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THE IMPACT OF ECONOMIC LIBERALISATION ON THE SPATIAL PATTERNS
OF PEASANT CROP FARMING IN ZAMBIA SINCE 1991: THE CASE OF
CHIBOMBO DISTRICT IN CENTRAL ZAMBIA

by

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SUMMARY OF THE DISSERTATION

This is a comparative study of the spatial patterns of peasant crop farming in Chibombo District between the 1980s and the 1990s. The study lists and discusses the agricultural support system, communication infrastructure and the crop production and patterns of the 1980s within the environment of centralised planning and then compares these to the structures and patterns of the 1990s in an atmosphere of economic liberalisation. This comparison in crop production, cropping patterns, institutional support systems and the communication infrastructure in five sampled farming wards of Chibombo District, leads to the conclusion that there is a marked change in the structures and patterns of the 1990s from those of the 1980s. Thus, in Chibombo District, the state of the communication infrastructure in the 1990s is generally poorer than the communication infrastructure of the 1980s, the agricultural support system of the 1990s is largely privately owned and found in fewer farming areas while the agricultural support system of the 1980s was state controlled and more widely spread, and crop patterns in some farming wards are different in the 1990s from those of the 1980s. In the 1990s, crop production in farming wards with a supportive environment has increased than it was in the 1980s but decreased in those where a conducive environment lacks. In this line, the study makes several recommendations for consideration on how to mitigate the problems that the peasant farmers are facing or how to enhance the positive changes that have occurred in Chibombo District.

KEY TERMS OF THE STUDY

The following are the key terms of this study: economic liberalisation, impact, agricultural policy, agricultural support system, command economy, free market economy, spatial patterns, peasant farmer, peasant crop farming, crop production, communication infrastructure, farming resources, farm family, farming ward, Chibombo District and Central Zambia.

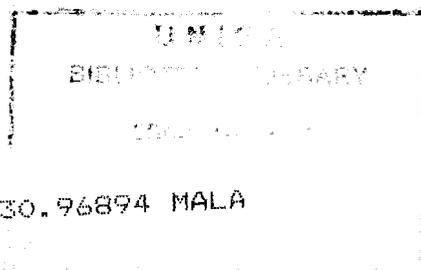
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DEDICATION

To Angela, Buumba, Tembozi and Mainza.

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COMMON ABBREVIATIONS USED

1. ACE: Agricultural Commodity Exchange.
2. AFC: Agricultural Finance Company.
3. ARMB: Agricultural Rural Marketing Board.
4. ASIP: Agricultural Sector Investment Programme.
5. BSA Co: British South African Company.
6. COZ: Credit Organisation of Zambia.
7. CPCMU: Central Province Co-operative Marketing Union.
8. CSO: Central Statistical Office
9. CUSA: Credit Union and Savings Association.
10. ECU: Eastern Co-operative Union.
11. FMB: Federal Marketing Board.
12. FNDP: First National Development Plan and Fourth National Development Plan.
13. GMB: Grain Marketing Board.
14. GRZ: Government of the Republic of Zambia.
15. KCE: Kapiri Commodity Exchange.
16. KRDCU: Kabwe Rural District Co-operative Union.
17. KM: Kilometre.
18. KG: Kilogramme
19. LINTCO: Lint Company.
20. LONRHO: London Rhodesia.
21. MMD: Movement for Multi-party Democracy.
22. NAMBOURD: National Agricultural Marketing Board.
23. NCZ: Nitrogen Chemicals of Zambia.
24. RIF: Rural Investment Fund.
25. SEED-CO: Seed Company.
26. SGS: General Society Surveillance.
27. SNDP: Second National Development Plan.
28. SPCMU: Southern Province Co-operative Marketing Union.
29. TBZ: Tobacco Board of Zambia.
30. TNDP: Third National Development Plan.
31. UNIP: United National Independence Party.
32. ZAMSEED: Zambia Seed Company.
33. ZCF: Zambia Co-operative Federation.
34. ZNFU: Zambia National Farmers' Union.

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CHAPTER 1

1.1 INTRODUCTION

In Central Zambia, and particularly the Chibombo District, the main economic activity is peasant farming. It accounts for more than 80 percent of the agricultural and economic activities in the region. The majority of the people in this region either keep animals or grow crops on a small scale for a living. As an economic activity, peasant agriculture is affected, in one way or another, by any change in the economic policies of the country. Since this type of farming is the main economic activity of the majority of the people in Chibombo District, like in other parts of Central Zambia, any impact on it is likely to affect the people's production capacity and the established spatial support structures, such as institutions, markets and roads.

In 1991 the government of Zambia, in an effort to revamp the ailing economy, introduced economic liberalisation policies that differed, in large measure, from the economic policies of centralised planning which the country had pursued since its independence in 1964. Owing to the different nature of the new economic policies, they were bound to impact - perhaps profoundly - on the spatial patterns of peasant crop farming. Both for academic and practical reasons, when there is a major policy change in a country, particularly shifts that affect many people and established structures, there is a need to investigate and record its effects on the structures intended to benefit from it.

This dissertation reports on a study concerned with the impact of economic liberalisation on the spatial patterns of peasant crop farming in the Chibombo District of Central Zambia. The investigation was aimed at establishing whether the policies introduced by the Zambian government in 1991, owing to their scope and intensity, did in fact affect the spatial patterns of peasant crop farming in Chibombo District. The study was primarily aimed at investigating the spatial changes that could have occurred in peasant crop farming in terms of crop production, institutional support networks of input and resource supply, crop marketing, extension services, and road infrastructure in farming areas of Chibombo District.

Economic liberalisation policies were launched in 1991 by the new government of the Movement for Multi-party Democracy (MMD), that came into office in that year, in order to revitalise the country's economy which had been ailing since the late 1970s. To achieve this the government decided to embark on creating a competitive market oriented economic environment in which producers, sellers and buyers of goods and services could freely do as they saw fit within the requirements of the law and the existing market opportunities. For agriculture, the policy of liberalisation meant a break from the pre-1991 policy of command structures sustained by the state, to free market policies in which small-scale farming, like other sectors of the economy, had to sustain itself depending on market opportunities. According to the pre-1991 policies the government had a direct participation in farming through its own farms, determination of prices for inputs and farm produce, provision of subsidies for the operation of state parastatals that supported agriculture, and the provision of extension services. With the new agricultural policy, the government opted to dispose of, through various mechanisms, its farms, discontinued its subsidies to agricultural parastatals, determination of input and farm produce prices, and liberalised input supply, crop marketing, provision of extension services and storage facilities. Similarly, farmers were encouraged to diversify crops and adopt new farming methods to match the new environment of a free market economy.

Owing to the fact that the bulk of the farmers in Chibombo District are peasants with a weak resource base and had been sustained for many years by state owned structures, such a profound shift in policy was likely to bring about many changes in this sector of the economy. It was this very idea that prompted the study being reported on here. This dissertation addresses the likely changes that could have occurred in the spatial patterns of peasant farming in the post-1991 period, and deals with the related issues in the context of the current government's emphasis on peasant farming as the engine of agricultural development.

The dissertation is organised in five chapters. Each chapter deals with a specific component of the study. In each chapter, the researcher has attempted to bring forth the spatial aspects of the effects of economic liberalisation on peasant farming in Chibombo District.

Chapter 1 outlines how the material is organised in the dissertation, gives a comprehensive literature review and states the rationale for the study. The literature review gives a detailed background description of peasant farming in Zambia, the development of spatial patterns, as well as the impact of government policies and changes that have occurred over time. The effect of government economic policies on the development of spatial patterns of small-scale farmers in historical times is explained with a deliberate emphasis.

In Chapter 2, the study area and the reasons for its selection are described and the problem under study, objectives of the study, hypotheses to be investigated, and the limitations of the study are set out. The key terms used in this dissertation are also defined.

Chapter 3 outlines the methods that were used when collecting the field data. Each method is explained and reasons for its choice and use are given. Within this chapter, an effort is made to describe the spatial distribution of the sampled population.

In Chapter 4, the data is presented, explained and analysed. The hypotheses are tested and the results interpreted. To do this effectively, tables, graphs and maps of production percentages and figures for the 1980s and 1990s, agricultural support infrastructure and road networks are used. Deliberately, a comparative approach over two time periods is adopted here in order to assess the effectiveness, or lack of it, of the new agricultural policies based on what they set out to achieve in 1991. In this chapter, careful consideration is given to the results of the study in line with the set objectives.

The last chapter, Chapter 5, deals with the conclusions, which can be drawn from the results. This chapter also presents a set of recommendations for consideration. These recommendations are aimed at presenting an alternative way, if necessary, of dealing with the many problems and challenges facing the peasant farming community in Chibombo District.

At the end of this dissertation is a consolidated list of all references and sources, as well as the appendices. The bibliography contains the titles of all the materials used, whether cited, or quoted from, or not. The appendices are those materials used either as sources of field data or some other information within the dissertation.

1.2 LITERATURE REVIEW

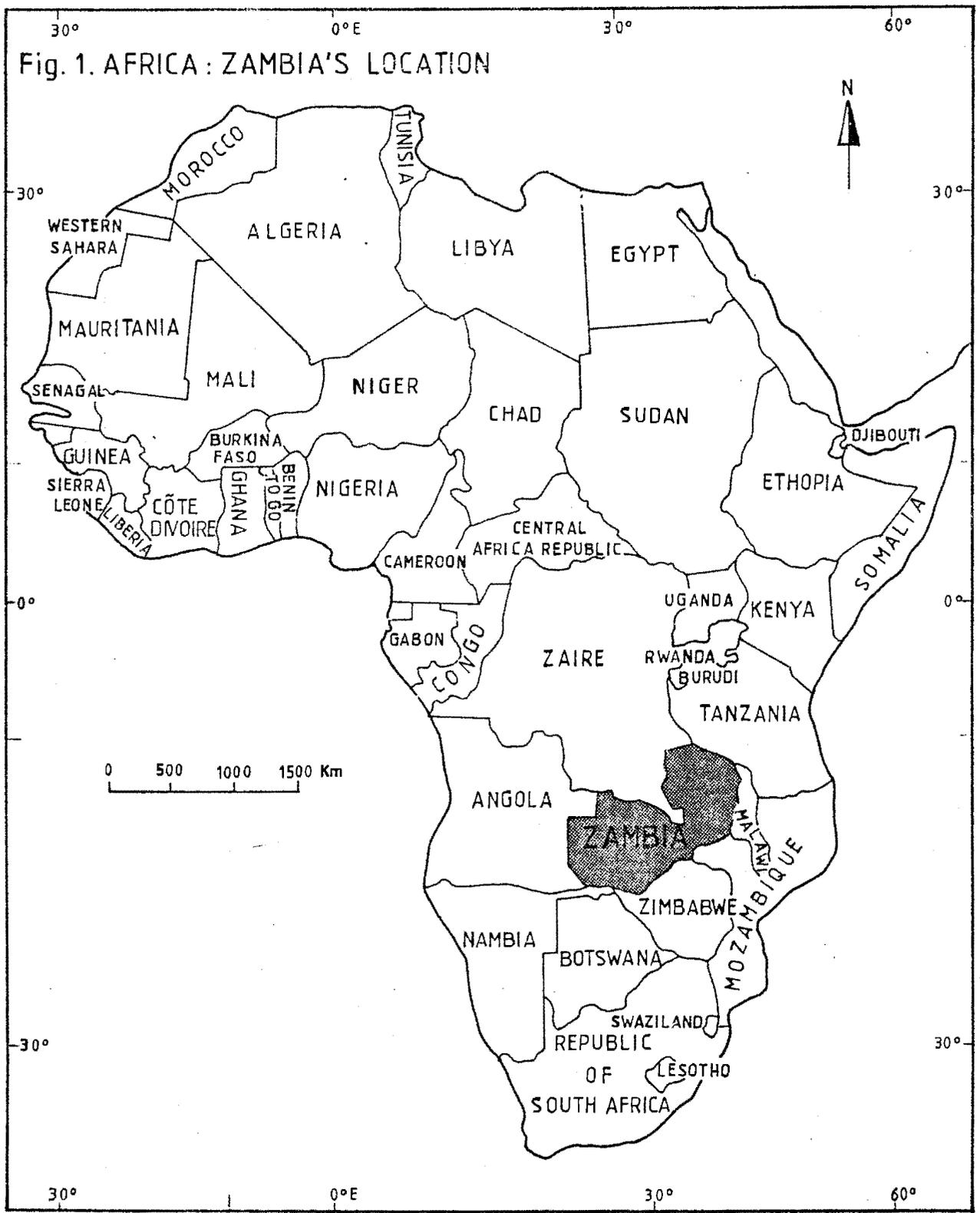
1.2.1 The historical background

The country of Zambia (figure 1), as it is called today, "... came into being in 1911 when the two British South African Company co-administered territories of North-western and North-eastern Rhodesia were brought together (to form Northern Rhodesia) ... and becoming a direct British protectorate in 1924 ... " (Wilson 1991:235). Prior to this period, 1890 to 1924, Wilson states that the British South African Company (BSA CO.) ruled Northern Rhodesia on behalf of the British Colonial Office in London. When this mandate expired in 1924, the British Colonial Office of the British government took direct governance control of the territory.

Before 1890 when colonial rule arrived in Northern Rhodesia, agriculture, according to Muntemba (1977a) and Chipungu (1988), was not commercialised as became the case in later years. It was structured in a manner that it directly responded to the immediate needs of the societies, and occasionally a commodity-to-commodity exchange system of trade. During this period, farmers in various parts of Northern Rhodesia, like in many parts of Africa, grew crops that had evolved from within their tribal communities. They "...cultivated crops such as sorghum (the staple food), millet and local maize under hoe cultivation for subsistence" (Muntemba 1977a:347). The hoe, according to Muntemba, was the main farming tool of the time - thus, it defines the technology of the time. Kay has described this period of agricultural development in Northern Rhodesia as "primitive...characterised by a very low level of capitalist inputs, by the use of no power other than human muscles and fire..."(Kay 1969:497).

Muntemba (1977a) further points out that due to the type of technology used, low population levels, limited interaction between communities, lack of active markets, poor

Fig. 1. AFRICA : ZAMBIA'S LOCATION



communication networks and other intervening variables, farming production was low. At this time agricultural production, in many places, focused more on meeting the food needs of the immediate community. Occasionally, however, trade occurred between tribal communities to exchange goods that each community desired from the other. For example, Muntemba (1977a) argues that the Lenje people traded with both the Portuguese, through long distance trade, and the neighbouring tribes like the Soli, Ila and Sala, through short distance trade, to obtain cattle, salt, copper and ivory in exchange for iron ore and other commodities.

During the pre-colonial period farmers used biotic manures like cow dung, ash from burnt tree branches, simple tools such as hoe and axe, and shifting cultivation in order to sustain the fertility of the land. Colson (1960) explains that farmers shifted to new plots of virgin land periodically so that the ones they had used for some time could regenerate. Owing to low population numbers, land tenure systems that existed at the time and the abundance of arable land such a method was able to prevail without undue pressure on the land or inconveniencing other people.

Arising from the above facts, one concludes that the pre-colonial period saw farmers use local tools like a hoe and axe for cultivating their fields, planted only crops that had evolved over time from within their communities and produced little but enough mainly for their own consumption. Similarly, settlements were not as concentrated as they are today in one or two places due to the shortage of land. Land was abundant relative to the populations of the day. The abundance of land, relative to the population, made crop rotation possible. Their settlement patterns, at this time, were dictated mainly by the availability of security to the whole tribal community, surface water, hunting and grazing lands.

According to Muntemba (1977a) and Chipungu (1988), with the arrival of colonial rule, agriculture in Northern Rhodesia changed. The farmers acquired new farming resources and opportunities - new crops, technologies and other know-how, and new markets that stimulated a general agricultural expansion. Muntemba (1977a) argues that the period between 1902 and 1920 witnessed the diffusion of technological and technical innovations, which saw an increase in agricultural output. She further points

out that "... as early as 1910 the Bulenje cultivators ... were reported as taking advantage of the markets selling milk, eggs, poultry, vegetables and grain to the growing towns" (Muntemba 1977a: 345). Kay (1969), Kajoba (1988) and Chipungu (1988) have all supported this argument. Additionally, Muntemba (1977a) and Chipungu (1988) seem to share the view that the major factor that inhibited agricultural development of the peasantry at this time was lack of effective communication links between communities.

The acquisition of new farming knowledge, crops and tools helped the African farmers increase their crop production and management of their fields (Gerrard et al 1994). These developments were particularly pronounced among those African farmers that were in close proximity with the settler farmers and/or missionaries. Muntemba (1977a), Chipungu (1988) and Mwanza (1992a and b) point out that such developments were common in Southern, Central and Eastern Provinces of the country.

Writing about the Bulenje people, Muntemba (1977a:266) states that:

As the people of Bulenje [Kabwe Rural District] seized the opportunity to produce for the growing urban market, there was triggered a process of agricultural change in terms of crops, the means of production and land tenure. Whereas in the nineteenth century sorghum was the staple grain, the twentieth century saw a shift to maize, which became more profitable to grow commercially.

These developments in Kabwe Rural District (part of which is now Chibombo), like in many other parts of the country, especially in the districts of Southern Province and parts of Eastern Province, brought about an increase in crop production and marketed crop. Muntemba makes this point clear when she says "Whereas the district [Kabwe Rural District] produced 5,000 bags (of maize) in 1946, production reached 19,000 bags in 1948" (Muntemba 1977a:258). An increase of 14,000 bags of maize within a short period of two (2) years seems to suggest that there was a remarkable improvement in farming practices among the farming community. This conclusion seems to hold ground considering the type of farming tools and knowledge most farmers had at this time.

1.2.2 Agricultural policy and its effect on peasant farming

Prior to 1950 the Colonial Government's agricultural policy, particularly towards the African peasantry can be said to have been contradictory. On one hand it appeared to encourage the African peasantry to improve production, while on the other, it clearly discouraged it. This contradiction is clearly illustrated by the following passages (as quoted by Chipungu (1988:26)), from the Department of Agriculture's policy documents just before 1928:

"Agricultural development must receive top priority. African subsistence must develop into peasant farming. Capital and technical technical [sic] must be made available on a large scale to make the African farmer efficient [sic]".

At the same time, the Department of Agriculture maintained that

"The ordinary villager...is a more economic and productive value [sic] than as a producer...He would be twelve to fifteen times as valuable in terms of manpower as a farm employee [sic] rather than self-employed".

These two quotations from the policies of the Department of Agriculture indicated a strong resolve by the ruling class (at this time) to encourage the development of Settler agriculture while suppressing the African peasantry. This policy only started changing towards Zambia's independence (Chipungu 1988).

The effects of the Colonial government on African agriculture, prior to the Second World War, were that African farmers were uprooted from the best fertile lands along the major road and communication networks and relocated to far flung areas in the interior where markets, extension services, and other very basic agriculture requirements were either in minimal supply or did not exist at all (Chipungu 1988). Muntemba seems to agree with this when she says that land alienation ...in Bulenje "...led to the relocation of people away from the towns and main lines of communication, and caused congestion and land shortage" (Muntemba 1977a:359).

This argument seems to suggest reasons why the majority of the (present day) small-scale farmers are settled, relative to their commercial counterparts, in remote areas of the country. The relocation of peasant farmers to remote parts of the country could

have had an adverse impact on crop production, knowledge diffusion and land availability. These possibilities seem to be potent considering that some of the places the farmers were removed from had the best soils in terms of fertility, and were close to markets and sources of new knowledge - the settler community. By settling the African peasantry in the reserves the Colonial Government seems to have brought about the shortage of land for growing crops and grazing animals. The overuse of land for growing crops and keeping animals could only lead to land exhaustion, declining production, poor nutrition and ultimately a low standard of living of the people (Muntemba 1977a). Muntemba (1977a) also indicates that the reserves, where the peasants were settled, had limited or no services such as schools, clinics and shops. So it means that to obtain these services the peasants needed to walk long distances.

In the late 1950s and early 1960s the policies changed (for various reasons such as political appeasement, the need for peasants to have a reliable source of income to enable them to pay hut tax and the government's need to meet the cheap food requirements of the urban centres particularly the Copperbelt Province) towards encouraging the African peasantry to expand crop production. Muntemba (1977a), Chipungu (1988), Gerrard et al (1994) and Mwanza (1992a and b) have indicated that to achieve this aim the colonial government established marketing boards, training institutions, the African Improvement Fund, and distributed chemical fertilisers to the African farmers, and improved the communication networks in farming areas. Further, this policy of inclusion, rather than exclusion, enabled the African peasantry to gain farming resources, farming know-how and new crops directly from the government and their settler counterparts. The established agricultural support network in the farming communities, for example Chipembi Farm Institute at Chipembi and Keembe Farm Institute at Keembe (see figure 13) and the marketing boards became an engine of development to the areas near or around them.

Under this policy of inclusion, "the Department of Agriculture provided free financial and technical assistance to some improved farmers - for stumping (a process of clearing the land by uprooting trees), water supplies, purchase of oxen, inputs, etc. Bonuses were also allocated on the basis of the size of holdings" (Muntemba 1977a:266). This policy-change helped farmers acquire the required farming technology. For example,

Muntemba further indicates that Kabwe Rural District "...had a total of 1,253 ox-drawn ploughs in 1948, ...1,406 in 1950 and ...3,530 in 1961; and by 1964 95 percent of the cultivators used the plough cultivation" (Muntemba 1977a:266).

With an improvement in communication networks and the general farming environment, the Zambian peasant improved his production capacity. Clearly, the colonial policy of making farming resources and support infrastructure available to the farming community, shows that the African peasantry responded, like their counterparts the European settler farmers, favourably to changes that were taking place in the economic environment.

Table 1. AFRICAN MAIZE SALES IN THE LINE OF RAILWAY AREA, 1950-1964

| YEAR | EUROPEAN-GROWN (90 kg bags) | AFRICAN-GROWN (90 kg bags) | TOTAL (90 kg bags) |
|------|--------------------------------|-------------------------------|-----------------------|
| 1950 | 447,000 | 344,000 | 791,000 |
| 1951 | 399,000 | 290,000 | 689,000 |
| 1952 | 389,000 | 173,000 | 562,000 |
| 1953 | 602,000 | 435,000 | 1,037,000 |
| 1954 | 600,000 | 467,000 | 1,067,000 |
| 1955 | 664,000 | 658,000 | 1,322,000 |
| 1956 | 606,000 | 433,000 | 1,039,000 |
| 1957 | 900,000 | 746,000 | 1,646,000 |
| 1958 | 1,174,000 | 883,000 | 2,057,000 |
| 1959 | 544,000 | 36,000 | 580,000 |
| 1960 | 1,021,000 | 516,000 | 1,537,000 |
| 1961 | 945,000 | 738,000 | 1,683,000 |
| 1962 | 1,298,000 | 955,000 | 2,253,000 |
| 1963 | 1,288,000 | 839,000 | 2,127,000 |
| 1964 | 655,000 | 354,000 | 1,009,000 |

SOURCE: Chipungu 1988:84.

Table 1 on maize sales figures demonstrates this positive response by the African peasantry, in crop production terms. Table 1 shows maize sales figures only because the information for other crops, like cotton and sunflower that had been introduced among peasant farmers during this time was scanty and impossible to obtain.

Table 1 indicates that with a provision of an effective farming support network in the farming community, sound prices of agricultural produce, good road network, and a general positive environment in the country, crop production improves. The only reason for crop production fluctuation, if the agricultural policy remains favourable, is environmental conditions and other external factors that are beyond the control of the farming community. For example in the years 1951, 52, 59 and 64 production was low mainly because of poor rainfall and the struggle for political independence that reached its peak in the late 1950s and early 1960s (Chipungu 1988).

By incorporating the African peasantry into the main stream of commercial agriculture, the Colonial government enabled the African farmers to improve their perception of farming as a business. This perceptual change brought about an improvement in the general response of the African peasantry to farming and their competitiveness. Gerrard et al (1994) argue that the policy shift resulted in an increase in land-use intensity particularly in high potential areas, high crop production, and a general improvement in agricultural efficiency. According to Gerrard and co-authors, the results from a change in the Agricultural policy of the Colonial government towards the time of Zambia's independence prove that "...small farmers are responsive to economic opportunities..." (Gerrard et al 1994:9).

The colonial government, with all its negative impacts on African peasant agriculture and the general agricultural policy that was tilted towards making agriculture a mere provider of cheap food to the mining community, managed, in the researcher's view, to establish a spatial pattern that favoured farmers in some areas of the country and created a foundation for the post colonial spatial patterns in Zambia. Among the institutions founded were the Maize Control Board which was "... established in 1936 with the power to purchase and sell maize, and later groundnuts along the line of rail

area, that is the area between Livingstone and the Copperbelt” (Shawa and Johnson 1990:370). Shawa and Johnson also point out that in 1952 “... the Eastern Province Agricultural Produce Board was set-up to provide marketing services in that province” (Shawa and Johnson, 1990:371).

