reported as being irrelevant because of the heterogeneity of the training groups, or the material is repetitive. In part, this is a consequence of ambitious training targets, an emphasis on numbers at the expense of quality, and of the level of training of extension staff members themselves.

Available data for extension and farmer training indicate a considerable amount of farmer contact, although still only a small fraction of the smallholders is being reached. Data are too limited to make any firm conclusions about the types of farmers benefitting from extensive extension contacts. There is, however, a systematic bias across all districts when it comes to training female farm operators.

Input supply and marketing problems

The importance of ADMARC in input supply and marketing was noted earlier. What is vitally important as far as farmers are concerned is their proximity to the ADMARC stations, especially where rural transportation is not

well developed and travel at various times of the year is difficult. Road improvement has not kept pace with other changes, with an average 1.8% increase in km of improved roads since 1980.

There are two types of data which bear directly on farmers' access to inputs and marketing, density of farm households for each ADMARC facility, and farmers' proximity to a facility. Data from ADMARC itself show wide differences across districts in terms of the ratio of depots to farmers. Some ADMARC facilities serve relatively low numbers of farms (Karonga, 272), while in other districts the numbers are quite high (Lilongwe, 1215). This density measure can serve as an indicator of potential delivery and marketing delays.

Data from the national agricultural survey get directly at the issue of distance from an ADMARC facility. For Malawi as a whole, a little over three-fourths of farm households are within 8 km, a figure which would fall within what Mosher (1976) defines as being in the farming locality and, therefore, convenient to farmers. As before, inter-ADD variations are striking. To illustrate, one might compare the Kasungu and Ngabu ADDs. In the former district almost 40% of farms are more than 8 km from an ADMARC depot, compared with only 6% in Ngabu. In Karonga ADD, over 40% are less than 2 km from a depot, a relatively advantageous situation, compared with 13% in Kasungu.

Apart from the distribution of ADMARC facilities across the countryside, there are also the typical problems associated with parastatals (Vengroff and Farah, 1986): inadequate storage facilities, untimely deliveries, spoilage, inadequate supplies, long lines at harvest and delayed payment. As noted earlier, these are periodic problems only and the ADMARC distribution and marketing system works fairly well.

Farmer utilization of new technology

The ultimate tests of the effectiveness of various incentives, technology transfer mechanisms, and farmer access to new inputs lie in farmers' utilization of new technologies and increased production. Technology and input utilization are especially important dimensions of development in Malawi since that is where the main emphasis is being placed, and since the prospects for increasing production through bringing additional land into production are more limited than in other African countries.

The extent to which farmers have adopted new inputs and recommended practices will be illustrated for maize, the most important staple in the Malawi diet, and in recent years an increasingly important export cash crop. It has been government policy to increase maize production through farmer utilization of improved seeds, applications of fertilizer, pest control, and a set of improved cultural practices. Farmers are being instructed to monocrop maize hybrids in pure stand, to apply fertilizer and adhere to several cultural practices: early planting, a prescribed plant population, ridging, and early and re-

peated weeding. More specific recommendations pertaining to each of these inputs and practices are contained in Malawi (1985).

Despite the availability of high-yielding maize varieties and aggregate increases in production, farmers' adoption levels have been disappointing. Table 3 presents ADD adoption levels for hybrid maize, and for several inputs and recommendations being promoted among maize farmers. In no district were more than 10% of maize plots planted in hybrids, and for the country as a whole, slightly over 3% of the maize plots are in hybrid maize. In several districts the adoption of hybrid maize is negligible. It should be noted that while relatively few plots are currently in hybrids, in the previous agricultural survey 15 years earlier, there was not even an entry for hybrid maize. There is thus some progress toward the government goal of introducing hybrid maize production.