In 1957, during the time of the Federation of Rhodesia (Northern Rhodesia (now Zambia) and Southern Rhodesia (now Zimbabwe) and Nyasaland (now Malawi) “... the Federal Grain Marketing Board was established to replace both the Grain Control Board and Eastern Province Agricultural Produce Board. The Federal Board had an expanded marketing mandate that included beans, sorghum and millet, in addition to maize and groundnuts” (Shawa and Johnson 1990:371). The network of the Board grew from the already developed places such as towns, along the main roads and the railway line and sparsely into the interior (Shawa and Johnson 1990).

In addition to the Federal Board, “...some loosely organised marketing co-operatives existed in the Eastern and Southern provinces, but these only acted as agents for the marketing boards” (Shawa and Johnson 1990:371). These marketing boards, though efficient in their operations, had a weakness of overlooking farming activities among the African peasantry, particularly in remote areas. Additionally, in spatial distribution terms, the marketing boards were more concentrated along the Livingstone - Copperbelt trough than in any other area. The spatial concentration of these agricultural support institutions tended to concentrate agricultural activities in the same area.

The facts about the Colonial Agricultural policy, brought out here, seem to suggest that the policy combined government intervention and free markets, particularly with regard to the co-operatives that were controlled by the settler community. This period should also be viewed as the period when the foundation of commercial agriculture in Zambia was established, in terms of crops grown and cropping systems, road networks, institutional support infrastructure and general agricultural knowledge among the farmers.

With the coming of Independence, the UNIP (United National Independence Party) government decided to follow a path of "centralised planning" (GRZ 1979:1). According to this policy, particularly after 1973 after Zambia was declared a one party humanist state, the government became a central player in all sectors of the economy, including agriculture. The policy of centralised planning adopted by the UNIP government at independence had, as is shown later, far reaching effects on the spatial patterns of peasant farming in the country for a long time.

At independence in 1964 the Grain Marketing Board (GMB) and Agricultural Rural Marketing Board (ARMB) were formed to take over from the Federal Board (Shawa and Johnson 1990). The GMB operated along the railway line from Livingstone to the Copperbelt, while the ARMB was given the task of dealing with the rural areas neglected by the Federal Board. It was the ARMB that was tasked to incorporate the rural peasantry into the cash economy. The GMB and ARMB dealt in maize, groundnuts, sorghum, soya beans, cotton, tobacco, fruits and vegetables. In addition to these two boards two provincial unions in Southern Province (Southern Province Marketing Union (SPCMU) and Eastern Province (the Eastern Co-operative Union (ECU)) operated. For cash credit, the government established the Land Bank, the forerunner of the Credit Organisation of Zambia (COZ) (Mwanakasale 1996). In later years, the Land Bank was dissolved and its place was taken over by the Credit Organisation of Zambia (COZ), which, too, was later dissolved to give way to the Agricultural Finance Company (AFC).

Shawa and Johnson (1990) argue that due to a duplication of functions, large size of operation areas, too many heavy responsibilities, poor government pricing policies, constant government interference and a critical shortage of qualified manpower, the two marketing boards failed to operate effectively and efficiently. Owing to their poor performance the ARMB and GMB were dissolved and the government formed the National Agricultural Marketing Board (NAMBOARD) in 1969 under an Act of Parliament (Shawa and Johnson 1990:372).

NAMBOARD was given a nation-wide monopoly in agriculture. In Southern and Eastern Provinces respectively, it competed against the two Unions - SPCMU and ECU.

NAMBOARD established a field network of "... more than one thousand market points... relying on a structure of fifty-two major depots" (Shawa and Johnson 1990:373). In addition this huge infrastructure was controlled from "...a head office in Lusaka, operating through nine provincial and forty-three managers" (Shawa and Johnson 1990:373). NAMBOARD's depot network in the sampled wards of Chibombo is shown in figure 13.

Shawa and Johnson (1990), Mwanza (1992a and b), Mwanakasale (1996) and Klepper (1979) argue that by 1969 operational problems of NAMBOARD and other agricultural institutions (involving their inability to efficiently and effectively handle farming problems, repay government loans, be financially self sustaining and diversify agriculture) had become very apparent. So, there emerged a strong feeling in government circles to restructure the institutions by streamlining their operations. Klepper argues strongly that the inability to service government loans largely emanated from their culture of "... treating the money as income rather than investment funds..." (Klepper 1979:141).

Table 2. AMOUNTS OF CREDIT APPROVED BY LIMA BANK AND ZCF FINANCE SERVICES - 1983/84 TO 1988/89 (Zambian K in thousands)

| FARMING SEASON | LIMA BANK | ZCF FINANCE SERVICES |
|----------------|-----------|----------------------|
| 1983/84 | 45,585 | 4,180 |
| 1984/85 | 55,903 | 6,001 |
| 1985/86 | 48,005 | 6,026 |
| 1986/87 | 79,322 | 60,000 |
| 1987/88 | 86,022 | 80,139 |
| 1988/89 | 214,204 | 107,933 |

SOURCE: Chabala and Sakufiwa 1993:37

Chabala and Sakufiwa (1993), and Mwanza (1992a and b) have argued that the shortage of qualified manpower in these institutions made them operate as social equity institutions tailored towards government political goals rather than businesses with a profit motive. Table 2 shows credit disbursements from two credit organisations between 1984 and 1989. At this time, it must be borne in mind, that these amounts were big sums of money. Similarly, like Chabala and Sakufiwa (1993:37) have pointed out, credit lending at this time suffered very high non-recoveries some of which were as high as 60% or more at times.

Further Klepper states that the government, on its part, "failed to organise and train cadres to work in rural areas and bring to the peasantry ideological training as a complement to putting fertilisers, tractors, and ploughs in their hands" (Klepper 1979:141). Such a failure, on the part of the government, created a very serious gap of understanding, particularly on the part of the farmers concerning the purpose of loans, and interpretation of government agricultural policies. Many, as became common in later years, took loans to be cash gifts from government rather than money they needed to repay.

This culture of not paying back loans affected, directly, both government and agricultural institutions' coffers. Government subsidies to agriculture kept on increasing. In 1979, for example, "... the total subsidy to agriculture, most of which went to NAMBOARD, exceeded K100 million and was about 19% of total recurrent government spending" (Mwanza 1992b:131). These subsidies included meeting the cost of inputs like chemical fertilisers, seed, and funding the credit institutions that gave the small-scale farmers agricultural loans. Table 3 clearly shows the amount of government subsidies, especially for maize, for the period 1980 to 1990.

Table 3. MAIZE RELATED SUBSIDIES IN RELATION TO GOVERNMENT BUDGET (RECURRENT AND CAPITAL) AND BUDGET DEFICIT 1980 TO 1990

| YEAR | GOVT BUDGET (K'M) | BUDGET DEFICIT (K'M) | MAIZE SUBSIDIES (K'M) | SUBSIDIES AS % OF BUDGET |
|------|----------------------|-------------------------|-----------------------------|-----------------------------|
| 1980 | 1,657.6 | 160.3 | 154.0 | 9.3 |
| 1981 | 1,388.6 | 155.7 | 87.1 | 6.3 |
| 1982 | 1,643.2 | 658.1 | 138.0 | 8.4 |
| 1983 | 1,475.9 | 8.6 | 124.7 | 8.4 |
| 1984 | 1,484.6 | 284.8 | 81.6 | 5.5 |
| 1985 | 2,184.3 | 280.4 | 134.0 | 6.1 |
| 1986 | 5,383.6 | 1,025.7 | 565.0 | 10.5 |
| 1987 | 5,837.5 | 2,146.8 | 638.4 | 10.9 |
| 1988 | 8,359.3 | 1,531.2 | 1,413.0 | 16.9 |
| 1989 | 9,838.0 | 3,699.0 | 1,585.6 | 16.1 |
| 1990 | 24,503.3 | 2,801.4 | 3,363.9 | 13.7 |

K'M = Zambian Kwacha in millions.

SOURCE: Chabala and Sakufiwa 1993:46

NB: No explanation is given to explain why the 1983 budget deficit figure of 8.6 came about.

According to the Second National Development Plan (SNDP 1972 -76), in order to achieve the government's aim of diversifying agriculture to make it the mainstay of the economy, the government decided to pursue the policy of centralised planning more vigorously. Prior to the oil crisis of 1974 and the fall of copper prices on the world market at this same time, according to Klepper (1979), Mwanza (1992a and b) and Mwanakasale (1996) the Zambian Government was able to continue subsidising agriculture due to the high incomes it earned from the export of copper. Mwanza (1992a and b), Klepper (1979) and Chabala and Sakufiwa (1993) have argued that

high income earnings from copper at this time made the government fail to see the need to take practical steps towards cutting down on agricultural subsidies and making the lending institutions financially self sustaining.

From the Second National Development Plan (1972 - 76), Third National Development Plan (1979 - 83), and Mwanza (1992a and b), one concludes that between 1969 and 1991 Zambian agriculture was run by monopoly institutions. These include the National Agricultural Marketing Board (NAMBOARD) - formerly the Grain Marketing Board; Tobacco Board of Zambia (TBZ); Lint Company of Zambia (LINTCO); Zambia Seed Company (ZAMSEED); Nitrogen Chemicals of Zambia (NCZ); Agricultural Finance Company (AFC) that later changed to Lima Bank, Credit Union and Savings Association (CUSA); Zambia Co-operative Federation (ZCF formerly numerous co-operatives owned mainly by settler farmers); Provincial and District co-operatives; Extension Services, and a network of training institutions. Additionally, the government of the Republic of Zambia built roads that enabled these institutions to reach the rural farmer even in remote places. Based on the evidence from the field, these roads were regularly maintained by the government for most parts of the year, particularly during the dry season just before crop haulage, to make them passable.

Unlike the Grain Marketing Board and individual co-operatives of the colonial period, that confined their operations to the areas along the major roads and the Livingstone to the Copperbelt line of rail, the new agricultural support infrastructure was spatially well spread. This is evidenced by figure 13, which shows the spatial distribution of the agricultural support infrastructure in Chibombo District before 1991.

According to Mwanza (1992a and b) and Gerrard et al (1994) each of the institutions (NAMBOARD, ZCF, ZAMSEED, LINTCO, AFC, CUSA, TBZ and NCZ) was tasked to carry out a specific function to promote agricultural development in accordance with the centralised policy of management. These were that NAMBOARD, Provincial and District Co-operatives, and the Zambia Co-operative Federation (Agriculture Business) were to supply inputs, buy produce and supply storage facilities at selected places in the farming community at government cost. ZAMSEED developed and supplied hybrid

seed for maize and other crops through those institutions with a field network (i.e. through NAMBOARD, ZCF, NCZ and CUSA).

African Farming Equipment (AFE) had a duty of making and supplying farming equipment like ploughs, hoes, harrows, and others. These were bought on cash directly by the farmers through various retail outlets or obtained on loan through NAMBOARD, the Co-operatives or other farming institutions. African Farming Equipment had no field network.

Nitrogen Chemicals of Zambia manufactured and supplied chemical fertilisers directly through its own urban outlets or through NAMBOARD and the other institutions that had an extensive field network. Like for the other farming resources this was done mainly on credit.

Lima Bank was given the mandate of giving out government sponsored cash loans to the farming community. Although it did not have a field network of offices, but only relied on its urban outlets, it was popular among the small-scale farmers largely because of the product it dealt in. Owing to the nature of the farming resource Lima Bank specialised in, farmers of all categories covered distances of various lengths to reach the Lima Bank offices wherever they were (District Agricultural Co-ordinator – verbal interview, 1997).

CUSA, like the Lima Bank, specialised in supplying farmers with cash credit. But, unlike Lima Bank that supplied cash credit to any applicant they approved, evidence from the field, and Mwanakasale (1996) indicate that CUSA's loans were only accessed by some of its own members. Non-members were required to apply for membership before they were given any loans. To be a member one had to pay subscription fees determined by the CUSA Board. Anyone who did not follow the rules of CUSA was automatically deregistered. This foundation of operation made CUSA, unlike the institutions that depended on annual government funding, more financially sound and economically sustainable.

Zambia Co-operative Federation Finance Services (ZCF Finance Services) provided cash credit, like Lima Bank and CUSA, to farmers, especially the small-scale farmers.

The source of the annual funds to lend out to farmers, like the case for Lima Bank, was government. This made ZCF Finance Services financially unsustainable and dependent on government. The situation was made worse by perpetual poor annual loan recoveries from the farming community that was not held accountable for their actions.

The Department of Agriculture, through its extensive network of Extension Offices in the field (see figures 3 – Agricultural Camps), provided farmers with extension advice on farming management, particularly with regard to crop production. This network of extension offices made it very easy and cheap for the farming community to obtain advice from government at no cost at all. To-date, the spatial distribution of this network, as figure 4 shows, has remained the same.

LINTCO was specialised in promoting cotton growing. It supplied farmers with free extension service, loaned them with seed and cotton equipment like cotton sprayers, and provided a closely supervised field network of depots (figure 13). Additionally, this company, unlike other government run establishments, had more autonomy and was allowed to have some small private investment. According to Lombard and Tweedie (1972) and Mwanza (1992a and b) this autonomy LINTCO was given allowed it to respond favourably to the needs of the farming community and hence enabling cotton to be a success story in the history of Zambian agriculture. Although it occasionally suffered bad debts on loans from the farming community, its annual losses were much less and therefore more manageable than those were for NAMBOARD and the co-operative movement (Lombard and Tweedie 1972, Mwanza 1992a and b).

During this same period the government managed to establish and maintain main roads and feeder roads in the rural areas (figure 11). These roads, as explained later, seem to have encouraged crop production to be high at the time, as long as there were no other intervening variables such as droughts. Also, the wide spread of maintained roads, according to field data collected during the current study, enabled farming development to take place spatially more evenly. This network of roads was established mainly during the First National Development Plan (GRZ 1979:1). The FNDP put emphasis on, among others, on the development of communication

infrastructure in the farming community. According to the FNDP (1966 - 70), SNDP (1972 - 76), TNDP (1979 - 83) and the GRZ Economic Review report of 1984, this was done in order to open up areas previously neglected by the colonial government to economic development and help reduce the rural-urban drift that followed political independence.

Using evidence obtained from the field work of the current study, it appears that the wide spread of support infrastructure in the farming community, the guaranteed availability of farming resources, and a maintained network of roads, encouraged the small-scale farmer to locate even in areas that were previously viewed as disadvantaged (figure 10) and be able to produce more. According to Shawa and Johnson (1990), this was made possible by the government policy of maintaining uniform prices of agricultural produce across space, establishing and maintaining of passable roads, establishment of social amenities like schools, clinics, shops and others in the farming community.

Table 4. CROP PRODUCTION ESTIMATES - CHIBOMBO DISTRICT

| | MAIZE (90 kg) bags | COTTON (Kilograms) | SUN/FLOWER (50 kg) bags | SOYA BEANS (50 kg) bags | GROUNDNUTS (90 kg) bags | SORGHUM (80 kg) bags |
|---------|--------------------------|-----------------------|-------------------------------|----------------------------------|-------------------------------|----------------------------|
| 1988/89 | 15,500 | - | 2,200 | - | 750 | 300 |
| 1989/90 | 98,200 | 177,000 | 10,300 | - | 883 | 222 |
| 1990/91 | 850,000 | 2.2 Million | 5,700 | 2,500 | 2,200 | 400 |

SOURCE: Department of Agriculture - Chibombo District (on file) - 1997

NB: According to the information on file at the Department of Agriculture, 1990/91 year had favourable weather conditions and hence farmers produced more particularly cotton. This seems to agree with the statistics for all crops.

Such a deliberate agricultural policy of encouraging production and paying a uniform price, on the part of the government, helped farmers, particularly those in remote areas engage in active production. In a sense this policy seems to encourage farmers to produce more. This is made clear by the only available statistics of Chibombo prior to 1991 in table 4.

From the above statistics it is clear that crop production, particularly maize which was the focused food crop by government policies, and cotton were doing well due to the support infrastructure that existed in the farming communities at this time. Production of maize and cotton was particularly good in the farming seasons 1988/89 to 1990/91 when Zambia either had no imports or managed to export excess crop and experienced good rainfall. This is shown in table 6. The statistics in table 5 are inclusive of maize produced and marketed by both commercial and small-scale farmers countrywide.

Table 5. MAIZE IMPORTS AND EXPORTS 1982/83 TO 1991/92 (thousands of 90kg bags)

| YEAR | IMPORTS (000) | EXPORTS (000) |
|---------|---------------|---------------|
| 1982/83 | 1,240 | - |
| 1983/84 | 1,100 | - |
| 1984/85 | 1,060 | - |
| 1985/86 | 1,080 | - |
| 1986/87 | 160 | - |
| 1987/88 | 710 | - |
| 1988/89 | - | - |
| 1989/90 | - | 2,000 |
| 1990/91 | - | - |
| 1991/92 | 6,900 | - |

SOURCE: Chabala and Sakufiwa 1993:6

NB: 1991/92 farming season had low rainfall and farming inputs were delivered late to the farmers, and hence the food imports.

It is crucial, however, to realise that over 60 percent of marketed maize in Zambia came from the small-scale farmers (GRZ 1994a). Additionally, maize exports at this time were mainly conducted by government parastatals, such as NAMBOARD.

The biased government agricultural policy towards maize, without surprise, had a negative impact on the production of other crops in the country. Since crops like sorghum, sunflower, millet, groundnuts and cassava lacked good prices and an effective in-field infrastructure to support them, they failed to fare as well as maize in terms of production figures. Farmers, even in ecological zones where these crops were most appropriate, grew maize while considering other crops as second rate. Table 6 reveals low production for some of these crops.

Table 6. MARKETED CROPS PURCHASES IN THOUSANDS, 1989/90 TO 1991/92

| YEAR | SUNFLOWER thousands of 50 kg bags | SORGHUM Thousands of 90 kg bags | MILLET thousands of 90 kg bags |
|---------|---|---------------------------------------|--------------------------------------|
| 1989/90 | 148 | 4 | 4 |
| 1990/91 | 176 | 2 | 2 |
| 1991/92 | 136 | 1 | 1 |

SOURCE: Chabala and Sakufiwa 1993:6

The information contained in table 6 indicates clearly how depressive the agricultural policy of this government was on other crops in the country. This negative impact of maize dominance over other crops is also revealed in table 6 above showing estimates of crop production for Chibombo District. Similarly, it should be pointed out that in as much as the policy overtly discouraged the growth of other crops, it made the farmers very dependent on maize and hence promoting food insecurity in households. Farmers failed to have enough food for themselves and the country whenever maize, for any reason, failed in any year.

Also, household food security was undermined by the subsidised low prices of mealie meal on the market. Owing to the subsidised mealie meal, many small-scale farmers sold all their maize produce at harvest expecting to purchase cheap maize meal later (Chabala and Sakufiwa 1993). This induced attitude of farmers to sell their produce, not only weakened the farmers' resolve to retain enough food reserves on their farms for the whole year, but also made them fail to develop appropriate on-farm all-weather storage facilities. The inability to have effective on-farm storage facilities by the farmers, and the maintenance of uniform prices throughout the year and in all places in the country by the government regardless of distance from the market, destroyed the farmers' initiative to improve the technology of on-farm crop storage and timing of market opportunities that could have made agriculture a self sustaining and robust industry. To this day, the problems of food insecurity and inability to hold back the crop to await market opportunities among farmers arising from lack of effective on-farm crop storage, according to field data of the current study, have not been resolved.

Agricultural development, as such, suffered in that its success or failure was viewed only in terms of maize production progress. It is for this reason, perhaps, why Mwanza (1992b) has pointed out that the problems of agricultural development in Zambia are due, partly, to having maize as the sole dominant crop. This seems to have also contributed to making the government fail to discover the potential of other crops particularly in ecological areas where they are suitable as opposed to maize. In short, the maize culture seems to have inhibited the overall growth of agriculture in Zambia for a long time.

Owing to the increase in agricultural subsidies that the government could not sustain, the inefficient operations of many agricultural support institutions such as NAMBOARD and the Co-operative movement, and overall poor performance of the Zambian economy in the late 1970s and 1980s, the government resolved to restructure the whole agricultural sector putting emphasis on decentralisation and co-operatives. This restructuring, according to Mwanza (1992a and b), Shawa and Johnson (1993), Chabala and Sakufiwa (1993) led the government to progressively reduce the functions of NAMBOARD and then to dissolve it on June 30, 1989 (Chabala and Sakufiwa 1993:41). NAMBOARD's functions were transferred to the Zambia Co-operative

Federation and Nitrogen Chemicals of Zambia. This meant that the void left by NAMBOARD in the farming community, like Chibombo, was completely taken over by the Co-operative movement and CUSA. The dissolution of NAMBOARD in 1989 by the government was done on the assumption that the Co-operative movement had sufficient capacity, in terms of manpower, crop handling resources, and spatial infrastructure, to service the farming community effectively.

At this point, it has to be emphasised that the dissolution of NAMBOARD was done with a view to bringing about efficiency in the operations of the agricultural sector, reduce subsidies, improve loan recoveries and the delivery of inputs to the farmers, and accelerate crop diversification (Mwanza 1992b, Chabala and Sakufiwa 1993). Reduction of subsidies meant increasing the cost of inputs and hence raising the price of produce, particularly the staple food maize.

According to Mwanza (1992a and b), the government's fear to cause urban population discontent, especially after the food riots of 1986 and 1990 caused by the same factor, made agricultural restructuring slow or just a complete failure. At best, one would say that the 'to and from' agricultural policy of the Zambian government between 1980 and 1990 was very confused. The government was in deep confusion about how to progress with economic restructuring while maintaining its hold on political power through the provision of cheap food. Like Chabala and Sakufiwa (1993), and Mwanza (1992a and b) have pointed out that this impasse was finally resolved by the 1990 coup attempt that brought about a change from the one party political system of the United National Independence Party (UNIP) that pursued a commandist economy, to the multi-party political system of the Movement for Multi-Party Democracy Party (MMD).

The MMD government, on coming to power in 1991, unlike UNIP, elected to vigorously pursue economic liberalisation at all costs. Like in other sectors of the economy, the introduction of the liberalisation policy in agriculture meant a departure from the pre-1991 policies of "centralised planning in which farmers were sustained (among others) through government subsidies and interventions" (GRZ 1992:2). In the new policy of liberalisation the government withdrew "...from direct involvement in agricultural marketing and input supply by freeing prices, removing subsidies, privatising

parastatals...and making public storage facilities available to the private sector" (GRZ 1992:12). This new policy, as will be explained later, proved to have far-reaching effects on the agricultural sector in the years ahead.

The following statement better explains the state of the agricultural industry in 1991:" the MMD Government inherited a poorly developed, inefficient, non-sustainable agriculture base which was characterised by inconsistent policies, heavy subsidies and heavy government interference and involvement in actual agricultural production leading to poor growth and performance of the agricultural sector" (MMD 1996:7).

In order to improve the state of the agricultural industry, the government adopted the policy that it would "... not directly compete with the private sector in the areas of input supply, production, marketing, transportation, storage, processing or retailing. However, government will both support and regulate the private sector in these activities" (GRZ 1992: 8). This policy, therefore, set the tone for a liberalised environment in the sector. And, in order to deal with the problems of agriculture, the new government set out the following objectives:

- 1 Continue with the policy of liberalising agriculture by enhancing the role of the private sectors....
- 2 Encourage, assist and strengthen the development of an efficient private sector-driven crop marketing and input distribution system.
- 3 Recapitalise the agriculture sector by ensuring that there is sufficient medium and long-term development financing and provision of development grant aid....
- 4 Found an investment Fund to assist small-scale farmers.
- 5 Encourage crop diversification and ensure that agricultural production takes cognisance of agro-ecological variations and market situations.
- 6 Promote sustainable systems of agriculture through encouragement of good land use practices and utilisation of organic crop fertilisation methods like green manuring, inter-cropping and crop rotation.
- 7 Improve crop production and yields through strengthened research and extension and provision of agriculture related information. (MMD 1996:8).

It is, therefore, on the basis of the above agricultural liberalisation policy and goals that this research was founded. What comes ahead is a comprehensive account of the results of the field research carried out in Chibombo District in Central Zambia. The results herein will attempt to show the spatial impact of the agricultural policies of the MMD government on the institutional support network, crop production figures and the

road infrastructure in Chibombo District. To do this, findings have been placed in tables, graphs and maps. Maps have been used to reveal the spatial changes that have taken place since 1991. To enable the reader to see the spatial impact of the new agricultural policies on small-scale farming, a deliberate comparative approach has been adopted for two time periods, namely the 1980s and 1990s.

According to Gulhati (1992), Mwanza (1992a and b), Gerrard et al (1994) and World Bank (1994) the economic reforms taking place in Zambia are not unique to this country alone. There are many countries in Africa, and other parts of the world, undertaking similar reforms and for the same reasons of economic revival. In the region Kenya, Tanzania, Malawi and Zimbabwe are some of the countries undertaking economic reforms along the same lines as Zambia. Specifically, Mwanza (1992a and b), Gerrard et al (1994) and World Bank (1994) have pointed out that the only differences found in the reforms taking place in these countries with similar economic histories, is the rate and sequencing of reforms. Zambia is seen as a country whose reforms have been implemented at a high pace, in a short period of time and involving all sectors of the economy. The other reforming countries are viewed as slow, more cautious and are reforming specific sections of the economy one at a time. This category of countries, such as Zimbabwe, is viewed as hesitant reformers particularly in agriculture where state monopoly has been maintained.

1.3 MOTIVATION OF THE STUDY

From the literature cited in the introduction, it is clear that the agricultural policies pursued between the time of political independence and the coming to power of the MMD, might have been less than successful, but have had a marked effect on both the economics and the spatiality of peasant farming in Zambia. The radically different liberalised economic policies introduced in 1991 were meant to have an impact in all economic spheres, including that of agriculture. As these policies have now been in place for more than five years it can reasonably be assumed that they have had a marked effect on the economy, commercial agriculture and small-scale farming, and it is now incumbent on scholars of various disciplines - including Geography - to study their impact.

Some researchers, namely Mwanza (1992a and b), Sakamoto (1993), World Bank (1994, 1996), and Holden and Rajapatirana (1995), have studied the policies and their impact from an economic viewpoint. Several views have been expressed about how economic liberalisation has impacted on the way of life in Zambia (namely [Mwanza 1992, Chabala and Sakufiwa 1993; Gerrard et al 1994, Javaheri et al 1996, and Kokwe 1997]). Others, namely Mwanza 1992b, Chabala and Sakufiwa 1993, Gerrard et al 1994, World Bank 1994; Javaheri et al 1996, Kokwe 1997, have written about the impact of these policies on agriculture. The impact of the economic liberalisation on the spatial patterns of peasant farming, however, has not been investigated to a notable degree except for the investigation by Kokwe (1997) who has discussed maize, markets and livelihoods [sic] of Luapula Province of Zambia from a co-operative perspective. Mwanza (1992a and b) - though mainly an economic analyst, has covered agriculture but to a limited degree and only covering the era before 1992 - and, Chabala and Sakufiwa (1993) - covered mainly maize production and its associated inputs, storage, marketing, and institutional support, but also only up to 1993. The study being reported on here, attempts to fill the gap others have left uncovered. Such spatial changes, or lack of it, could serve as a valuable yardstick to measure the success - or failure - of the economic liberalisation policies.

The need for such geographical knowledge has become even more necessary now that the economic policies of a number of African countries, particularly those in the Sub-Saharan region, are changing quite rapidly (Gerrard et al 1994, World Bank 1994, Kokwe 1997). As is the case in Zambia, the implementation of new economic policies is done with minimal or no regard to their spatial impact. The driving force for the restructuring of economic policy is either political or pragmatic (such as the need for sufficient food supplies), while environmental concerns are of little importance (World Bank 1994 and 1996). To those in political office, what matters is 'that there is food on the plate', and not 'how the food gets to the plate'.

Government policies on agriculture, even when endeavouring to increase food production in the country, are often formulated and implemented with scant regard to the spatial infrastructure necessary to sustain the agricultural support institutions,

roads, information, markets, resource supply and other aspects vital to sustainable growth in agriculture, is often overlooked (Kokwe 1997). In this study, an attempt is made to investigate the interrelatedness of the spatial infrastructure for agriculture in Central Zambia and economic and agricultural policy reforms introduced in 1991. This study was also necessitated by the need to document information on the current state of peasant farming in Central Zambia, and specifically Chibombo District. It was felt that it was worth recording the impacts that the recent economic developments have had on the spatial patterns of small-scale farming in this region of the country.

Finally, it was felt that the knowledge contributed by this study will not only help geographers keep abreast with spatial changes in Central Zambia, but could provide recommendations on how to improve food security among smallholder farmers at household, district, regional and perhaps national level. This is significant considering that in a country like Zambia, this category of farmers produce the bulk of the nation's food (GRZ 1992, CSO [Central Statistical Office] 1994). Any economic policy that is implemented should continuously be evaluated with regard to its impact on these farmers who have the disadvantage of having a weak resource base.

CHAPTER 2

DESCRIPTION OF THE STUDY

2.1 INTRODUCTION

Chapter 2 gives a detailed outline of the current study. This chapter offers, among other things, a description of the research problem; formulation of the research hypotheses; choice of the study area (Chibombo) and definition of the key terms.

2.2 THE RESEARCH PROBLEM

This study proposes to investigate the impact of economic liberalisation on the spatial patterns of peasant crop farming in Chibombo District since 1991. The basic questions asked about the research topic include the following: to what extent has economic liberalisation affected the spatial patterns of peasant crop farming in Chibombo District?; have the spatial patterns changed?; has crop production changed?; has the communication infrastructure and agricultural support institutions in the farming areas changed?; if so, how and in which way has the change affected crop production?

A specific aim of the study is to establish the actual impact the new agricultural policy of liberalisation has brought about on the pre-1991 agricultural support network of input supply and buyers of produce, suppliers of agricultural resources, and extension services. In this sense, the study aims at providing answers to such questions as follows: has the new agricultural policy of liberalisation affected the pre-1991 agricultural support network of input supply and buyers of produce, suppliers of agricultural resources and extension services?; has the impact of liberalisation policy on the agricultural support network in turn affected crop production and cropping patterns?; in which way has the new agricultural policy affected the communication infrastructure, and in turn, what has been the impact of the change in the communication infrastructure on crop production in Chibombo District? These are the questions that are embodied in the research hypotheses.

In evaluating the extent of the impact of economic liberalisation, the study has chosen to compare the spatial patterns of peasant farming during the period of centralised planning in the 1980s and the years of economic liberalisation in the 1990s. For the 1980s, the study has covered the 1983/84 to 1989/90 farming seasons. For the 1990s, the study has focused on the 1990/91 to 1996/97 farming seasons. Each block of time consists of seven farming seasons. In certain instances, however, in order to offer a clearer picture of the effects of centralised planning policies, on one hand, and those of liberalisation, on the other, farming seasons of pre-1983/84 and post-1996/97 have been referred to.

2.3 THE RESEARCH HYPOTHESES

This study is based on the general hypothesis that there is a marked difference between the spatial patterns of peasant crop farming in Chibombo District in the 1990s and those of the 1980s. Since this impact will manifest itself in the spatial patterns of crops grown, crop production, land-use, agricultural support structures and communication networks, it will be investigated by means of the three sub-hypotheses below.

1. The spatial pattern of crop production and cropping systems of peasant farmers in the 1990s differs markedly from the pattern that existed in the 1980s.
2. The spatial pattern of the agricultural support system in the 1990s differs markedly from the pattern that existed in the 1980s.
3. The spatial pattern of communication infrastructure in the 1990s differs markedly from the pattern that existed in the 1980s.

2.4 DEFINITION OF KEY TERMS

The key terms used in the study are as follows:

IMPACT

The word 'impact' is used in this dissertation to refer to the resultant effect or aftermath of a new idea on an existing spatial pattern or structure. In this study, this impact is assessed in terms of the changes in crop production, cropping patterns, agricultural support systems and communication infrastructure in Chibombo District.

ECONOMIC LIBERALISATION

'Economic liberalisation' policy is used in the dissertation to refer to a set of economic ideas that allow individuals and other stakeholders in a country to operate freely, in accordance with the laws of demand and supply, with minimal government interference. Here, the freedom being discussed is that one which individuals and institutions have in agriculture as per government regulations. This freedom deals with the latitude people and institutions have in deciding what crops to grow, when to grow them, how to grow them, sources of inputs, markets, and the prices of their produce. It also covers the liberty people and institutions have to decide on when and where to sell their produce given the prevailing market opportunities.

AGRICULTURAL POLICY

'Agricultural policy' is being used in this dissertation to refer to the institutional arrangements made and implemented by the Zambian government to regulate the development of farming at any given moment in time. These institutional arrangements help farmers and all stakeholders in agriculture perform their day-to-day functions as per expectations of the government. Such arrangements influence directly or indirectly the actual development of institutions that support agriculture. Thus, it covers the provision of farming resources such as loans, type of crops farmers prefer to grow at a

particular time in history, prices of produce, the development and maintenance of roads and other marketing infrastructure in the farming communities. In short, the agricultural policy controls the farming environment existing in the country at any given time.

COMMAND ECONOMY

'Command economy' is used here to refer to the Zambian economy of centralised planning which existed prior to 1991. This economic set-up entailed that government made economic rules and was a direct participant in the economy. In agriculture, this term has been used to cover government's direct control of the farming environment through the agricultural policy of the time, use of parastatals to supply farming resources, provision of extension services and government's direct involvement in farming activities through state farms. Here, this term is occasionally interchanged with controlled economy, socialist economy, planned economy and centralised economy.

FREE MARKET ECONOMY

In this dissertation, 'free market economy' is used for an economic environment in which government only formulates laws and doesn't directly take part in running economic affairs, thus leaving these to private individuals and institutions. As regards agriculture in Zambia, this term is used to refer to the post-1991 agricultural policy that allows farmers to buy inputs from any source and sell their produce to a market of their choice and at a price they determine as per market opportunities prevailing at a given moment in time. This term refers to the economic environment that allows the establishment of private agricultural support institutions and the government's withdraw of direct support to the existing institutions so that they are self-sustaining. In this dissertation, this term is interchanged with liberalised market, capitalist economy and non-controlled economy.

SPATIAL PATTERNS

'Spatial patterns' refer to the distribution arrangements of the agricultural support systems or any arrangement of phenomena across space in Chibombo District.

Specifically, this term is used here to denote the distribution of agricultural farming systems (such as the institutions that provide inputs, extension services and buy produce), farm families, differences in crop production in given wards, etc.

PEASANT CROP FARMING

'Peasant crop farming' is used here to refer to a farming system that is less mechanised and uses less sophisticated farming tools such as hoes, axes, oxen, hand sprayer, uses mainly family labour to produce relatively small quantities for sale. Additionally, when compared to large-scale commercial farming, peasant crop farming depends on small plots of land that may or may not entitle the owner to have a leasehold title deed. The majority of the peasant farmers in Chibombo District are found on communal land, only a few hold leasehold title to their land. This farming system covers the majority of farmers in Central Zambia outside typical traditional farming (subsistence farming) in which production is only for family consumption, and large-scale commercial farming that is highly mechanised and produces large quantities for the market. In many instances, this term is interchanged with smallholder farming, small-scale farming and peasant farming.

PEASANT FARMER

A 'peasant farmer' is one who grows a variety of crops on a small plot of land, keeps animals on a relatively small scale and uses less scientific farming methods. Throughout the dissertation, the term is used to indicate the type of farmers that sell small quantities of crops to the market. These farmers are also referred to as smallholder farmers and small-scale farmers. Although the peasant farmers produce only small quantities for sale they are active participants in a cash economy.

CROP PRODUCTION FIGURES

'Crop production figures' refer to the number of bags a peasant farmer or groups of peasant farmers in the sampled farming wards of Chibombo District are able to produce in a particular farming season. This term covers the total number of bags or kilograms

of various crops produced by the sampled farmers in wards or the annual crop estimates for Chibombo District in particular farming seasons. In this dissertation, individual farm production is divided into three categories: less than 30 bags is regarded as low production, between 30 and 50 bags is regarded as a medium production and more than 50 bags as high production. These three categories were arrived at after consulting farmers on their perception of levels of production.

COMMUNICATION INFRASTRUCTURE

'Communication infrastructure' is used here to cover all roads and railways found in Chibombo District. The Chibombo communication infrastructure includes the old railway, main Great North road, the 'regularly' maintained roads and the feeder roads that enter the interior of the rural areas. Further, the roads in the wards have been described either as passable, impassable, or bad depending on their state to permit their effective use in the delivery of farming inputs and purchase of farm produce, or the ease with which farmers are able to move from place to place.

FARMING RESOURCES

'Farming resources' cover all the essentials a smallholder farmer uses or needs for his farming activities. These resources include, inter alia, cash, manure, seed, farming equipment, animals, information and water. The resources most emphasised in the dissertation are those commonly needed and/or used by the peasant farmers of Chibombo District.

FARMING WARD

'Farming ward' is a term that is used in the dissertation to refer to an official administrative division, section or segment of the district. Chibombo District has 18 Wards (figure 4). Each of these wards comprises a certain number of farm families. For this research, these divisions, which are also used for political activities such as elections, were adopted as the most convenient unit for study. Of the 18 Wards, this study sampled five - Chaloshi, Chibombo, Chikobo, Keembe and Liteta (figure 4).

FARM FAMILY

In this dissertation, the term 'farm family' is used to refer to the whole family of a farmer, that is, the entire farming household of one adult man or woman whose major livelihood is farming. In this dissertation this term considers all people making up a household as equal partners in farming - they are all farmers like the head of the family.

AGRICULTURAL SUPPORT SYSTEM

The dissertation uses 'agricultural support system' to cover all institutions and structures that help the small-scale farmer carry out his/her farming activities easily and effectively. These institutions include those that supply inputs, information, provide storage facilities, buy farm produce, and provide extension services to the peasant farmer in Chibombo District. In this study this term is interchanged with agricultural support network, agricultural support institutions and agricultural support infrastructure. Examples of such systems include input suppliers such as NAMBOARD, LINTCO, LONRHO, CUSA, Lima Bank, Mbayimbayi and Sons, Department of Agriculture and Cotmark.

CHIBOMBO DISTRICT

Chibombo District refers to a district or spatial unit in Central Zambia (figure 2). In the literature review above, this district (Chibombo) has been discussed as a component part of Kabwe Rural District or Bulenje area in the information covering the period before 1990, when it was made a district on its own. Muntemba (1977a), especially, has used the term Bulenje to refer to Chibombo because the majority of the indigenous people living in the district are called Lenje or Balenje.

CENTRAL ZAMBIA

'Central Zambia' (figure 2) refers to the region located in the central part of the country. This region is located on the Zambian plateau that stretches from the south to the

north. In some instances in the dissertation, Central Zambia is simply referred to as Central Province or Central Region.

Unless otherwise stated, the above terms are used in the dissertation in the manner described above. Where different meaning is intended, an attempt is made to state the targeted meaning. This is done in order to reduce the amount or level of confusion on the usage of the same term.

2.5 CHOICE OF THE STUDY AREA.

Firstly, Chibombo was chosen as a case study because its main economic activity is farming, particularly smallholder farming. Smallholder farming accounts for over 80 percent of agricultural activities in the district (CSO 1994, Department of Agriculture information on file 1996).

Secondly, it was selected as an area for investigation because the researcher resides in this area and hence knows the area and the people well. The researcher's knowledge of the area and the people helped, in large measure, to ease communication during the period of the fieldwork.

Thirdly, the fact that the researcher resides in this district helped cut the cost of the field-work thereby making the research feasible. This factor was crucial in making it possible for the researcher to do the fieldwork and control the data collection.

2.6 DESCRIPTION OF THE STUDY AREA

2.6.1 ADMINISTRATION AND LAND HOLDING IN CENTRAL ZAMBIA

Central Zambia is one of the nine provinces of Zambia, located on the Zambian plateau that stretches from the south to the north, 15'00"S and 28'00"E (Bwalya et al 1994:56). Like other provinces in the country, Central Province is divided into districts. The districts are Mumbwa, Chibombo, Kabwe, Kapiri Mposhi, Serenje and Mkushi (figure 2). Civic authorities administer each of these districts. The civic authorities are elected

council officials at the local level. These authorities implement government programmes at this level, such as investment in agriculture and land allocation. Tribal chiefs and headmen help the civic authorities implement government programmes at the grassroots. The duties of the two authorities (respectively, civic leaders, the tribal chiefs and headmen) include distribution of land holdings to the people that live in their locality either through the statutes (title deeds) or traditional land holding (GRZ 1995). The power of allocating land to the citizens helps the local leadership influence population distribution in their areas.

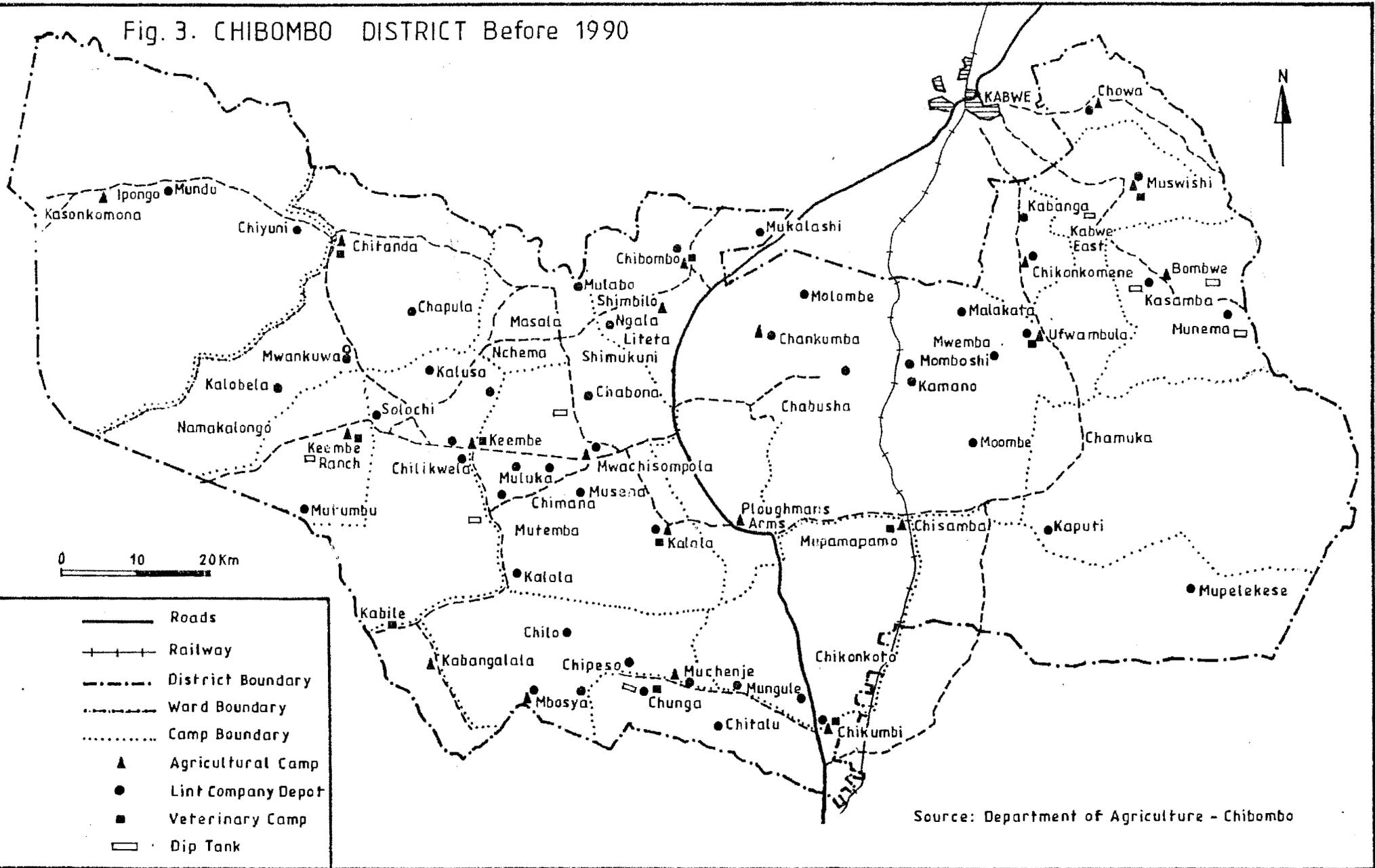
Districts, such as Chibombo, are responsible for allocating agricultural land under their jurisdiction. Plots of land allocated by Councils enable the holders to obtain certificates of title. Conversely, the tribal chiefs and headmen are responsible for allocating traditional land to their subjects, with or without certificates of title. Land wholly under the tribal chiefs' control is not given certificates of title. However, according to the Lands Act (1995) land held under traditional or customary tenure can be converted to leasehold (land held with title of ownership) with the recommendation of the headman, chief and district to the Ministry of Lands.

While the majority of smallholder farmers in Central Zambia hold land under customary land tenure, only a very small percentage hold theirs under leasehold (Department of Agriculture file, 1996). The implication of holding land under customary tenure is that the land the farmer owns cannot be used as collateral when applying for financial loans, while those holding land under leasehold can use the land as collateral. In Chibombo, like in other parts of Central Zambia, the act of holding land under traditional tenure has proved a major drawback to the development of peasant agriculture (Department of Agriculture file, 1996).

2.6.2 LOCATION AND ADMINISTRATIVE DIVISIONS OF CHIBOMBO DISTRICT

Chibombo District (figures 2 and 4), with an estimated land area of 23,000 square kilometres and population of 147,777 (CSO 1990), is located in the Central Province of the Republic of Zambia on latitude 14' 40" south and longitude 28' 04" east. This District is located between Kabwe District in the north, Mumbwa in the west, Lusaka

Fig. 3. CHIBOMBO DISTRICT Before 1990



Source: Department of Agriculture - Chibombo

and Kafue in the South and Chongwe District in the east (Bwalya et al 1994: 10 and 56). In the 1980s, Chibombo was divided into six Farming Wards, namely Chisamba, Ipongo, Katuba, Chitanda, Chikobo and Chunga (figure 3-no clear boundaries were available on the original map or district). In the 1990s, the District is divided into 18 Farming Wards (figure 4). For administrative purposes, each ward is under local leadership. For agricultural administration, the Wards are under the control of extension officers. In each ward the resident extension officer(s) is/are responsible for providing the farmers with farming information they require.

2.6.3 PHYSICAL AND CLIMATIC CONDITIONS OF THE STUDY AREA

2.6.3.1 RELIEF AND DRAINAGE OF CHIBOMBO

Chibombo District lies on the Zambian plateau with an altitude of between 900 and 1200 metres above sea level. Although this land is generally flat, it has scattered hills in places. It is this general flatness of the plateau that has proved ideal for agriculture in the district and the country as a whole. This point is emphasised by the wide spread of farming activities in Zambia as revealed in figure 10. The relief of the land is also ideal for easy construction of communication infrastructure. This perhaps explains why the post-independence government in Zambia managed to construct so many major roads and feeder roads in Chibombo District (figure 11) and the rest of the country.

2.6.3.2 SOILS

The Zambian plateau, as shown in figure 6, has well-drained sandy-loam soils suitable for the cultivation of many tropical crops like maize, sunflower, cotton, sweet potatoes, sorghum, groundnuts, millet and others. For Chibombo District, the sandy-loam soils dominate the central landscape, parts of the west around Keembe, Mwachisompola and the east covering both Chamuka North and South. These soils are also found in parts of Chibombo Ward. In Wards bordering swamps, clay soils dominate. Around Mungule area, sandy soils are dominant over sandy-loams.