Overall, more than 90% of maize hectares are still planted in 'local varieties', and other census data show that 69% of farmers are using seed retained from the previous year. On most other practices listed in Table 3, however, the adoption rates are somewhat higher. Sizeable percentages of farmers are planting early and weeding at least once. A minority are doing a second weeding and applying fertilizer. The overall adoption levels are still fairly low considering that research results show that the utilization of these inputs and practices does improve yields.

In addition to the unevenness across districts, there are also differences across farm size, suggesting a relationship between farm size and modern input use. Census data (not presented) show a gradual change in level of adoption as farm size increases. Not surprisingly, more larger farmers grow hybrid maize,

TABLE 3

Adoption of new inputs and improved cultural practices on maize plots (%)

District (ADD)	Maize plots in hybrids	Early planting (before mid December)	Weeding more than once	Maize plots fertilized	Maize plots with second fertilizer application
Maronga	7.3	31.9	31.4	12.7	4.6
Mzuzu	5.8	50	51.9	45.6	8.2
Kasungu	1.0	80.9	34.7	33.8	10.4
Salima	9.7	74.1	37.7	24.9	4.7
Lilongwe	1.2	79.1	25.6	31.6	6.8
Liwonde	.6	84.5	39.9	23	9.6
Blantyre	3.1	89.8	48.8	21.2	0.9
Ngabu	4.0	67.7	56.7	0.5	0
Malawi	3.4	79.1	39.6	26.3	4.6

use fertilizer, buy improved seed from ADMARC and obtain seeds on credit. To illustrate, approximately 70% of the farms over three hectares are using commercial fertilizer, compared with about 15% of the farms with less than one-half hectare.

In Malawi, farm size is related to other potentially important farm characteristics and resources. It is directly related to household size, and thus to labor availability. Second, smaller farms are disproportionately headed by women. While, overall, 28% of farms in Malawi are headed by women, 40% of the smallest (<0.5 ha) are female-operated, and 34% of the next smallest size category (0.5 to 0.99 ha) are also operated by women. Adoption of new inputs is thus likely to exacerbate a differential between male and female operators, to the further disadvantage of the latter.

Conclusions

Malawi's agricultural development can be treated as a 'success story', but many questions and qualifications have been noted in this paper which make it clear that Malawi's success has hardly touched the majority of the farm population. A balanced view would have to center on the notion that some solid beginnings have been made.

To emphasize beginnings is not to denigrate what has been accomplished. Some very important elements of developmentally oriented infrastructure have been put in place and seem to be functioning as intended (Swanson et al., 1986). Farm credit and other inputs are becoming available. Price policies and physical facilities for marketing seem to be functioning as intended, at least with respect to maize which produced a surplus in 1985. And most important, a technical assistance system has been established and has achieved a degree of audience penetration. The elements of infrastructure are perhaps less visible than a surplus of maize for export in the general context of African food deficits, but they are probably more important in terms of long run development prospects.

On the other hand, there is ample evidence that progress in Malawi's agriculture thus far has not reached the majority of farmers, and of course Malawi is essentially a nation of farmers at this point in time. Current efforts to introduce modern technology into agriculture will have to be expanded to reach a much larger fraction of the farm population and generalized to a broader array of farm enterprises if Malawi is to rise out of the 'poorest of the poor' category. Beyond that, it is certainly not obvious that the many families on very small farms can rise much above subsistence levels without substantial expansion of off-farm employment.

In summary, one can conclude that Malawi's success in agricultural development represents a solid beginning but probably no more than that. A 'success' label carries with a risk that further efforts are defined as not needed, and

that is clearly not the case in Malawi. One example of such risk is in the area of donor support. Malawi's infrastructural development has relied heavily on donor support and significant expansion of that infrastructure will hinge on continued and perhaps increased support. The fact that the United States bilateral economic aid to Africa (excluding the northern tier of nations) declined by 21% from 1985 to 1986 is not encouraging in that regard. Malawi's 'success' is real, but partial and must be viewed as fragile. Continued progress is not to be taken for granted.

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