Fig. 5 RELIEF OF ZAMBIA

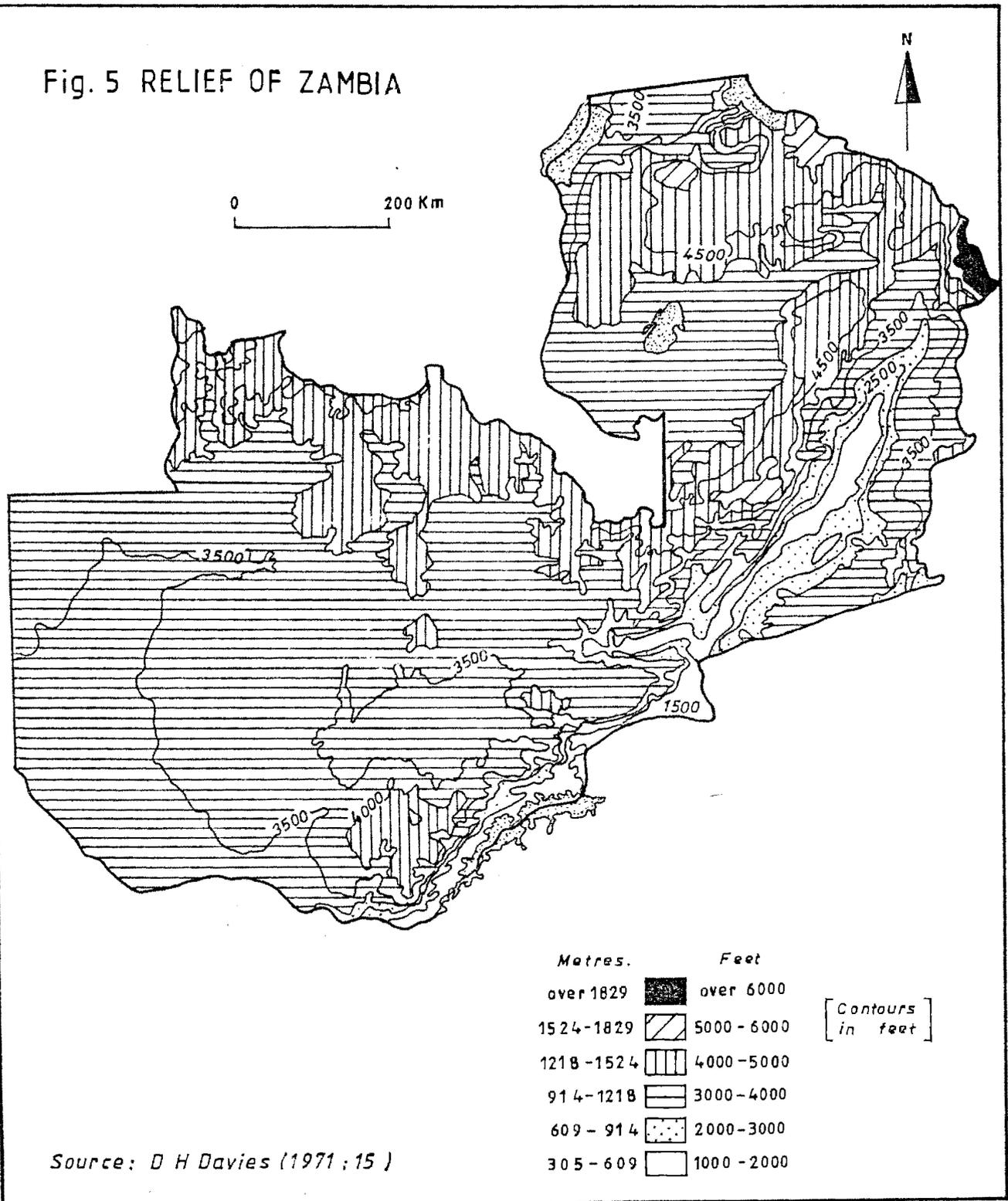
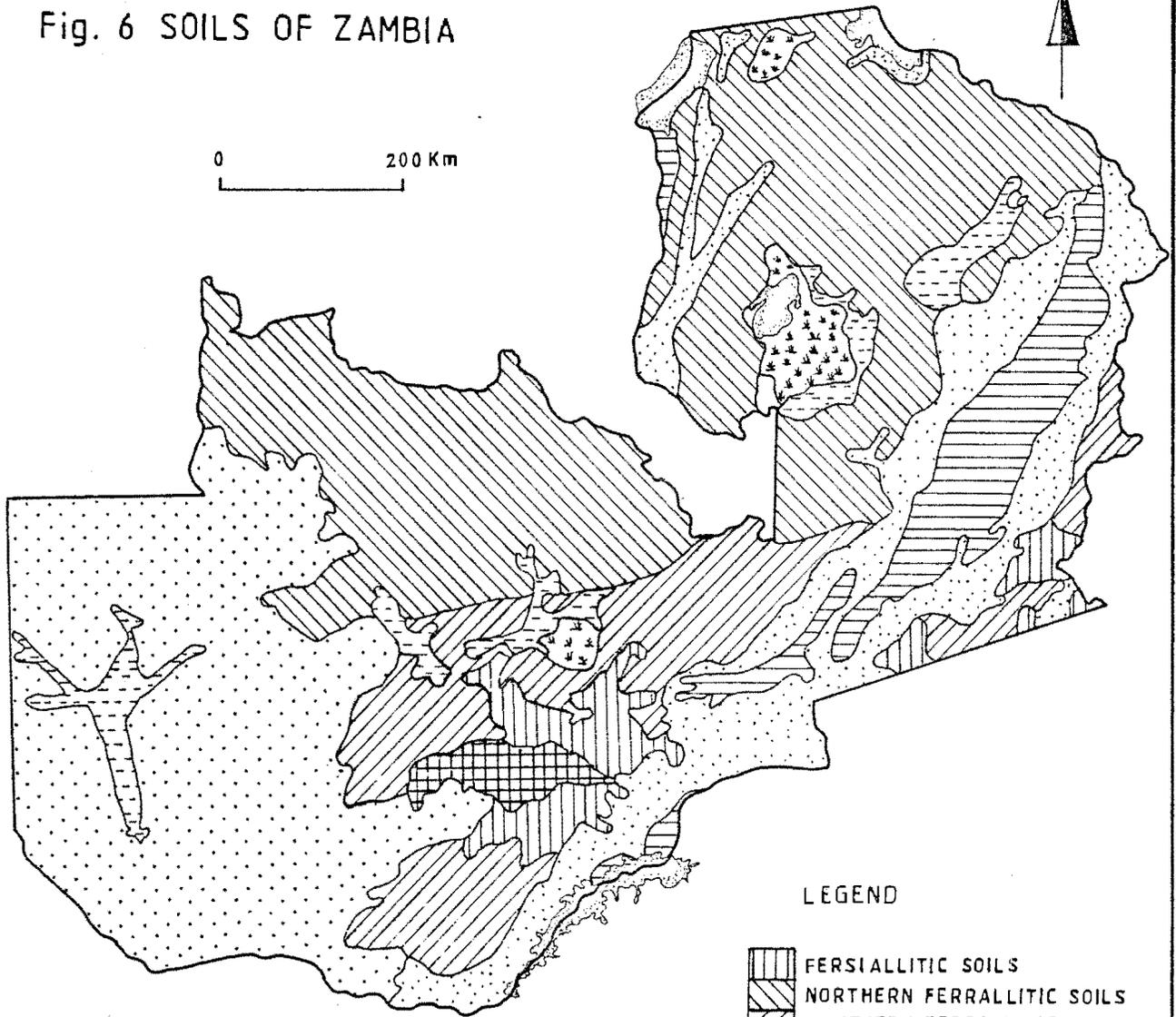


Fig. 6 SOILS OF ZAMBIA

0 200 Km



LEGEND

-  FERRALLITIC SOILS
-  NORTHERN FERRALLITIC SOILS
-  SOUTHERN FERRALLITIC SOILS
-  BAROTSE SANDS
-  VERTISOLS OF KAFUE FLATS
-  VERTISOLS OF RIVER VALLEYS
-  VERTISOLS ON FLOOD PLAINS
-  LITHOSOLS
-  SWAMP

Source: D H Davies (1971: 27)

2.6.3.3 VEGETATION

Vegetation in Chibombo District, like in many other areas in Central Zambia (figure 7) that experience medium level rainfall (figure 9), is mainly of scattered *miombo* and *munga* woodland (both indigenous hardwood trees) and open grassland. This type of vegetation, like for many parts of south central Africa, is referred to as savannah vegetation. In recent years, many trees have been cleared to make way for agriculture or for charcoal making and human settlements. However, typical savannah vegetation is still evident in Chibombo to this day. The grass of this area is appropriate as pasture for animals kept by small-scale farmers. This is the reason why the Lenje people have, over the ages, managed to maintain cattle, goats and other animals.

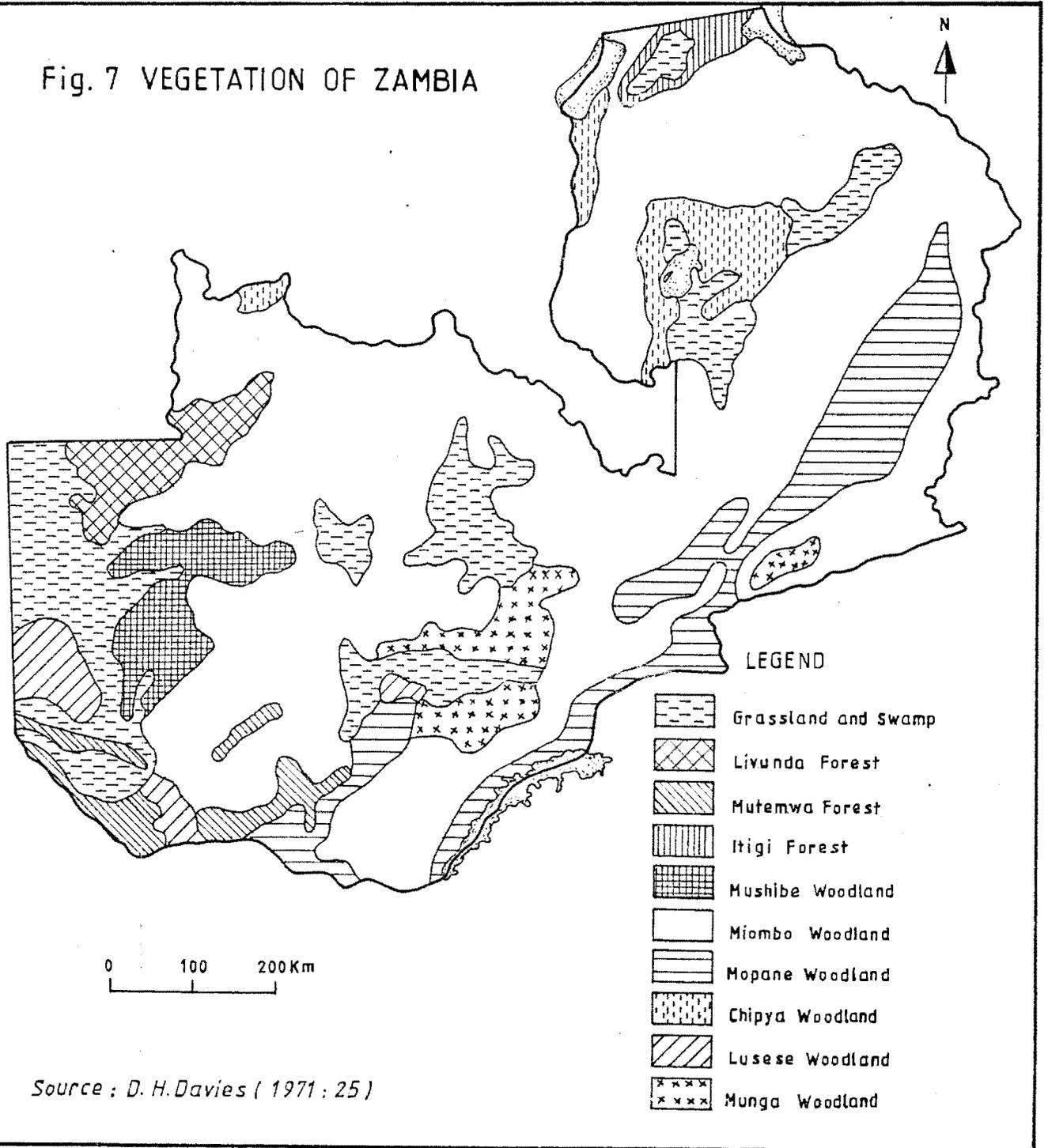
2.6.3.4 TEMPERATURE

The central Zambian plateau, on which Chibombo lies, experiences a tropical climate with a mean annual temperature of 22 degrees Celsius (figure 8). In the hot-dry and the hot-wet seasons, mean daily temperatures in Chibombo, like in other parts of Central Zambia, are generally high. In certain instances the maximum daily temperature may reach 36 degrees Celsius. In the cool-dry season, between May and late July, temperatures are fairly low. During this time, minimum daily temperatures may drop to as low as 15 degrees Celsius. The temperatures of Chibombo, like for any other place in Central Zambia, tends to influence the farmers' activities at different times of the year, such as what crops to grow or the time when to clear the fields in readiness for the coming rainy season.

2.6.3.5 RAINFALL

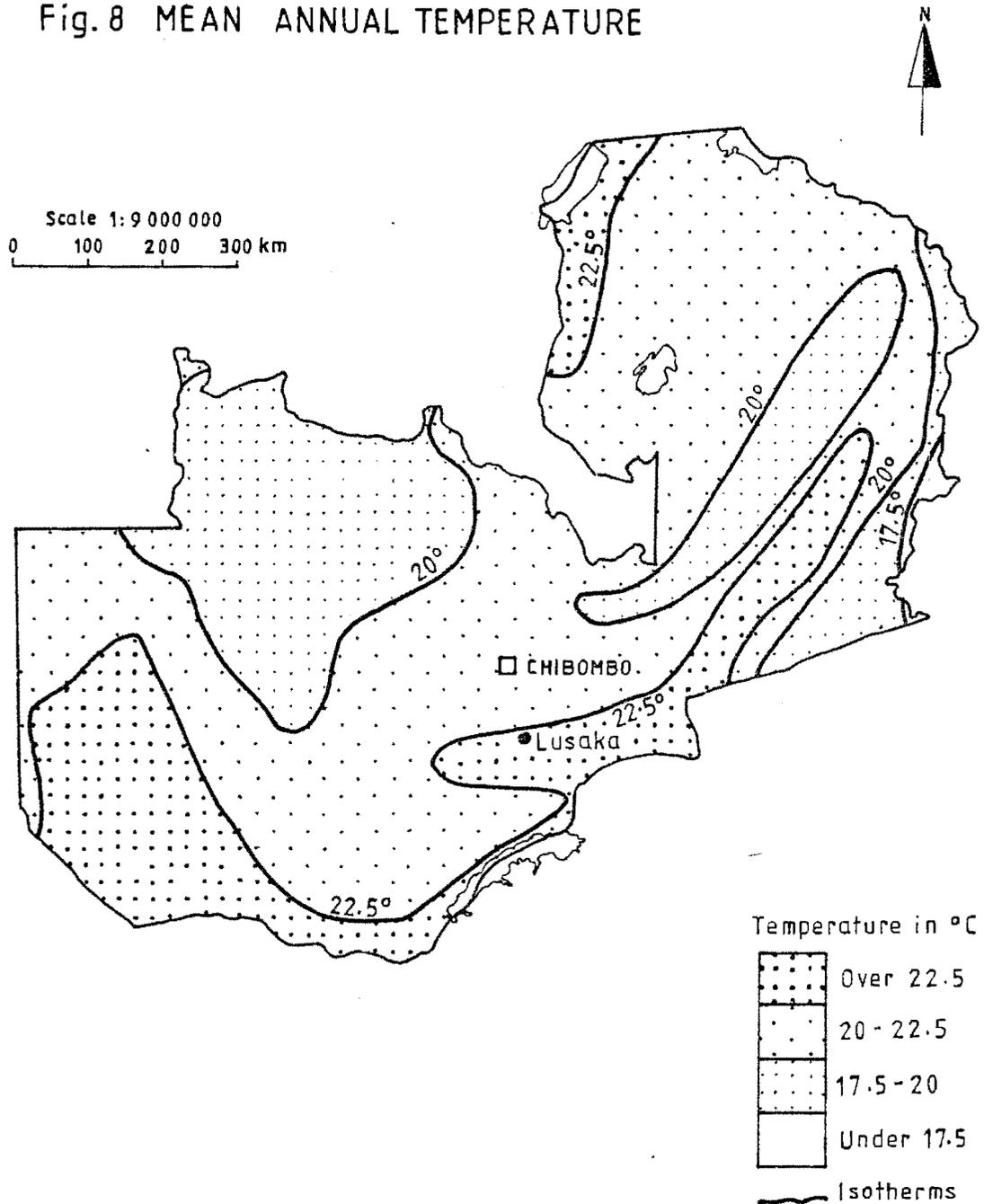
Rainfall in Chibombo District, as is the case on the central Zambian plateau (figure 9), is moderate and comes in the hot-wet season between October and April. As figure 9 shows, the mean annual rainfall averages 800 millimetres. Nevertheless, this varies from place to place. Towards the south of the Central region, rainfall decreases (to about 700 millimetres) while the north registers higher rainfall (about 1000 millimetres). According to the information obtained in this study during the survey, the amount of

Fig. 7 VEGETATION OF ZAMBIA



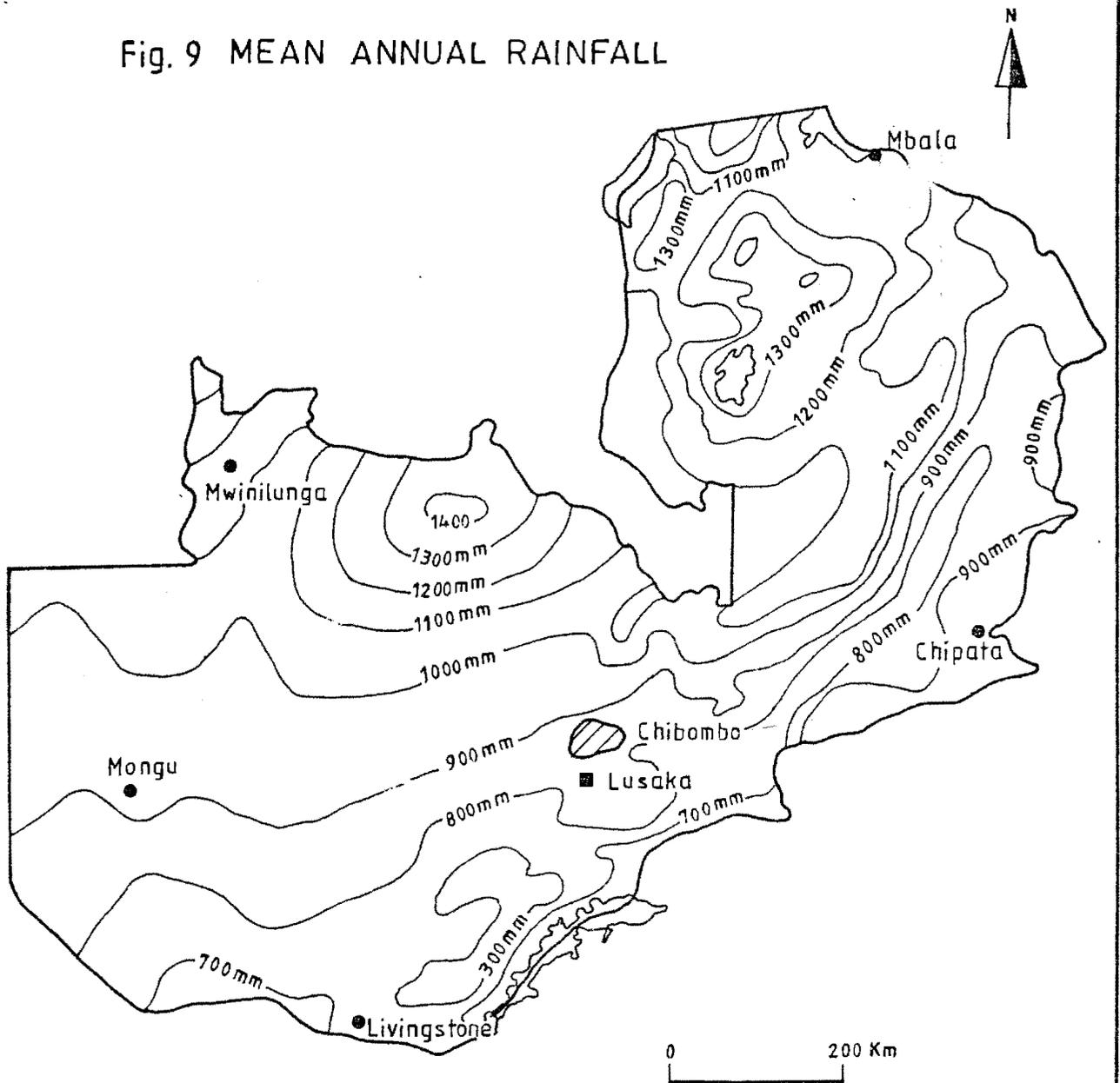
Source : D. H. Davies (1971 : 25)

Fig. 8 MEAN ANNUAL TEMPERATURE



Source : Bwalya et al 1994:12

Fig. 9 MEAN ANNUAL RAINFALL



Source: Department of Meteorology

rainfall seems to be adequate for crops grown in the Chibombo District. In low rainfall zones like Ipongo, drought tolerant crops such as sorghum and millet are mainly grown to supplement low maize yields. According to the Department of Agriculture (information on file, 1996) droughts in the 1980s were not as frequent as they have become in the 1990s. This Department cites the fact that one drought occurred in the early 1980s, and one occurred in the early 1990s, but since then droughts occur more frequently (information on file, 1996).

2.6.4 ECONOMIC FEATURES OF CHIBOMBO DISTRICT

2.6.4.1 ECONOMIC ACTIVITIES

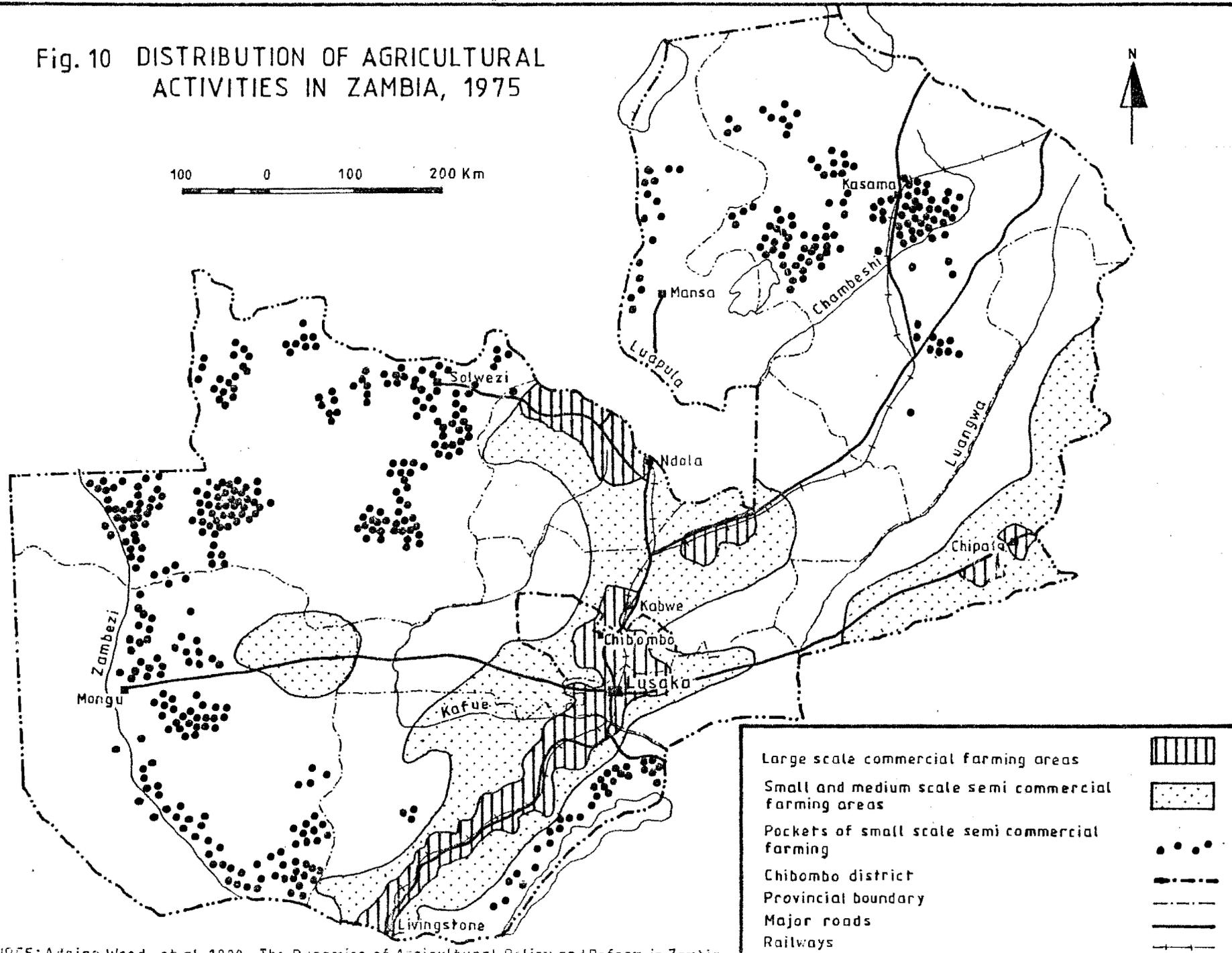
In Chibombo District, farming (both small-scale and commercial scale) is an important economic activity. This is shown in the agricultural map of Zambia (figure 10). The dominant type of farming practised here is small-scale farming. It accounts for 80 percent of all agricultural activities and over 90 percent of economic activities in the district (CSO 1994). For instance, at the time of this study there were a total of 31,188 farm families in the entire district (Department of Agriculture file, 1996). Of this number 24,950 were small-scale farmers engaged in the cultivation of maize, cotton, groundnuts, sorghum, sweet potatoes and other crops (Department of Agriculture file, 1996). With a total population of 147,777 (CSO 1994) this amounts to a very significant part of the population involved in small-scale farming.

The people not involved in agriculture are found in careers such as teaching, health, engineering, civic duties, retailing and quarrying. These professions, however, employ less than 10 percent of the people in Chibombo (CSO 1994) and hence, in comparison to small-scale farming, are less significant.

2.6.4.2 COMMUNICATION NETWORKS

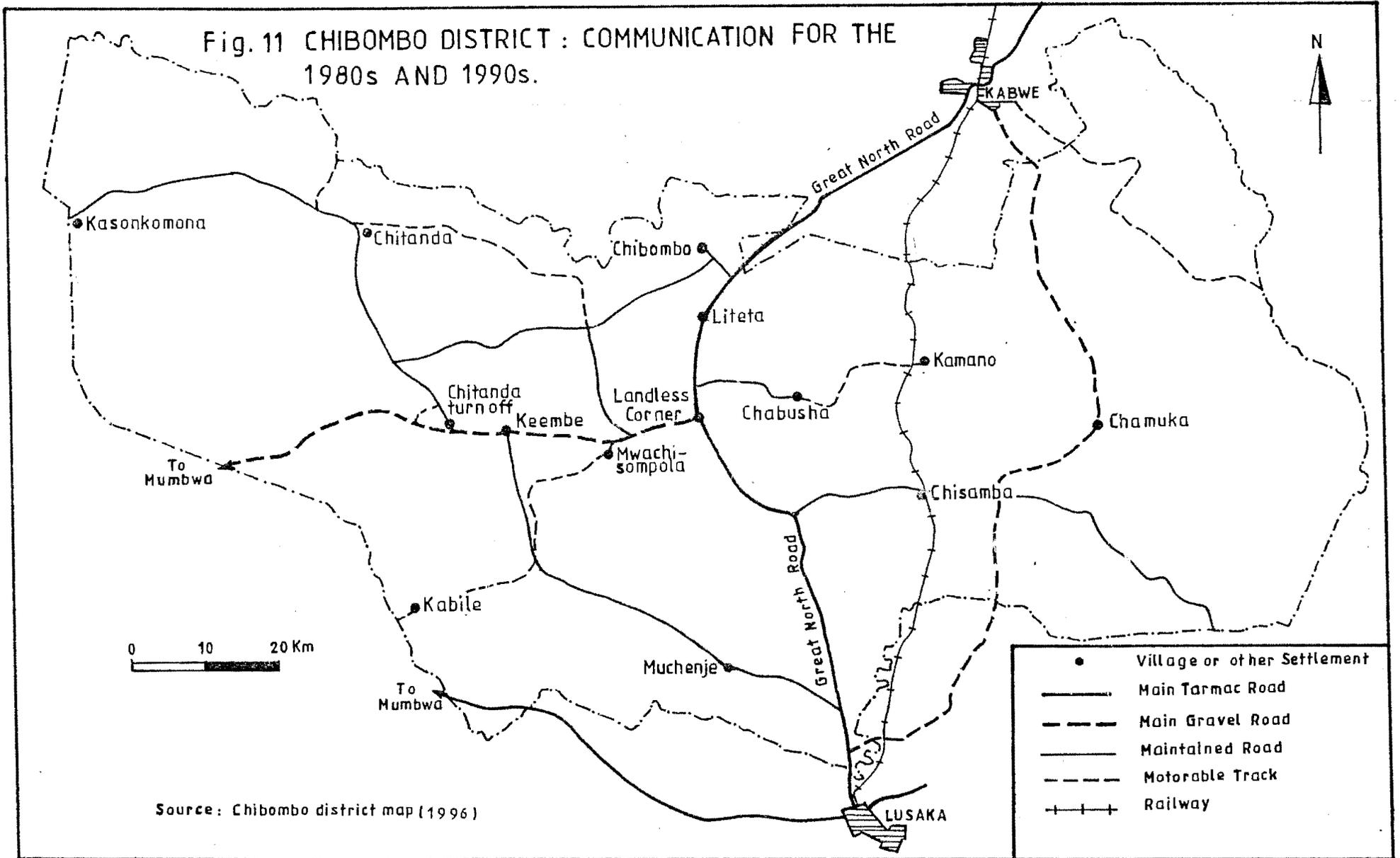
As figure 11 shows, Chibombo District has a number of roads and other communication infrastructures. Some of these are: (1) the old railway line that passes on the eastern part of the district, (2) the Great North road (the main tarred road), (3) the Landless

Fig. 10 DISTRIBUTION OF AGRICULTURAL ACTIVITIES IN ZAMBIA, 1975



SOURCE: Adrian Wood, et al. 1990. The Dynamics of Agricultural Policy and Reform in Zambia

Fig. 11 CHIBOMBO DISTRICT : COMMUNICATION FOR THE 1980s AND 1990s.



Source: Chibombo district map (1996)

Corner to Mumbwa gravel road, (4) Chitanda turnoff to the Ipongo dusty road, (5) the Chisamba turnoff through Chisamba siding to Kabwe gravel road, and (6) a number of feeder roads leading to many places in the district.

These communication networks were mainly established in the period of the First National Development Plan (FNDP) of 1966 to 1970. Through the years, the government of Zambia and the local community have mainly been maintaining these roads to keep them passable, most especially during peak farming seasons when inputs and/or outputs are moving. It seems that in places where the communication infrastructure was established a long time ago, it has contributed, largely, to the spatial pattern of the settlements in Chibombo District as they are today. According to the Department of Agriculture (information on file, 1996), this is particularly so along the Great North road and the railway.

The establishment of this infrastructure was part of the ambitious government programme of rural development in the formative years of independence (GRZ 1979). From the time of construction during the FNDP until the early 1980s, the Chisamba turnoff to Chisamba siding road was tarred and the road from Landless Corner to Mumbwa (see figure 11) was a very well maintained gravel road that could be used by any automobile. Seasonal grading and general maintenance of the roads in rural areas seems to have been a priority of the pre-1991 government (GRZ 1986). According to field data, grading and general maintenance of rural roads was common between April and the beginning of June in readiness for crop marketing that started at the end of June. The government's policy of regular road maintenance helped to keep roads (including feeder ones) passable during most parts of the year. With a widespread social infrastructure of schools, clinics and shops the rural population was helped to settle in many places of the district including those previously considered too remote like Ipongo (Department of Agriculture file, 1996).

2.7 CONCLUSION

As explained above, Chibombo District is mainly an agricultural area where small-scale farming is the most important economic activity. Chapter 2 has offered a detailed

description of Chibombo District in order to put the discussion of this study in perspective.

CHAPTER 3

METHODOLOGY OF DATA COLLECTION AND LIMITATIONS OF THE STUDY

3.1 INTRODUCTION

Chapter 3 covers details about the preparation of the research, its implementation, the sample design and the limitations of the study. This chapter outlines how the research assistants were recruited and trained; the type and structure of the research instruments; the interviews held; observations made in the field; the sampling frame; sampling units; sample selection and structure; management of the fieldwork, description of methods of data analysis, and the limitations the study faced. In dealing with each of these issues, an attempt has been made to provide specific details on what they involve.

The section on research assistants provides details about how many research assistants were recruited, how they were selected, their qualifications, how they were trained both in theory and field practice. This section also touches on how the pilot survey, using the research instruments, was conducted and then a post pilot survey review was conducted to improve the structure and simplicity of the questions while minimising the degree of error in the quality of the field data.

The instruments used in this study to collect the field data are identified, listed and described. Then, the structure and scope of each instrument is outlined. In outlining the structure and scope of the instruments, the nature of the questions asked and their focus are discussed. Here, the purpose is to reveal the specific details of each questionnaire in terms of the nature and focus of the questions asked to the respondents.

The interviews conducted in the field are described. The description of the interviews is confined to their nature and purpose, how they were done and who did them.

The section on observations outlines the aim of the observations and how they were carried out in the field. This section also states that these observations were made primarily as supplement to the data collected through the use of questionnaires and interviews.

Three sampling frames have been presented. These are the sampling frames for the Department of Agriculture officials, the frame for officials of cotton companies and the frame for peasant farmers. Each frame's composition and structure are then discussed.

Dual spatial sampling units are outlined. These are the extension unit (for both extension workers for the Department of Agriculture and cotton companies) and farming ward unit to cover farm families. These sampling units were used as a basis for the current study.

For the sample selection, it is explained how it was done, which sections of the population were selected, and the method that was adopted in order to ensure that the sample was spatially representative. This section also gives the structure of the selected sample - that of the extension workers and peasant farmers (farm families).

The section on management of fieldwork covers the actual work of the researcher and the research assistants. This section thus explains how the researcher and his assistants did data collection. It further explains the controls that were put in place to ensure that the assistants did their work correctly and the post-fieldwork reviews. It is this section that outlines how the researcher made sure that the objectives of the fieldwork were achieved.

Finally, section 3.11 presents the numerous limitations that were faced during the period of data collection. Here, the nature of the problems have been identified, how they affected the research and the steps that were taken to solve them so as to minimise their effects on the quality and quantity of the data. Although the study encountered several limitations, only the severe ones have been discussed in this

section. All minor limitations have been omitted because their bearing on the quality and quantity of the information obtained in the field was insignificant and tolerable.

3.2 RESEARCH PREPARATION

3.2.1 RECRUITMENT AND TRAINING OF RESEARCH ASSISTANTS

3.2.1.1 Recruitment of research assistants

In order for the study to be successful, 39 research assistants were employed from the 50 that had applied. Thus, 8 assistants for Chaloshi, 5 for Chibombo, 8 for Chikobo, 8 for Keembe and 10 for Liteta. Each of these assistants had to meet some minimum educational qualification. It was required that any aspirant had to have at least a grade 9 standard of education and be able to carry out basic instructions and tasks as demanded by the programme. Similarly, the aspirants were subjected to a test that covered basic English and mathematics problems. Only those that passed this test at their level (grade 9 and 12 educational levels) were picked as assistants.

Further, it was required that the aspirants show the ability to translate English to the local language Lenje or the sister language Tonga. This was a necessary skill since some of the peasant farmers they had to deal with could not speak or write English.

A further requirement to the research assistants (for each ward) was that they needed to be resident in the farming ward. This requirement was given for two reasons. First, the researcher needed only people that knew the farming ward well. Secondly, it was done in order to reduce the cost of transport between the point of residence and the research area. Moreover, all the assistants were encouraged to use local transport to reach the farmers. Although this presented problems initially, the work smoothed out as the research gained momentum.

Based on this selection procedure, each ward had a specific number of research assistants (see table 7). Research assistants with grade 9 and 12 educational levels were selected. The two grade levels were used for this study because the majority of

the people who came forward during the recruitment exercise had this type of education. The dominance of these two levels of education is due to the fact that these are the two levels at which people drop out of the education system in Zambia.

Table 7. RESEARCH ASSISTANTS

| | Assistants with grade 9 education | Assistants with grade 12 education | Total number of assistants in the Ward |
|----------|-----------------------------------|------------------------------------|--|
| Chaloshi | 6 | 2 | 8 |
| Chibombo | 2 | 3 | 5 |
| Chikobo | 6 | 2 | 8 |
| Keembe | 5 | 3 | 8 |
| Liteta | 6 | 4 | 10 |

The average number of respondents each assistant had to deal with determined the number of assistants in each ward. In order to minimise the workload; each assistant was limited to a maximum of 11 farmers. Thus, assistants in Chaloshi had to deal with 11 farmers each, Chibombo 9 farmers each, Chikobo 9 farmers, Keembe 11 farmers and Liteta 10 farmers per research assistant. At the end of the fieldwork it was appreciated that the limitation in number of farmers per assistant helped maintain the standard of information obtained. Also, this enabled the researcher to easily carry out random visits to sampled households to check whether or not the assistants actually visited the farms.

3.2.1.2 Training of research assistants

After the 39 research assistants were recruited in the five wards a one-week training programme per ward was organised by the researcher. A home of one of the grade 12-research assistants in each ward was used as a training base. The training programme or learning schedule covered reading, interpreting and translating the questionnaire; asking questions; effective listening and recording responses; formulating follow-up

questions; drawing sketch maps of visited areas; mathematical calculations of addition, subtraction, fractions and divisions; nature and cause of measurement error, and identification of the samples selected by the researcher (emphasising systematic and stratified random sampling). The theory-training programme lasted for three days on average.

3.2.1.3 Field trials

During the field trials (which lasted for one full day), the research assistants were subjected to methods of selecting sample farmers, asking them questions, translation and recording responses and sketching maps of visited areas. They were also encouraged to practice humility during their visits to selected households, particularly when it entailed dealing with farm families that were not very receptive. This aspect was emphasised in order to avoid confrontations between the research assistants and their respondents.

The field trials were conducted in groups of one (where the group of assistants was small) or two (if the group of assistants exceeded five). The researcher or a selected grade 12 assistant who had shown great initiative and fast learning abilities in the acquisition of the research skills led each group. The assistants used as leaders during the field trials eventually assumed the same role in the final field research because of their reliability.

3.2.1.4 Field trial review

The last day of the training programme involved reviews of the field trials. In the reviews the trainees shared their experiences, problems and challenges encountered in the field. Additionally, they used this time to bring out suggestions on how to solve problems faced during the one-day field trials. This day proved very important to the whole research preparation programme as it was used by all the parties to seek clarifications on issues that were not clear to them in the initial stages (or any other stage) of the training schedule. The researcher used the day of review to emphasise

those areas of research in which measurement errors could easily arise and the methods the assistants needed to adopt in order to minimise such problems.

3.3 RESEARCH INSTRUMENTS

The instruments of research used here were three questionnaires.

The three questionnaires were A, B and C.

3.3.1 QUESTIONNAIRE A

Questionnaire A (appendix 1) was designed in a way that peasant farmers provided information for the 1980s and 1990s. This instrument had 15 questions that ranged from personal identity of the individual farmers to their crop production activities during the 1980s and the 1990s. This instrument was tried in the field before it was finally used during the actual field research. The field trial involved giving the questionnaire to a small number of farmers in Chikobo and Liteta to answer on their own. After this was done, the researcher discussed the strengths and weaknesses of the questions. These discussions were used as a basis to improve this instrument.

As the main research instrument of this study, each research assistant conducted physical questioning (where the respondents could not read or write) in a translated form in Lenje (the local language) or Tonga (the sister language) at sampled households in the wards. Respondents that displayed good knowledge of English and the ability to write, had to fill in the questionnaire either as the research assistants waited or on short term agreements of a day or two. Each assistant had a notebook in which they wrote the names of the farmers with whom they had deposited the questionnaire on a given day and when to collect them. Such record keeping was done in order not to lose vital information from the sampled farmers in each study unit that each assistant covered.

3.3.2 QUESTIONNAIRE B

This questionnaire (appendix 2) was aimed at the extension officers of the Department of Agriculture in the Ministry of Agriculture, Food and Fisheries based in the sampled five wards. The instrument had 12 questions. These questions ranged from the personal identity and rank of the individual extension officer to their perception of liberalisation experiences among the farmers in the wards under their jurisdiction.

This instrument was meant to elicit the personal views of these officials on the changes taking place in Chibombo District after the introduction of economic liberalisation in 1991. This questionnaire was also intended to act as a supplement to questionnaire A.

Prior to the use of this questionnaire in the survey, it was distributed to eight selected officials at the Department of Agriculture in Chibombo for testing. After they completed answering the questions, a meeting was held with the officers (by the researcher) to discuss areas of improvement in terms of the clarity, appropriateness and effectiveness of all the 12 questions. Improvements to this instrument were largely based on the resolutions of this meeting.

This questionnaire was distributed among the sampled extension officers in the five wards and later collected from them by the researcher himself. Because of their educational standards they did not face many problems in answering the questions.

3.3.3 QUESTIONNAIRE C

Questionnaire C (appendix 3) had 12 questions and was aimed at extension officers from companies promoting cotton growing in Chibombo. The purpose of this instrument was twofold. First, it was meant to provide this study with the knowledge these officials had on managing a single crop. Second, it was meant to obtain their suggestions on how the peasant farmers growing other crops (other than cotton) could use knowledge from this sector to improve their farming skills, particularly in the present era of liberalisation.

In a way, it was this instrument that was aimed at providing this study with practical suggestions on how to improve the operations of the peasant farmers. This instrument was also included in the investigation mainly because over the years cotton growing had enjoyed a high degree of autonomy from state control and consequently performed better than the farming areas that were under heavy state influence (Department of Agriculture file, 1996).

Just as for questionnaires A and B, this instrument was also subjected to field trials during the training period in order to discover its weaknesses.

Out of this trial it was improved upon, particularly in wording and sentence construction in order to reduce areas of difficulty.

Questionnaire C was distributed to and collected back from the officials in the cotton companies by the researcher himself. The officials answered the questions on their own and then handed back the answered questionnaires to the researcher after a day or two. Their level of education helped them to easily understand what was required of them.

3.4 INTERVIEWS

The interviews held with farmers and the five field agricultural officials were direct structured ones. These interviews involved prepared written questions on selected aspects of small-scale farming such as crop production during the 1980s and 1990s, state of road networks and their associated impact on production, cropping systems, land holding rights, farming resources and/or agricultural support institutions. In some cases, the interviews were used to get more data from those people who had completed questionnaires. This was done as a follow-up to questionnaires. In other cases, they were used to get information from those seen as important but not covered by filling in of questionnaires. For example, this method proved effective in eliciting information from officials of the Department of Agriculture at Chibombo and other Ministry of Agriculture, Food and Fisheries personnel in Central Province, the headmen and chiefs of various areas in the district (Chibombo) who were not covered by the three questionnaires.

At Kasukwe the researcher interviewed officials from Tazcor Company Limited (figure 14) that now occupies the premises previously owned by the Central Province Co-operative Union (CPCU). The officials of this company were interviewed because it is the only enterprise specialising in supplying fertilisers to small-scale farmers on loan in exchange for maize bags. Thus, it exchanges one bag of fertiliser for two bags of 90 kilogrammes of maize on harvest. It also buys maize and sorghum on cash or in exchange for fertiliser. This company started its operations in the 1995/96 marketing season.

3.5 OBSERVATIONS

The type of observation method adopted for this study was one of non-participant. As a research instrument, observations were used to verify certain information collected by questionnaires or interviews, or to collect information, which could not be collected by any other way than mere observation. However, due to this method's high degree of subjectivity, its general level of inclusion when processing the field data was kept to a low level except in instances where authentic independent details existed to support such a view (Silk 1979). This stand was deliberately taken to safeguard the reliability of field data and hence reduced personal views that could not be supported by any other independent information.

Data on the communication infrastructure was collected from the farmers as they filled in the questionnaires, through the observations of the researcher and his assistants during their visits to the study areas and from the information found on file at the District Council. The District Council provided detailed information on the total length of the communication infrastructure, their state and any developments that may have occurred. This information was verified by the data from farmers and the field visits by the researcher and his assistants. Similarly, the researcher verified all lengths of the railway and individual roads by calculating each length from maps using the provided linear scale. This was done in order to minimise the degree of error in the data given by the council officials.

3.6 SAMPLING FRAMES

This study adopted a multiple frame of sampling. Thus, it used a frame for small-scale farmers, a frame for extension officers in the Department of Agriculture and one for extension officers from companies promoting cotton growing.

3.6.1 FRAME FOR SMALE-SCALE FARMERS

Village registers maintained by the individual village headmen in wards and a list of households of small-scale farmers for the whole district from the Department of Agriculture were used as a base for this frame.

These two registers were used to decide which farmers to include in the sample. Using the two lists and the knowledge of the assistants about the individual study areas, it was fairly easy to collect field data from the farmers.

3.6.2 FRAME FOR EXTENSION OFFICERS OF THE DEPARTMENT OF AGRICULTURE

The list of these extension officers was obtained from the Department of Agriculture at Chibombo District office. For administrative purposes, the Department maintains an up-to-date register of its officers in the field, with their operation stations clearly stated. Since the Department of Agriculture has an elaborate field infrastructure for their extension officers it was easy to select those in the sampled wards.

3.6.3 FRAME FOR EXTENSION OFFICERS OF COMPANIES PROMOTING COTTON GROWING

The lists of extension officers from companies promoting cotton growing were obtained from the district head offices. The managers at the head office of each cotton company provided the researcher a consolidated list of their officers in the various locations in Chibombo District. This made the researcher's work easier to do. Similarly, the accompanying official introductions from the headquarters for each

company to the extension officers at various stations in the sampled wards enabled the researcher to receive maximum co-operation from the respective officers.

3.7 SAMPLING UNIT

Farming wards were used as the spatial units for this study. Of the 18 wards, this study selected five Wards (Chaloshi, Chibombo, Chikobo, Keembe and Liteta) for investigation. The five wards selected represent 27.8 percent of the entire number of wards in Chibombo. These five Wards were selected because of their level of agricultural activity, accessibility and proximity to the researcher's residence. Additionally, Chaloshi, Chibombo, Chikobo and Liteta are adjoining. Keembe, though removed by a distance of about 36 kilometres from the other wards, was selected because of the reported high agricultural activities as compared to the other farming wards (Department of Agriculture file 1996).

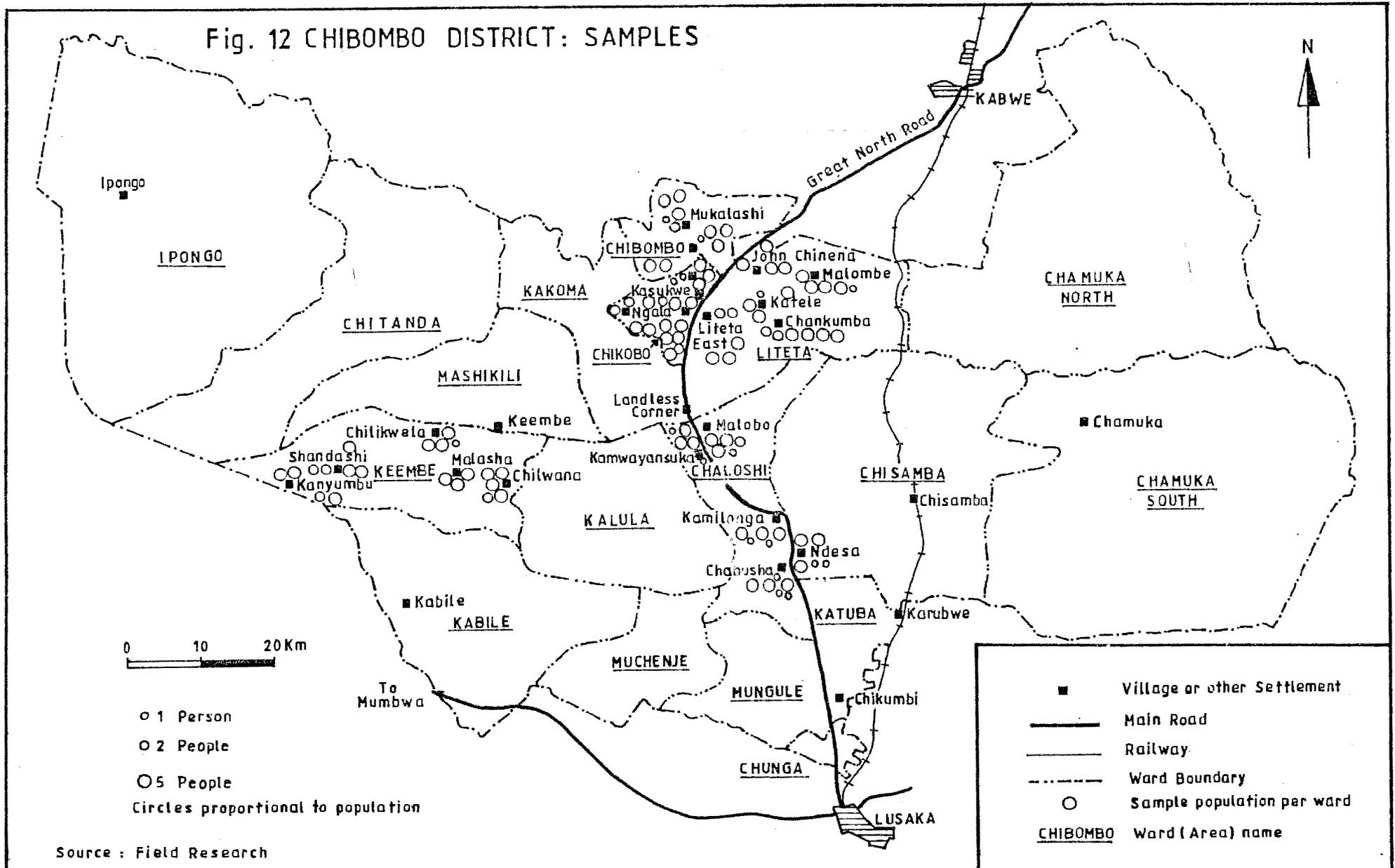
3.8 SAMPLE SELECTION AND STRUCTURE

3.8.1 FARM FAMILIES

In each ward, a specific number of households/farm families were selected as respondents by the researcher as the main source of primary data. Stratified random and systematic sampling methods were used for this task. Stratified random sampling was used here for its flexibility to allow other methods to be incorporated. On the other hand systematic sampling was adopted in this study due to its being easy to handle.

Using stratified random sampling, the sampled farm families were selected at ten percent of the total population of farm families in the ward, except for Liteta Ward where eight percent was regarded as sufficient due to the large population of the ward (see table 8). In the other four wards, a ten-percent sample was used for respondents because it was considered the most convenient, cost effective and manageable. Then each ward was divided into several strata comprising groups of villages. In each stratum, a number of farm families were selected for this current

Fig. 12 CHIBOMBO DISTRICT: SAMPLES



study using, first, random and then systematic interval sampling. To determine the spatial units, the following formula was used:

$S = N/n$. Where S = sample interval/spatial unit, n = sample size, N = population size (Silk 1979).

For instance, to determine the spatial unit or sample interval for Keembe, the following calculation was done:

$N=891$, $n=10$. Therefore, if $S = N/n$, then $S = 891/89 = 10$

Using this method, for all wards except Liteta, after the randomly selected first farm family from the list in the village register or the CSO map (example appendix 4), the next family to be interviewed was the tenth of the total number of units in the village. This method of selecting farm families proved feasible to handle by the research assistants as it was easy to understand and apply, and it also enabled the households to be spatially well distributed. However, in places with a sparse population, the interval for farm families was reduced to four. Thus, instead of selecting every tenth household on the list, the fourth household was selected for interviews. This was done in order to be able to obtain the required sample size per spatial unit.

Table 8. FARM FAMILY SAMPLES IN THE FIVE WARDS

| WARD | FARM FAMILIES | SAMPLE | PERCENTAGE |
|----------|---------------|--------|------------|
| Chaloshi | 867 | 87 | 10 |
| Chibombo | 442 | 44 | 10 |
| Chikobo | 747 | 75 | 10 |
| Keembe | 891 | 89 | 10 |
| Liteta | 1264 | 101 | 8 |
| Total. | 4211 | 396 | 9 |

NB: In Liteta - only 100 were interviewed.

The actual number of households (farm families) selected for this current study from villages in the wards is shown in table 8. In order to make field operations easy, each research assistant had a CSO map of his study area (see example of CSO map, appendix 4).

3.8.2 EXTENSION STAFF

3.8.2.1 DEPARTMENT OF AGRICULTURE

All officers who happened to be present in the sampled wards were used for this study. This was done because there was one extension officer in each sampled ward.

3.8.2.2 COTTON COMPANIES

All extension officers available in the wards, except one in Keembe, were included. The actual number of those picked for this study is shown in table 9. Extension officers at permanent depots (see figure 14) were used for this study. Officers in temporary stations were not included in the sample because at the time of data collection these facilities were non-operational.

Table 9. SAMPLE EXTENSION OFFICERS OF COTTON COMPANIES

| WARD | NUMBER OF OFFICERS | OFFICERS INTERVIEWED | PERCENTAGE | STATION IN WARD |
|----------|--------------------|----------------------|------------|--------------------------|
| Chaloshi | 1 | 1 | 100 | Mupamapamo |
| Chibombo | 3 | 3 | 100 | Chibombo Turn-off |
| Chikobo | 1 | 1 | 100 | Shimbilo |
| Keembe | 6 | 5 | 83 | Keembe and Mwachisompola |
| Liteta | 1 | 1 | 100 | Chankumba |

NB: 1. Chaloshi is being served from Katuba, Mwachisompola, Mupamapamo and Chisamba Railway Siding. 2. For details see figure 14.

As in the case of the extension officers in the Department of Agriculture, the extension staff for the cotton companies in Chibombo were given a self administered questionnaire to answer at their own time. After a day or two, the researcher went round to collect the questionnaires from them and, wherever necessary, had an immediate follow-up interview with anyone of them.

3.9 FIELD RESEARCH ADMINISTRATION

3.9.1 RESEARCH ASSISTANTS' FIELDWORK ACTIVITIES

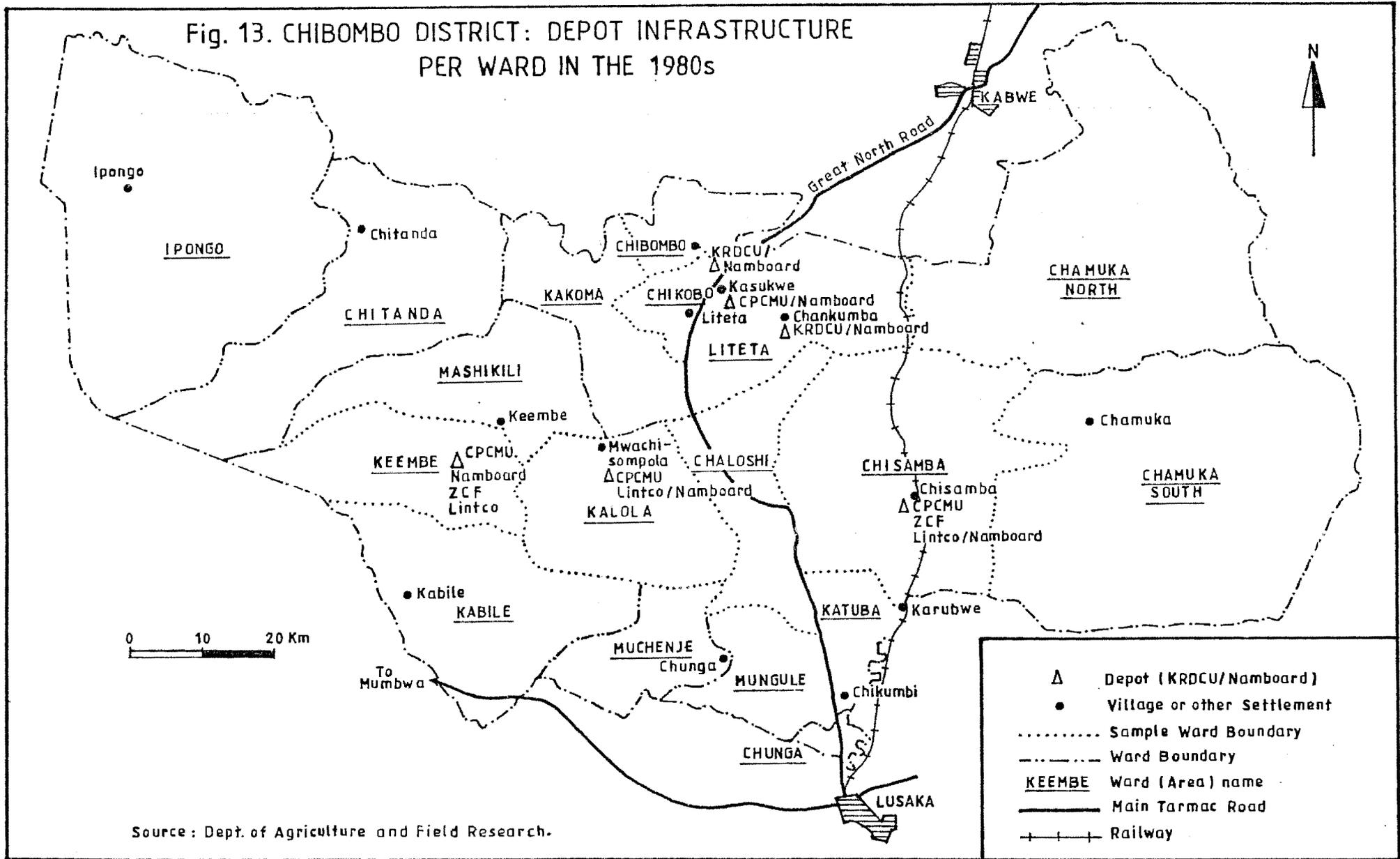
Throughout the period of field research, the research assistants were closely supervised in their work by either the appointed group leaders in their units or by the researcher himself. The group leaders maintained a close watch on the work of those under their supervision on a day to day basis. This was done so that each one of the assistants did not do anything that was outside the stipulated guidelines, particularly with regard to selecting the sampled farm families, distributing the questionnaires or conducting the physical scheduled interviews in situations where farmers could neither read nor write, and maintaining an up-to-date list of farmers visited.

The lists of farmers visited were submitted weekly to the group leaders who in turn submitted them to the researcher. As an administrative control and in order to ensure a reduced level of error, the researcher used these lists to conduct random visits to any randomly selected farm families. This strategy acted as a sure way of compelling the research assistants in all wards to visit all recorded households.

Furthermore, occasional meetings with research assistants also helped to solve, with minimum delay, any of the problems that came up in the process of their work. To a large extent, this contact with the researcher helped to maintain their focus on the key objectives of the fieldwork and a high level of work satisfaction.

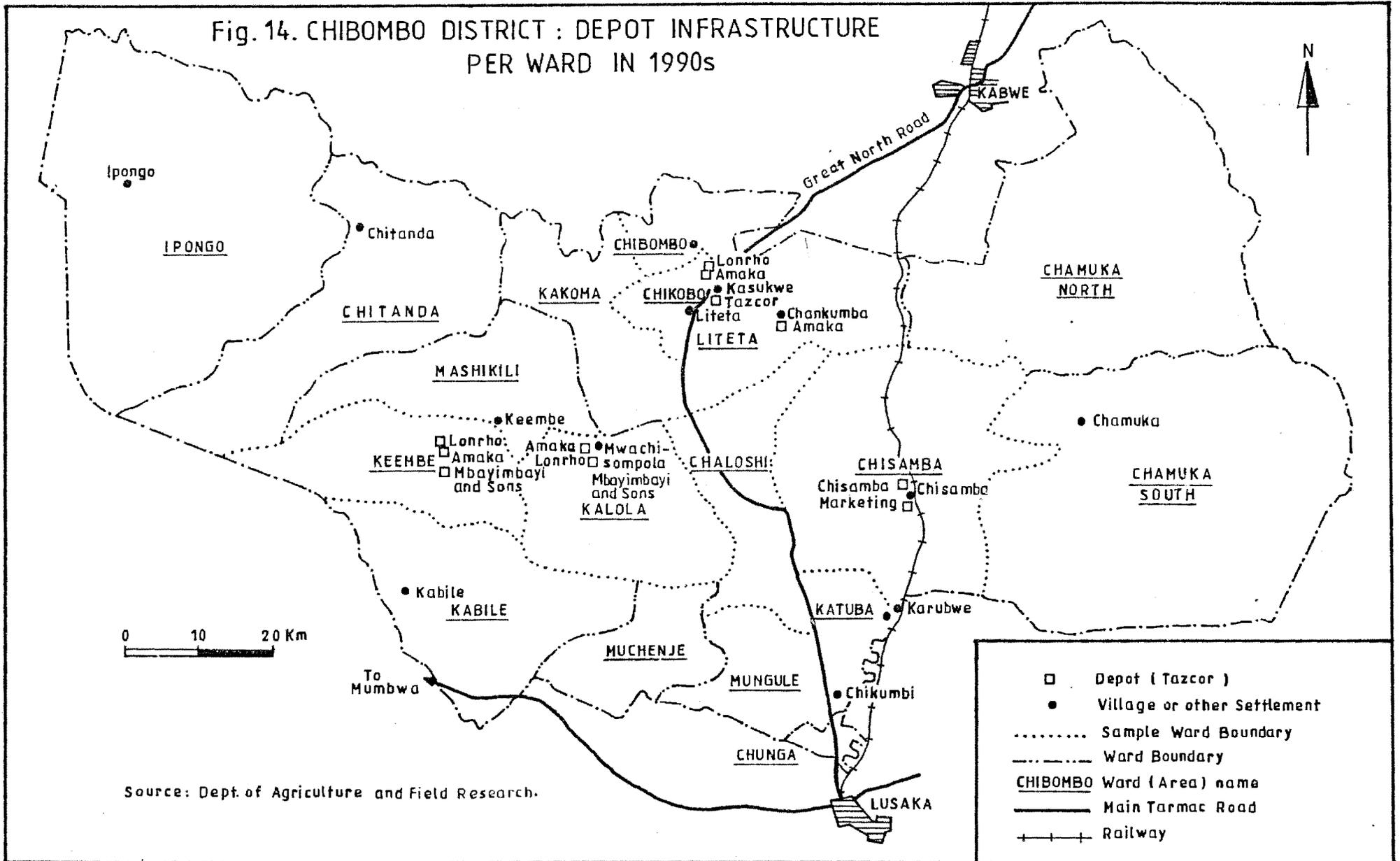
At the end of the fieldwork, the researcher and his assistants held a post-fieldwork review. This was done for two reasons. Firstly, it was done in order to share the field

Fig. 13. CHIBOMBO DISTRICT: DEPOT INFRASTRUCTURE PER WARD IN THE 1980s



Source : Dept. of Agriculture and Field Research.

Fig. 14. CHIBOMBO DISTRICT : DEPOT INFRASTRUCTURE PER WARD IN 1990s



0 10 20 Km

Source: Dept. of Agriculture and Field Research.

| | |
|-----------------|-----------------------------|
| □ | Depot (Tazcor) |
| ● | Village or other Settlement |
| | Sample Ward Boundary |
| ----- | Ward Boundary |
| <u>CHIBOMBO</u> | Ward (Area) name |
| ————— | Main Tarmac Road |
| + + + + + | Railway |

experiences. Secondly, this was done so that we identified the problem areas that needed urgent attention in order to correct situations that could have affected the field data in one way or another. Once any problem was identified, and perhaps called for revisiting the area of study, this was done without delay. This post-field review also helped the researcher to have a comprehensive understanding of the thoughts and deeds of the research assistants. This aspect of the post-field review helped the researcher in sorting, evaluating and processing the field data.

3.10 METHODS OF DATA ANALYSIS

First, the data is organised according to the three hypotheses. Under each of these hypotheses sections, tables and maps have been included to summarise and analyse statistical information. Specifically, maps have been used in order to emphasise the spatial approach of the study.

Secondly, each hypothesis has been tested as follows: (1) the crop totals and yearly crop production fluctuations were used to analyse the crop production trends for the 1980s and 1990s. (2) In order to test the hypothesis that there has been an institutional change in agriculture after the introduction of economic liberalisation in 1991, the agricultural support institutions of the 1980s and 1990s were listed and compared and maps have been used to show the differences in spatial distribution. (3) The changes that have occurred (or not occurred) on the road infrastructure, since the introduction of economic liberalisation policies in 1991, have been examined in terms of the differences in the length and percentages of passable roads throughout the year, passable roads during the dry season only and the length of impassable roads in the 1980s and 1990s. The basis of this analysis is a map.

3.11 LIMITATIONS OF THE STUDY

The study, as anticipated, faced some limitations. These limitations directly and negatively impacted upon the quantity and quality of data from the field. The major problems faced were:

(a) Some government departments did not co-operate with the researcher in the provision of required information. This was particularly so with the Ministry of Agriculture, Food and Fisheries in Lusaka. Although the researcher had official introduction documents, from both the University of Zambia, in Lusaka, and University of South Africa, in Pretoria, some officials hid behind the long bureaucracy to avoid giving out vital information that was needed. The problem as such was never solved. As a result of this, the researcher had no option but to rely heavily on secondary sources of information, and occasionally used somewhat junior officers, who could not be quoted for fear of victimisation from superiors, to provide what was needed. Although the researcher finally obtained the information that was intended from the Ministry of Agriculture using these sources, the input from those in decision-making positions was lacking. In the researcher's view, this input could have helped authenticate, correct, and/or enhance pieces of information, especially on matters of policy, from other sources.

(b) The Department of Agriculture at Chibombo lacked some detailed information on crop production and farmer's resource base in the district. The lack of information was acute particularly for the 1980s. The explanation for this was that most of the information the department had for this period was lost during the department's movement from Kabwe (a town located about 55 kilometres to the north). To solve this problem, the researcher used the fragmented details the department had on the files. This was supplemented by verbal evidence from those officials who had worked with the department for a long time

(c) Some Agricultural Extension officers, particularly for Chaloshi and Keembe, failed to provide full information about their wards at the time of research. The officer for Chaloshi argued that she was new in the ward and her predecessor did not leave any reliable information on file and hence it was not possible for her to have up-to-date information about the agricultural activities in the ward as she was expected to. But, to try to solve this problem she personally accompanied the researcher to all areas that were visited in this ward. Her presence on the tour of the Ward helped clear and/or confirm many important activities there.

The Extension Officer for Keembe was found operating from Mwachisompola (figures 3 and 4). Her explanation was that she didn't have accommodation in Keembe. Coupled with inadequate transport, she failed to provide the researcher with some of the details that he needed from the ward. As a way of solving the problem, the study used what she had on file and the field data. Unfortunately, like her counterpart in Chaloshi, she didn't have information for some years because, it was claimed, that her predecessor left the files with limited information.

(d) As the research went into the rainy season, some areas that are swampy could not be accessed easily. It was very difficult to visit some remote areas in the sampled wards because roads became impassable. During this time, fortunately, the bulk of the research had already been done. The major impact of this limitation was that it made the final part of the intensive field research slow, and that a few places in some wards could not be visited as earlier intended.

CHAPTER 4

TESTING THE HYPOTHESES OF THE STUDY

4.1 GENERAL INTRODUCTION

The introduction of economic liberalisation policies in agriculture in 1991 by the Zambian government was done with a view to improve, among other things, productivity and efficiency. In line with government policy, agricultural production and efficiency could improve, as stated in earlier chapters, through the withdrawal of government participation in funding and provision of logistics to the agro companies; ownership of farms; removal of monopolies in input supply; crop marketing and provision of storage space in farming areas. According to Kokwe (1997), the MMD government started to effectively implement its new policies in the 1994/95 farming season although the statutes were actually changed immediately after assuming office in 1991. Largely, between the 1990/1991 and the 1994/95 farming seasons, the government continued relying on the old institutions to support agriculture while trying out new measures.

In examining the impact of the policies of economic liberalisation on peasant agriculture in Chibombo District, this chapter puts forward research findings on the state of agricultural support institutions, cropping systems, and crop production and the communication infrastructure as they stood in the two time periods of 1983/84 to 1989/90, and 1990/91 to 1996/97. As much as possible, the researcher has endeavoured to use only those pieces of data directly relevant to the three hypotheses of the study. Other details not directly relevant to the study, though important, have either been mentioned only in passing or been omitted altogether.

4.2 CROP PATTERNS AND PRODUCTION IN CHIBOMBO DISTRICT IN THE 1980s AND 1990s

4.2.1 CROPPING PATTERNS

4.2.1.1 CROPS GROWN

Table 10 and figure 15 show the main crops that peasant farmers in the five sampled wards of Chibombo District grew in the 1980s during the period of centralised planning policies. Of the crops grown, maize, cotton, groundnuts, sunflower and sorghum stand out as the prominent ones (figure 15). In terms of preference, maize and cotton were ranked first and second respectively. Thus, maize and cotton polled as follows: Chaloshi, 87% and 75%; Chibombo, 59% and 16%; Chikobo, 95% and 64%; Keembe, 91% and 69%; Liteta, 81% and 46%. The dominance of maize over the other crops in Zambia was due to "The policy of subsidising maize production and marketing coupled with maize production credit packages..." (Chabaia and Sakufiwa 1993:4).

Like Gerrard et al (1994) and Kokwe (1997) have pointed out, maize and cotton were preferred in the 1980s because of the government institutional and logistical support they received. These two crops were supported by the government through the following measures: a wide network of government funded parastatals that supplied inputs and cash loans; the buying of these two crops at government determined prices; provision of storage space; the provision of extension services. According to Chipungu (1988), Mwanza (1992a and b), Gerrard et al (1994) and Kokwe (1997), maize enjoyed this government support because it is the staple food of the country. On the other hand, the government supported cotton growing among the smallholder farmers through LINTCO because it wanted the local textile industry to obtain the raw material locally. This support that the two crops received from government made the farmers grow them even in areas where conditions were unfavourable (Kokwe 1997). Additionally, while this biased government support to maize and cotton depressed the interest of farmers in the other crops, it also made all wards in Chibombo District, like in other parts of Central Zambia, maize dominated areas (figures 15 and 17). This

government-induced bias towards maize also limited crop rotation among the farmers. Information from the survey of this study reveals that farmers failed to practice crop rotation on a wide scale because other crops were unprofitable.

As a commercial crop, sunflower was the third most important crop among the farmers in the 1980s. During that period, sunflower grown by the farmers was sold to the government sponsored companies. Farmers seemed to prefer sunflower to some other commercial crops because it is drought resistant, does not require strict attention, requires less labour and is early maturing.

Groundnuts were grown on a small scale for food. Peasant farmers in Chibombo grew groundnuts as a direct substitute to cooking oil in relish. It is added to green vegetables such as rape and cabbage in powder form. The same was the case in other parts of Central Province. The amount of groundnuts entering the market was negligible, although the number of farmers who grew groundnuts in each ward was relatively high.

Table 10 also reveals that sorghum and vegetables were grown by a substantial number of farm families in the 1980s, but on a small scale. These two crops were grown mainly for domestic purposes. If there were any commercial intentions at all, they were limited to the local community, mainly neighbours. According to the field data, sorghum was grown for sale to beer brewers within the village and hence its commercial aspects rarely went beyond the local community as well. Vegetables were grown as relish.

A close examination of the data reveals that the percentages of crop preference, emanating from the money and food value attached, determined the amount of land hectares that each crop enjoyed on the farm (figure 15).

After the introduction of economic liberalisation policies in 1991, the traditional crops grown by the farmers in the sampled wards have remained largely the same (table 11 and figure 16). Although in some wards there has been a visible reduction in the percentage of farmers preferring maize to other crops, and a rise in those that prefer

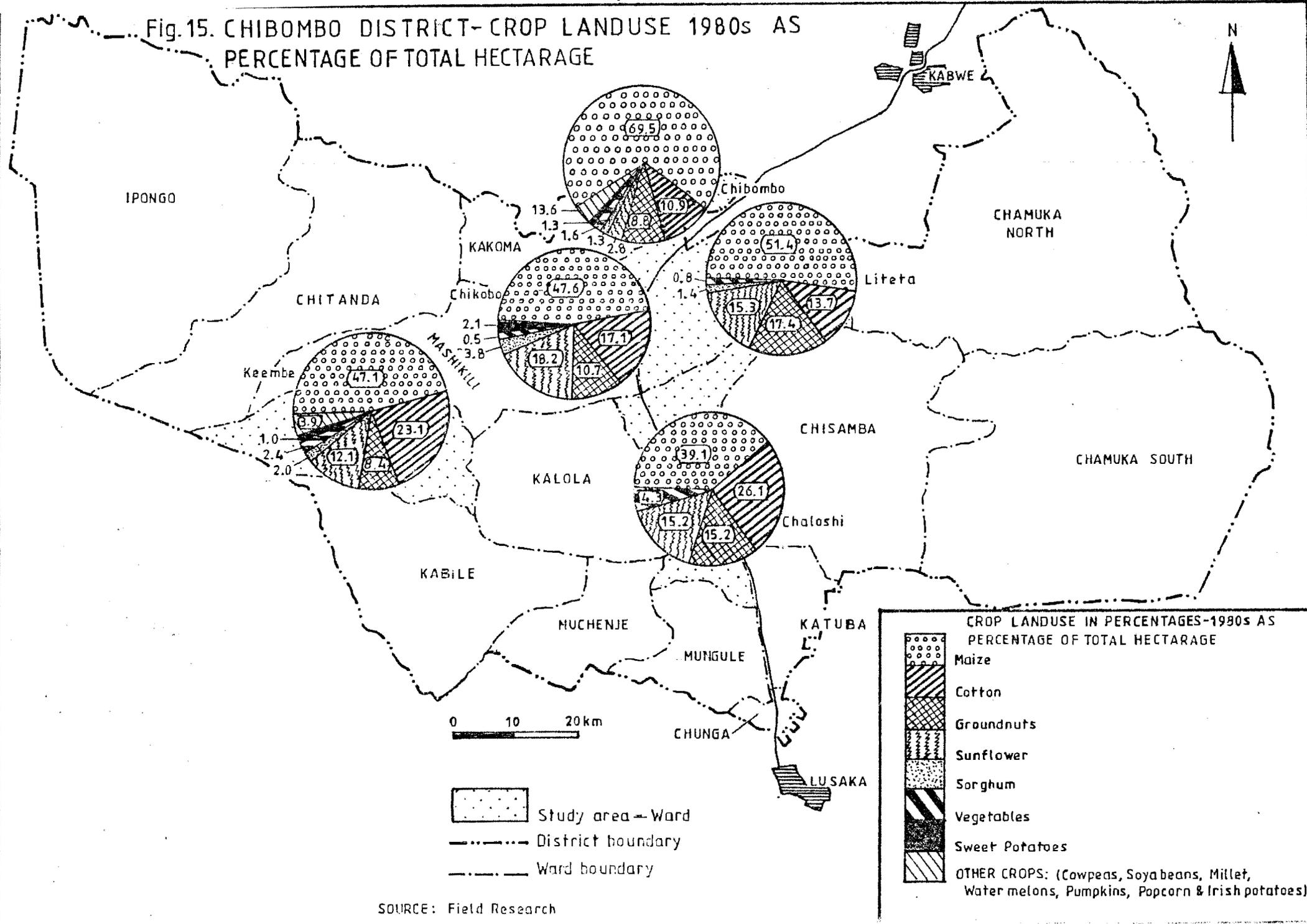
other crops particularly cotton (compare tables 10 and 11, and also compare figures 15 and 16), the types of crops dominating the peasant farming community is the same - maize, cotton, groundnuts, sunflower, sorghum, and vegetables.

Table 10. CROPS GROWN IN THE 1980s BY SAMPLED FARM FAMILIES

| Crops Grown | Chaloshi (Number and percentage of 87 farm families) | Chibombo (Number and percentage of 44 farm families) | Chikobo (Number and percentage of 75 farm families) | Keembe (Number and percentage of 89 farm families) | Liteta (Number and percentage of 100 farm families) |
|--------------------------|---|---|--|---|--|
| Maize | 76 (87.4%) | 26 (59.1%) | 70(93.3%) | 81 (91.0%) | 81 (81.0%) |
| Cotton | 65 (74.7%) | 7 (15.9%) | 48(64.0%) | 61 (68.5%) | 46 (46.0%) |
| Groundnuts | 76 (87.4%) | 15 (34.1%) | 32(42.7%) | 48 (53.9%) | 41 (41.0%) |
| Sunflower | 76 (87.4%) | 7 (15.9%) | 48(64.0%) | 48 (53.9%) | 54 (54.0%) |
| Sorghum | 0 (0.0%) | 2 (4.5%) | 21(28.0%) | 23 (25.8%) | 11 (11.0%) |
| Vegetables | 33 (37.9%) | 4 (9.1%) | 11(14.7%) | 13 (14.6%) | 16 (16.0%) |
| Cowpeas | 0 (0.0%) | 2 (4.5%) | 0 (0.0%) | 3 (3.4%) | 0 (0.0%) |
| Soya beans | 0 (0.0%) | 2 (4.5%) | 0 (0.0%) | 8 (9.0%) | 8 (8.0%) |
| Sweet potatoes | 0 (0.0%) | 2 (4.5%) | 0(0.0%) | 5 (5.6%) | 19 (19.0%) |
| Water melons | 0 (0.0%) | 2 (4.5%) | 0(0.0%) | 0 (0.0%) | 0 (0.0%) |
| Pumpkins | 0 (0.0%) | 2 (4.5%) | 0 (0.0%) | 0 (0.0%) | 3 (3.0%) |
| Millet | 0 (0.0%) | 2 (4.5%) | 5 (6.7%) | 3 (3.4%) | 3 (3.0%) |
| Irish potatoes | 0 (0.0%) | 0 (0.0%) | 0(0.0%) | 0 (0.0%) | 3 (3.0%) |
| Impwa (local egg plants) | 0 (0.0%) | 0 (0.0%) | 5 (6.7%) | 5 (5.6%) | 0(0.0%) |

NB. Percentages are rounded off to one decimal place.

Fig.15. CHIBOMBO DISTRICT-CROP LANDUSE 1980s AS PERCENTAGE OF TOTAL HECTARAGE



SOURCE: Field Research

Fig. 16. CHIBOMBO DISTRICT - CROP LANDUSE 1990s. AS PERCENTAGE OF TOTAL HECTARAGE

IPONGO

CHITANDA

CHIBOMBO

LITETA

CHAMUKA NORTH

CHIKOBO

Liteta

Keemba

Chaloshi

CHISAMBA

CHAMUKA SOUTH

KABILE

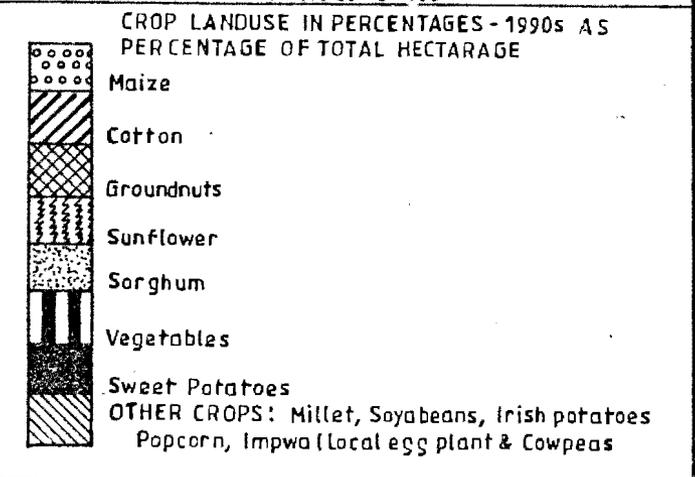
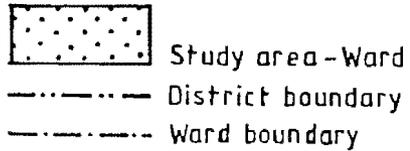
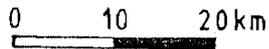
MUCHENJE

MUNGULE

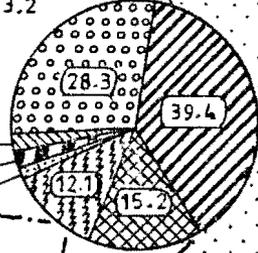
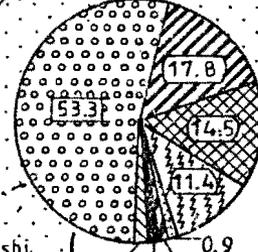
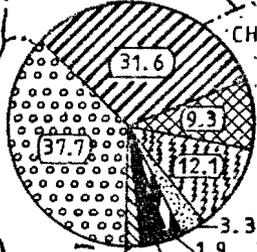
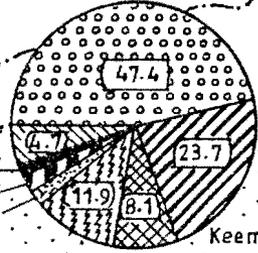
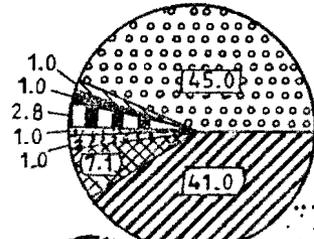
CHUNGA

LUSAKA

KABWE



SOURCE: Field Research



The strong attitude of peasant farmers towards traditional crops, according to Chabala and Sakufiwa (1993), has arisen from a lack of incentives for crop diversification over the years, and the favoured position of maize as the main food crop in the country. Government has complained at different forums about this inability of peasant farmers to diversify their crops. For instance, the Deputy Minister of Agriculture, Food and Fisheries was quoted as saying "...peasant farmers needed to diversify their crops in order to survive in a liberalised environment..." (Times of Zambia, Friday, December 20, 1996:2). Such statements indicate the frustration of the government about the lack of crop diversification in the new agricultural environment of liberalisation.

According to data from the survey in this current study, the increase in market demand of some crops (for example cotton in Chibombo and Keembe) and difficulties faced in procuring inputs such as chemical fertilisers (for example maize in Chaloshi and Chikobo), many farmers have started switching to cotton, vegetables, soya beans, sweet potatoes, pumpkins, Impwa (local egg plants) and pop corn. The growing popularity of cotton, and the gradual adoption of the once neglected crops, such as Impwa, sorghum and millet, appears to be the major change in crop patterns being experienced among peasant farmers in Chibombo today. The cropping shift occurring in the 1990s is resulting in a cotton-maize cropping system (Chaloshi), maize-cotton cropping system (Chibombo), cotton-maize cropping system (Chikobo), maize-cotton cropping system (Keembe) and maize cropping system (Liteta) – see figures 16 and 18. This is in contrast to the 1980s when maize dominated (see figures 15 and 17).

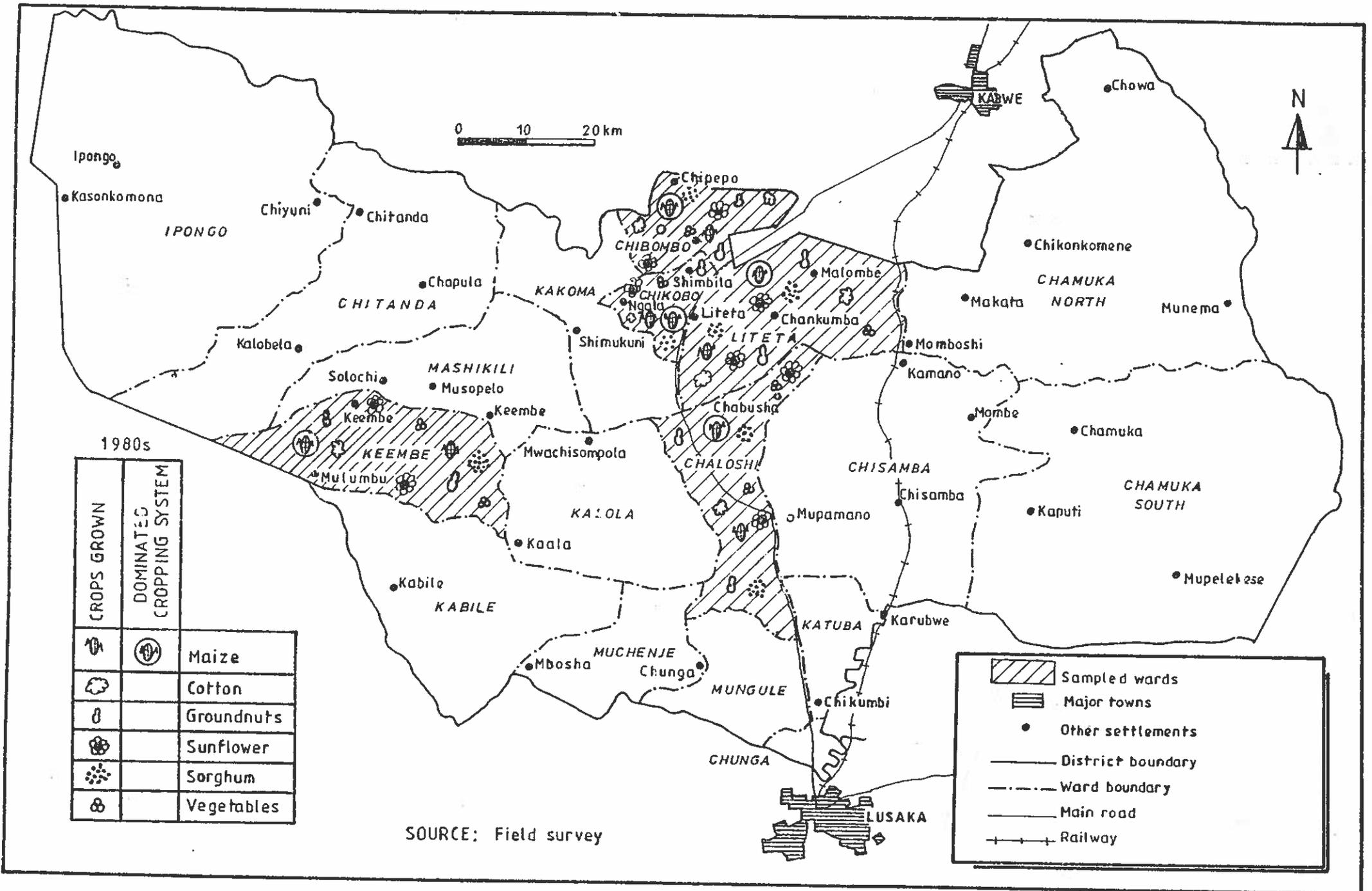
These cropping systems, just like the 1980s maize dominated cropping system in all the wards, reveal the dominant crop(s) in the late 1990s. In these systems, the crop stated first is more dominant than the second (compare figures 17 and 18). But the presence of the second crop in the cropping system entails that the crop is also a major one in the area. In terms of dominance, the recent cropping systems, in comparison to the maize dominated cropping system of the 1980s in all the wards, shows, at least for cotton and maize, a major development unfolding in Chibombo District in terms of preference and land hectares set aside for each crop by the peasant farmers. Changes have been particularly prominent in Chaloshi for maize. This seems to have

resulted from the collapse of the support infrastructure and increasing cases of peasant farmers seeking some manual work in the nearby commercial farms. In Chikobo a decline in maize, cotton, groundnuts and sorghum, according to the data from the survey, seems to have come about because of a collapse in the institutional support system and poor state of the roads.

The farmers that have started to adopt the once neglected crops have given a variety of reasons for the shift in crops preferred. Thus, 62.1% farmers in Chaloshi; 75% in Chibombo; 78.7% in Chikobo; 68.5% in Keembe and 59% in Liteta blamed the late arrival of inputs (particularly chemical fertilisers) and/or limited market opportunities as reasons for starting to grow other crops. Also, faced with difficulties to procure inputs such as chemical fertilisers, there is now visible evidence of crop rotation among farmers in Chibombo District. Crop rotation is especially practised in Chibombo, Liteta and Keembe wards.

The fact that in all sampled wards more than half of the farmers interviewed pointed to the changed market environment as the main reason for their shift to other crops on the farms, was an indication of the farmers' own changing strategies to survive and perhaps an emerging positive response to market opportunities. But, whatever the reason for starting to grow other crops in the 1990s, there is a definite growing trend among farmers, particularly those that have access to the market, to grow those crops that will give them better cash returns (Kajoba 1994). Assessing the volume of the growing trend, one may say that it is gaining momentum by the year judging from the amount of commercial crops farmers have adopted and/or continue adopting in recent years (World Bank 1994). For the government's dissatisfaction with the pace of crop diversification, one may say that the government is expecting 'too much within too short a time' from farmers who for many years got used to growing the same type of crops. The government needs to observe the internal changes taking place in crop preferences among the farmers within the realm of the traditional crops if it is to appreciate the direction crop farming is gradually taking. To identify and acknowledge some of these emerging patterns in agriculture in their early stages would help the government find solutions to some problems peasants face today.

Fig.17. CROPPING SYSTEMS FOR CHIBOMBO - 1980s



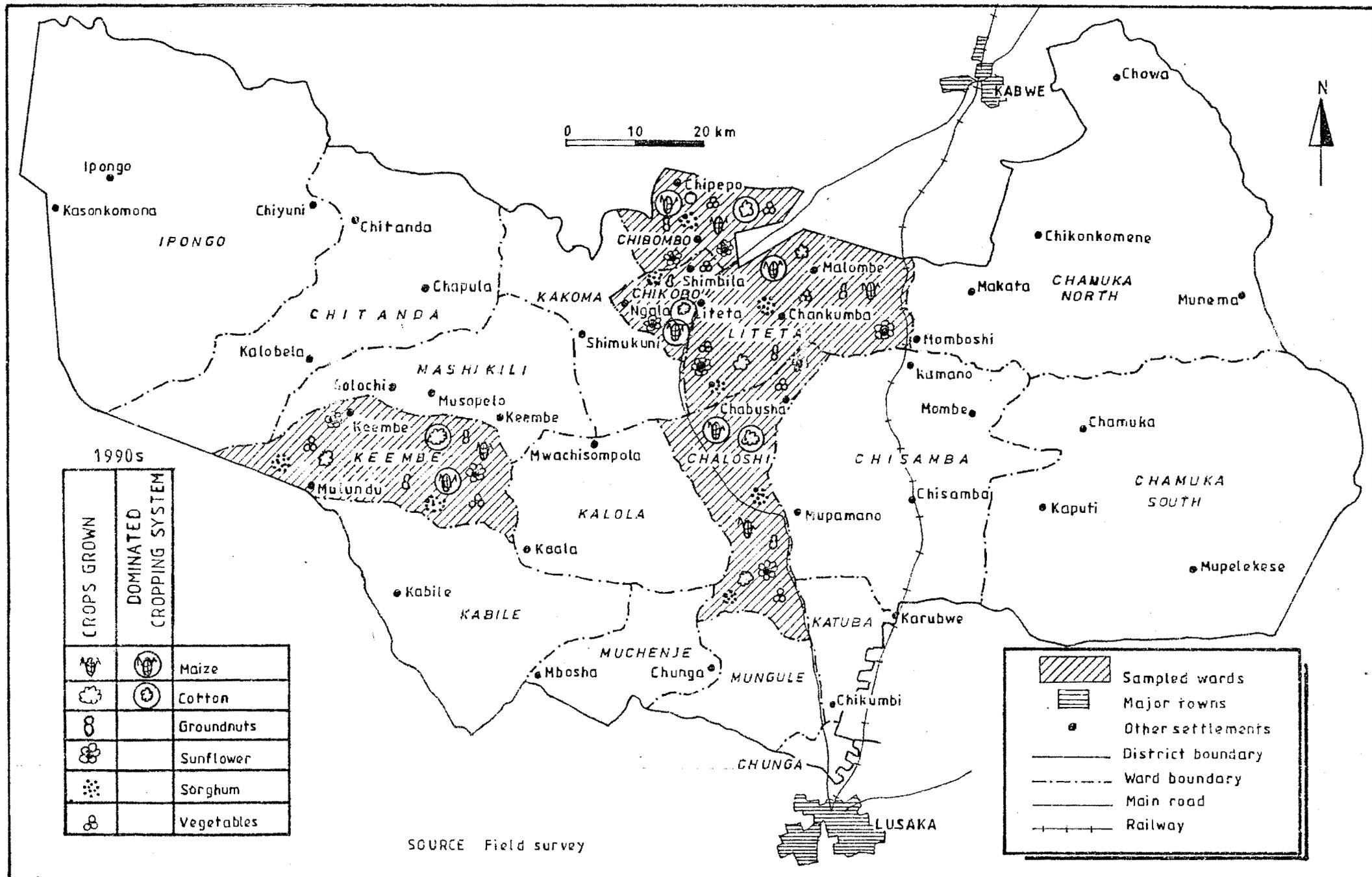
1980s

| CROPS GROWN | DOMINATED CROPPING SYSTEM | |
|-------------|---------------------------|------------|
| | | Maize |
| | | Cotton |
| | | Groundnuts |
| | | Sunflower |
| | | Sorghum |
| | | Vegetables |

| | |
|--|-------------------|
| | Sampled wards |
| | Major towns |
| | Other settlements |
| | District boundary |
| | Ward boundary |
| | Main road |
| | Railway |

SOURCE: Field survey

FIG. 18. CROPPING SYSTEMS FOR CHIBOMBO - 1990s



SOURCE Field survey

Table 11. CROPS GROWN IN THE 1990s BY SAMPLED FARM FAMILIES

| Crops Grown | Chaloshi (Number and percentage of 87 farm families) | Chibombo (Number and percentage of 44 farm families) | Chikobo (Number and percentage of 75 farm families) | Keembe (Number and percentage of 89 farm families) | Liteta (Number and percentage of 100 farm families) |
|-----------------------------|---|---|--|---|--|
| Maize | 61 (70.1%) | 35 (79.5%) | 64 (85.3%) | 84 (94.4%) | 89 (89.0%) |
| Cotton | 67 (77.0%) | 22 (50.0%) | 54 (72.0%) | 79 (88.8%) | 35 (35.0%) |
| Groundnuts | 60 (69.0%) | 13 (29.5%) | 48 (64.0%) | 51 (57.3%) | 62 (62.0%) |
| Sunflower | 44 (50.6%) | 4 (9.1%) | 38 (50.7%) | 48 (53.9%) | 35 (35.0%) |
| Sorghum | 11 (12.6%) | 2 (4.5%) | 11 (14.7%) | 13 (14.6%) | 14 (14.0%) |
| Vegetables | 33 (37.9%) | 9 (20.5%) | 16 (21.3%) | 18 (20.2%) | 3 (3.0%) |
| Soya Beans | 11 (12.6%) | 2 (4.5%) | 0 (0.0%) | 8 (9.0%) | 3 (3.0%) |
| Sweet Potatoes | 0 (0.0%) | 2 (4.5%) | 16 (21.3%) | 3 (3.4%) | 22 (22.0%) |
| Pumpkins | 0 (0.0%) | 2 (4.5%) | 0 (0.0%) | 0 (0.0%) | 3 (3.0%) |
| Pop Corn | 0 (0.0%) | 2 (4.5%) | 0 (0.0%) | 3 (3.4%) | 3 (3.0%) |
| Impwa (Local egg plants) | 0 (0.0%) | 0 (0.0%) | 5 (6.7%) | 5 (5.6%) | 8 (8.0%) |
| Millet | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 3 (3.0%) |
| Cowpeas | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 5 (5.6%) | 0 (0.0%) |

NB: Percentages are rounded off to one decimal place.

4.2.1.2 CROP LAND-USE

During the 1980s, maize dominated other crops in Chibombo in the amount of land hectareage it covered every farming season (table 12 and figure 15). For instance,

among the sampled farm families in Chaloshi, of the 610 hectares cultivated, maize occupied 39%, cotton 26%, groundnuts 15%, sunflower 15% and vegetables 4%.

According to table 12 and figures 15 and 17, the six traditional preferred crops also enjoyed a large farm hectareage. The dominance of one group of crops over others during the 1980s also indicated, particularly for maize, the government's biased agricultural policy and the crop's own long history of a favoured position both as a food and commercial crop. As stated earlier, maize cultivation dates back to pre-colonial days in Chibombo and other districts of Central Zambia (Muntemba 1977a). Owing to having such a long history, maize had established itself well among the smallholder farmers. With a comprehensive package of support from the government annually, both in terms of inputs and marketing, farmers were encouraged to grow maize on a large hectareage.

In the 1990s, the hectareage for maize, though still large in comparison to other crops particularly those that for a long time were neglected by the government structures and policy, has started to shrink (table 13 and figure 16). For example, commenting on crop forecasts for 1997, Muluzi pointed out that "Cropping figures in the final food forecast by the Ministry of Agriculture, Food and Fisheries show that the area planted has declined for most crops...with maize production declining steeply..." (Muluzi 1997:16). In the current study, the hectares for maize compare with cotton as follows: in Chaloshi the hectares for maize declined by 10.9%, while the hectares for cotton improved by 13.3%; in Chibombo a maize hectare decline of 24.5% saw a rise of 30.1% for cotton; in Chikobo a maize hectare decline of 9.9% has seen an increase of 14.5% for cotton (see tables 11 and 12, and compare figures 15 and 16). Even where the maize hectareage has risen (in Keembe and Liteta), the increase has been small when compared to the expansion in cotton hectareage. Thus, for Keembe, the hectareage for maize has increased by 0.3% while the cotton hectareage has gone up by 0.6%; in Liteta, where the hectareage for maize has risen by 1.9%, the one for cotton has gone up by 4.1% (see table 14). This strong showing for cotton is an indication of the farmers' resolve to take advantage of the elaborate field infrastructure and the competitive producer price in existence in the 1990s. With the unreliable, and at times, the non-existing field-support infrastructure for maize (for example in Chaloshi and Chikobo), coupled with low producer prices, more farmers seem to be increasing the

hectarage for cotton (for example in Chibombo) against that for maize. In a way, if nothing is done to improve the standing for maize in the market, in the very near future many homes will start facing low food reserves and hence seriously threatening household, district and national food security.

Table 12. AVERAGE LAND HECTARAGE PER CROP IN THE 1980s

| Crops | Chaloshi (Land hectarage as percentage of 610 total hectarage) | Chibombo (Land hectarage as percentage of 387 total hectarage) | Chikobo (Land hectarage as percentage of 954 total hectarage) | Keembe (Land hectarage as percentage of 1179 total hectarage) | Liteta (Land hectarage as percentage of 1166 total hectarage) |
|-------------------|--|--|---|---|--|
| Maize | 239 (39.2%) | 269 (69.5%) | 454 (47.6%) | 555 (47.1%) | 599 (51.4%) |
| Cotton | 159 (26.1%) | 42 (10.9%) | 163 (17.1%) | 272 (23.1%) | 160 (13.7%) |
| Groundnuts | 93 (15.2%) | 34 (8.8%) | 102 (10.7%) | 99 (8.4%) | 203 (17.4%) |
| Sunflower | 93 (15.2%) | 11(2.8%) | 174 (18.2%) | 143 (12.1%) | 178 (15.3%) |
| Sorghum | 0 (0.0%) | 5 (1.3%) | 36 (3.8%) | 23 (2.0%) | 16 (1.4%) |
| Vegetables | 26 (4.3%) | 6 (1.6%) | 5 (0.5%) | 28 (2.4%) | 9 (0.8%) |
| Cowpeas | 0 (0.0%) | 2 (0.5%) | 0 (0.0%) | 2 (0.2%) | 0 (0.0%) |
| Soya Beans | 0 (0.0%) | 5 (1.3%) | 0 (0.0%) | 10 (0.9%) | 0 (0.0%) |
| Sweet Potatoes | 0 (0.0%) | 5 (1.3%) | 20 (2.10%) | 12 (1.0%) | 0 (0.0%) |
| Water Melons | 0 (0.0%) | 2 (0.5%) | 0 (0.0%) | 3 (0.3%) | 0 (0.0%) |
| Pumpkins | 0 (0.0%) | 1 (0.3%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Millet | 0 (0.0%) | 5 (1.3%) | 0 (0.0%) | 29 (2.5%) | 0 (0.0%) |
| Irish Potatoes | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.1%) |

NB: Percentages are rounded off to one decimal place.

From these field statistics, the picture that seems to be emerging is that in the 1990s cotton is benefiting from a continuing reduction in the hectareage for maize. The positive growth cotton has registered, and perhaps will continue to register, is due to a combination of factors. First, after the collapse of the government sponsored LINTCO, the private companies, with an elaborate field infrastructure, have been established. This field infrastructure provides cotton farmers with inputs, extension service, and storage facilities and buy the crop at competitive prices. As Kokwe (1997) has argued, wherever an elaborate field infrastructure exists, farmers tend to respond positively.

Secondly, the expansion of the hectareage for cotton as revealed here, should be understood to be the farmers' own response to the new market environment. As the World Bank (1994) has pointed out, farmers in a liberalised economy, like anyone in business, tend to shift to the crops that give them the highest returns at minimal cost. Considering that the cost of inputs in cotton cultivation is lower than the returns, it is not surprising that many farmers are adopting the crop on a large scale despite its high labour demand.

Thirdly, the shift in crop hectareage towards cotton should be taken to mean the farmer's desperation to find a crop that will help them make a living when the staple food, maize, is failing because the inputs are either too expensive or not available. By growing cotton, farmers are attempting to find money from one crop in order to be able to buy the food crop maize. This issue featured prominently among respondents during the field survey in the five wards. 67% of the respondents argued that this was the only feasible way to survive in an economy where their input needs for the staple food (maize) are not being met. Respondents during the survey indicated that for comparative advantage purposes, it makes sense now to grow more cotton than maize for a farmer to be financially self sustaining in later years particularly now that there is no firm to offer cash loans.

The small percentage changes shown here (tables 12, 13 and 14, and graph 1) for crops such as millet, groundnuts and sorghum may indicate the poor input supply system and markets. Also, it could be due to the poor extension services rendered, and

Table 13. AVERAGE LAND HECTARAGE PER CROP IN THE 1990s

| Crop | Chaloshi (Land hectarage as percentage of 637 total hectarage) | Chibombo (Land hectarage as percentage of 393 total hectarage) | Chikobo (Land hectarage as percentage of 968 total hectarage) | Keembe (Land hectarage as percentage of 1230 total hectarage) | Liteta (Land hectarage as percentage of 1169 total hectarage) |
|-------------------------------|--|--|---|---|--|
| Maize | 180 (28.3%) | 177 (45.0%) | 365 (37.7%) | 583 (47.4%) | 623 (53.3%) |
| Cotton | 251 (39.4%) | 161 (41.0%) | 306 (31.6%) | 291 (23.7%) | 208 (17.8%) |
| Groundnuts | 97 (15.2%) | 28 (7.1%) | 90 (9.3%) | 100 (8.1%) | 169 (14.5%) |
| Sunflower | 77 (12.1%) | 4 (1.0%) | 117 (12.1%) | 146 (11.9%) | 133 (11.4%) |
| Sorghum | 6 (0.9%) | 4 (1.0%) | 32 (3.3%) | 17 (1.4%) | 10 (0.9%) |
| Vegetables | 13 (2.0%) | 11 (2.8%) | 18 (1.9%) | 25 (2.0%) | 6 (0.5%) |
| Sweet Potatoes | 0 (0.0%) | 4 (1.0%) | 31 (3.2%) | 9 (0.7%) | 18 (1.5%) |
| Millet | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 26 (2.1%) | 0 (0.0%) |
| Soya Beans | 13 (2.0%) | 0 (0.0%) | 0 (0.0%) | 25 (2.0%) | 0 (0.0%) |
| Pumpkins | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Irish Potatoes | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (0.2%) |
| Pop Corns | 0 (0.0%) | 4 (1.0%) | 0 (0.0%) | 3 (0.2%) | 0 (0.0%) |
| Impwa (Local egg plant) | 0 (0.0%) | 0 (0.0%) | 9 (0.9%) | 3 (0.2%) | 0 (0.0%) |
| Cowpeas | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (0.2%) | 0 (0.0%) |

NB: Percentages are rounded off to one decimal place.

hence limiting the farmers' own knowledge about the crops. If these problems are tackled, the farmers may increase the land hectareage and ultimately the production of these crops (World Bank 1994). To some degree, the increase in the hectareage and production of these crops, coupled with a change in eating habits of the rural population, could solve some of the food security problems being faced by some households at present.

Table 14. CROP LAND-USE PERCENTAGE CHANGE - INCREASES AND/OR DECREASES IN HECTARAGE FROM THE 1980s TO THE 1990s

| | Chaloshi (% change) | Chibombo (% change) | Chikobo (% change) | Keembe (% change) | Liteta (% change) |
|-------------------|------------------------|------------------------|-----------------------|----------------------|----------------------|
| Maize | (10.9) | (24.5) | (9.9) | 0.3 | 1.9 |
| Cotton | 13.3 | 30.1 | 14.5 | 0.6 | 4.1 |
| Groundnuts | 0 | (1.7) | (1.4) | (0.3) | (2.9) |
| Sunflower | (3.1) | (1.8) | (6.1) | (0.2) | (3.9) |
| Sorghum | 0.9 | (0.3) | (0.5) | (0.6) | (0.5) |
| Millet | 0 | (1.3) | 0 | (0.4) | 0 |
| Vegetables | (2.3) | 1.2 | 1.4 | (0.4) | (0.3) |
| Sweet potatoes | 0 | (0.3) | (1.1) | (0.3) | 1.5 |

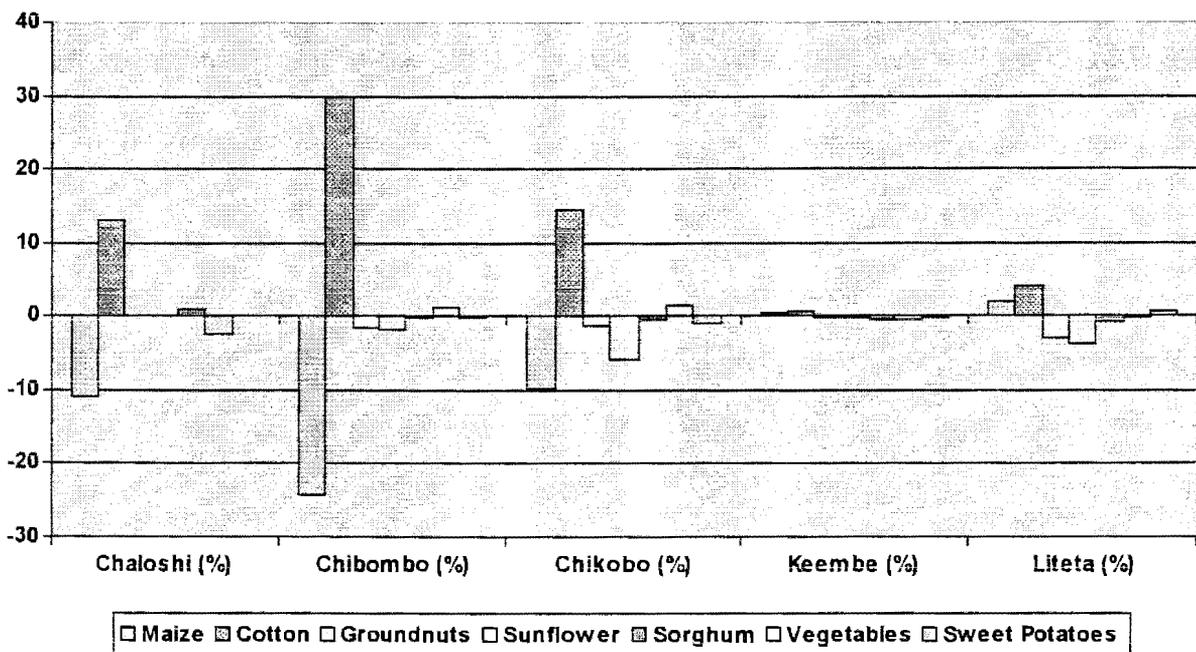
NB: (1) figures in brackets indicate a percentage decline.

(2) Figures without brackets indicate a percentage increase or no recorded change.

Fourthly, the increase in the hectareage for cotton and the decrease in the hectareage for other crops (mostly maize) could be understood in the context of changing weather conditions in some farming seasons. Thus, with some unfavourable weather conditions in some farming seasons, many farmers tend to grow drought resistant crops in order to reduce the chances of crop failure and hence increasing opportunities of a big harvest

even with adverse conditions. Many farmers that grow cotton for this reason also continue the cultivation of other crops, including maize. To a large degree, it can be argued that smallholder farmers grow different crops on their farms in one season in order to increase the chances of crop success and hence keep the risk of crop failure, for any reason, to the barest minimum. Information from the survey carried out in this study reveals that the degree of success among farmers who grow more than one crop is higher than that for those who specialise. It is also among this category of farmers that incidences of crop rotation and multi-cropping were recorded.

Graph 1. CROP LAND-USE PERCENTAGE CHANGE
INCREASES AND DECREASES IN HECTARAGE FROM THE 1980s TO 1990s



In the field survey, it was discovered that farmers that practice crop rotation interchanged maize with cotton, groundnuts and sweet potatoes. Crop rotation was evident in Chibombo, Keembe, and parts of Chikobo and Liteta. According to the farmers surveyed, this is done because the crops interchanged with maize fix nitrogen

into the soil either from their roots, leaves or from the chemicals used. However, the farmers surveyed also stated that crop rotation was affected by the availability of chemical fertilisers and other inputs. Accordingly, where inputs (mostly chemical fertilisers) are available as in accessible places along major roads, crop rotation is not a high priority as the same field can be used many times without a remarkable reduction in yields. For these areas, there is no clear evidence of a deliberate crop rotation pattern. Unlike in the 1980s when chemical fertilisers were readily available in many places, in the 1990s crop rotation is used mainly as a last resort to plough back soil nutrients in a field where the farmer is unable to procure chemical fertilisers, particularly in the remote areas of the district.

4.2.2 CROP PRODUCTION

4.2.2.1 INTRODUCTION

Crop production is analysed per crop and in terms of the numbers of bags produced by the sampled farmers for each ward. To give a general picture of the crop production trends in Chibombo District as a whole, crop estimates for some farming seasons have also been used. The use of this information is also meant to show that the changes noticed in the sampled wards are not confined to these areas alone.

4.2.2.2 CROP PRODUCTION IN CHALOSHI WARD

In the 1983/84 farming season, crop production in Chaloshi Ward was not as high as in the 1984/85 farming season (table 15). While the agricultural inputs such as seed and chemical fertilisers were delivered early in the farming season, the rainfall was slightly low (table 16, GRZ 1986). With a big improvement in rainfall in the 1984/85 farming season, coupled with the supply of inputs on time, crop production was high (tables 15 and 16, Department of Agriculture File, Chibombo, 1995). While rainfall was above normal in the 1985/86 season (see table 16), the crop production declined due to the late delivery of agricultural inputs by NAMBOARD and other agro companies (GRZ 1986). This decline continued in the following farming seasons (1986/87 and 1987/88) due, largely, to a drought (table 16). In the 1988/89 to 1989/90 farming seasons,

rainfall was normal (table 16). However, owing to the economic and political problems the country was experiencing towards the late 1980s, crop production, particularly for maize was affected negatively (Mwanza 1992b, Gerrard et al 1994, and World Bank 1994). During this period, the farmers experienced late supplies of inputs and payments for their produce (Mwanza 1992b, World Bank 1994). Mwanza (1992a and b) has pointed out that due to cash flow problems during the late 1980s, the government resorted to paying farmers through the coupon system in which they were given promissory notes on the delivery of their crops with cash payments coming very late in the same year or the beginning of the following year. The payment crisis was particularly bad in the 1988/89 farming season and maize was the most affected crop (table 15, GRZ 1996). Although the situation was generally unfavourable for the farming community during this period, it seems the crops that were being handled by private traders, such as cotton, were doing relatively better than maize that was state controlled (figure 19).

Table 15. CROP PRODUCTION IN CHALOSHI IN THE 1980s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1983/84 | 7344 | 1530 | 648 | 1017 | 45 |
| 1984/85 | 9261 | 1557 | 891 | 783 | 54 |
| 1985/86 | 6201 | 1512 | 648 | 765 | 36 |
| 1986/87 | 5076 | 1251 | 594 | 603 | 72 |
| 1987/88 | 5760 | 1080 | 765 | 495 | 63 |
| 1988/89 | 1443 | 1332 | 999 | 846 | 18 |
| 1989/90 | 5166 | 1701 | 999 | 927 | 45 |
| TOTAL | 40245 | 9963 | 5544 | 5436 | 333 |

In all the crop production tables that follow, maize bags weigh 90 kilogrammes, bags of groundnuts weigh 80 kilogrammes, sunflower bags weigh 50 kilogrammes, sorghum bags weigh 50 kilogrammes, a bale of cotton averages 95 kilogrammes, bags of millet

weigh 50 kilogrammes, bags of soya beans weigh 90 kilogrammes, bags of impwa and vegetables weigh 25 kilogrammes.

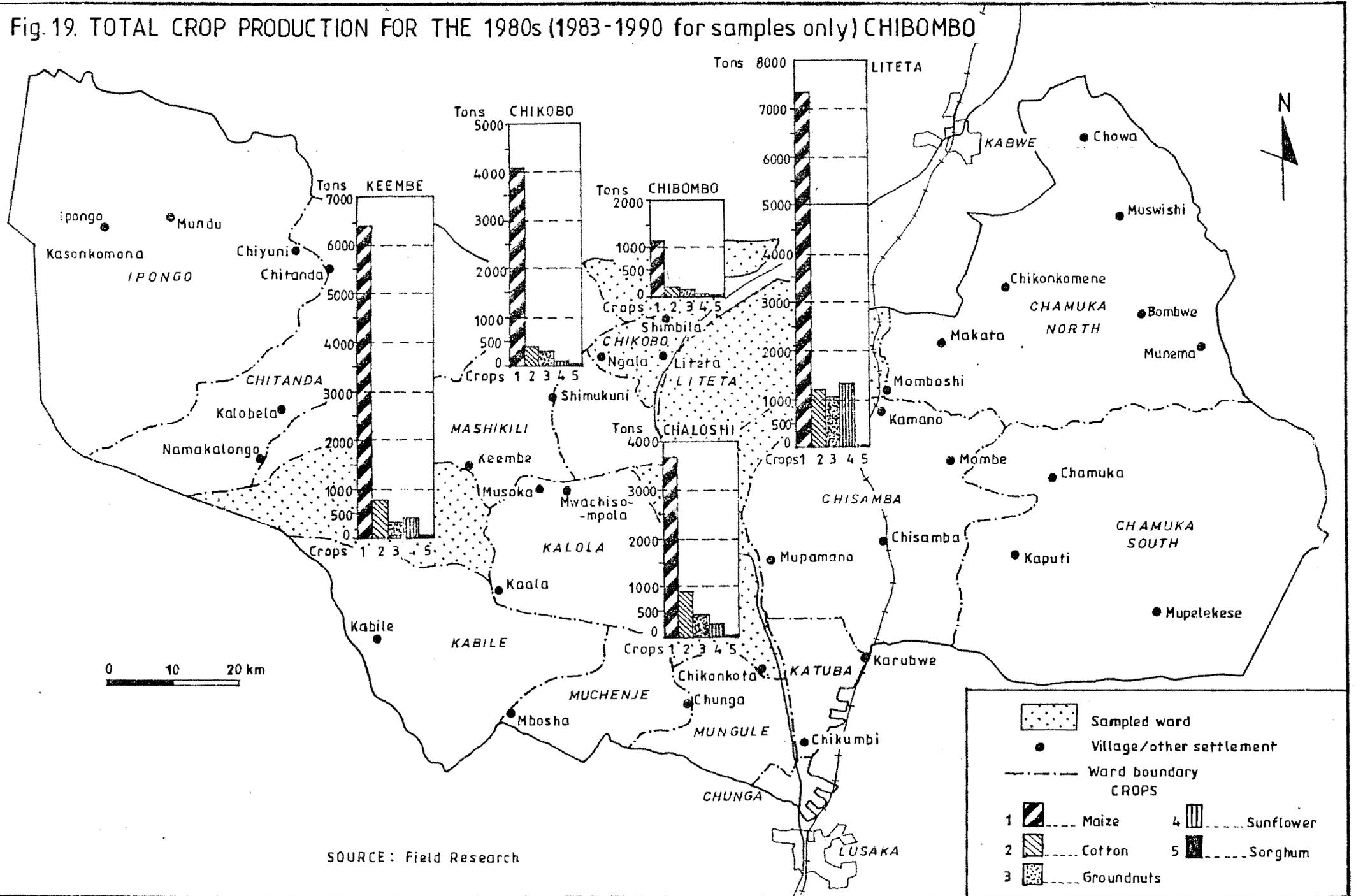
Table 16. TOTAL ANNUAL RAINFALL FOR CHIBOMBO DISTRICT

| Farming season | 1983/84 | 1984/85 | 1985/86 | 1986/87 | 1987/88 | 1988/89 | 1989/90 |
|----------------|---------|---------|---------|---------|---------|---------|---------|
| Rain (mm) | 746.3 | 1086.1 | 1021.1 | 664.8 | 638.1 | 822.8 | 850.5 |

SOURCE: Meteorological Office File, Kabwe, 1997.

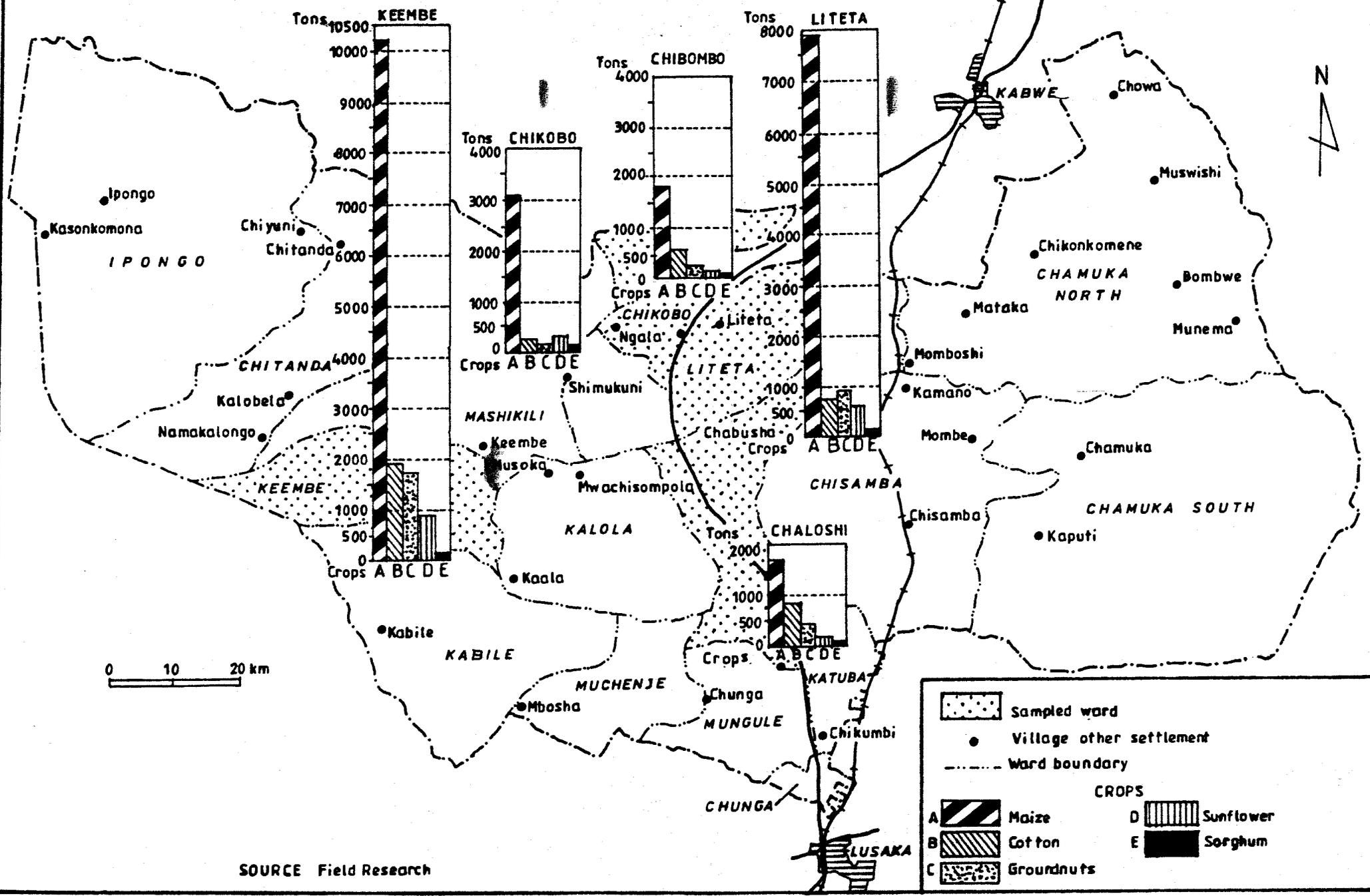
In the 1990/91 farming season, maize continued the declining trend of the late 1980s, but the other crops were low because of the drought and political instability (Kokwe 1997). With a great improvement in rainfall, favourable producer prices and available market in the 1992/93 farming season (tables 17 and 18), maize, groundnuts and sorghum slightly recovered (GRZ 1996). Nevertheless, cotton production seemed to have declined in the 1992/93 because of excessive rainfall (table 18). The cotton decline of the 1993/94 farming season was mainly because LINTCO was being replaced by private companies such as LONRHO, Cotmark, Amaka and Mbayimbayi (Department of Agriculture file, 1995). During this farming season the cotton farmers seemed to have had problems in knowing exactly whom to deal with. While maize production continued to decline in the 1994/95, 1995/96 and 1996/97 farming seasons due to poor rainfall and confusion in marketing arrangements, cotton production seemed to have recovered. This recovery in production figures (table 17) may be attributed to improved input supply, extension services and competitive producer prices from the new private companies that took over from LINTCO (Department of Agriculture file, 1997).

Fig. 19. TOTAL CROP PRODUCTION FOR THE 1980s (1983-1990 for samples only) CHIBOMBO



SOURCE: Field Research

Fig.20. TOTAL CROP PRODUCTION FOR THE 1990s (1991-1997, for samples only) CHIBOMBU:



SOURCE Field Research

Table 17. CROP PRODUCTION IN CHALOSHI IN THE 1990s

| | Maize (number of bags) | Cotton (number of bales) | Ground- nuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) | Soya Beans (number of bags) |
|---------|------------------------------|--------------------------------|--|----------------------------------|--------------------------------|-----------------------------------|
| 1990/91 | 2025 | 1071 | 369 | 72 | 19 | 15 |
| 1991/92 | 1935 | 1368 | 378 | 351 | 36 | 23 |
| 1992/93 | 3222 | 1296 | 963 | 225 | 63 | 46 |
| 1993/94 | 3168 | 909 | 1035 | 225 | 27 | 25 |
| 1994/95 | 2727 | 1431 | 1134 | 477 | 78 | 11 |
| 1995/96 | 2529 | 1422 | 738 | 432 | 69 | 13 |
| 1996/97 | 1818 | 1890 | 945 | 279 | 16 | 18 |
| TOTAL | 17424 | 9387 | 5562 | 2061 | 308 | 151 |

In the 1990s, maize and sunflower figures in Chaloshi declined (table 17). Maize recorded an annual mean production of 2489.14 bags against 5750.10 bags for the 1980s; cotton 1341.00 bales against 1423.29 bags for the 1980s; groundnuts 794.57 bags against 792.00 bags for the 1980s; sunflower 294.43 bags against 776.57 bags in the 1980s, and sorghum 44.00 bags against 47.57 in the 1980s. In terms of totals between the 1980s and 1990s, except for groundnuts that had a slight increase from 5,544 bags to 5,562 bags, all crops declined in production figures. Thus, maize fell from 40,245 bags to 17,424 bags; cotton from 9,963 bales to 9,387 bales; sunflower from 5,436 bags to 2,061 bags, and sorghum from 333 bags to 308 bags (see also table 27 and graph 2).

Table 18. TOTAL RAINFALL FOR CHIBOMBO DISTRICT IN THE 1990s

| Farming Season | 1990/91 | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 |
|----------------|---------|---------|---------|---------|---------|---------|---------|
| Rain (mm) | 768.4 | 476.9 | 1026.7 | 697.0 | 711.2 | 722.0 | 1091.0 |

SOURCE: Meteorological Office File, Kabwe, 1997.

4.2.2.3 CROP PRODUCTION IN CHIBOMBO WARD

In the 1983/84 farming season, crop production in Chibombo Ward was generally low (table 19). Low crop production during this season is attributed to below normal rainfall (table 16). In the 1984/85 and 1985/86 farming seasons rainfall dramatically improved (see table 16) and consequently the Ward recorded a better crop production in maize, cotton, and groundnuts (table 19). Such an improvement also signals stability in input supply and marketing arrangements (Department of Agriculture file, Chibombo, 1995). For lack of adequate inputs and market support, sunflower and sorghum continued to perform poorly. In the 1986/87 and 1987/88 farming seasons there was reduced rainfall in the district as a whole, but due to the nature of soils, early planting and availability of inputs, crop production was, except for sorghum, good. In the 1988/89 farming season, though rainfall improved to normal levels, crop production, except for cotton and sorghum, declined (table 19). This decline in production was as a result of late payments to the farmers by the government funded companies in the previous farming season (Mwanza 1992a and b, Chabala and Sakufiwa 1993, Department of Agriculture file, Chibombo, 1995). In the 1989/90 farming season crop production improved despite a slight reduction in rainfall. According to the Department of Agriculture at Chibombo, this improvement was due to the marketing arrangements the government had put in place.

The mean crop production for Chibombo Ward in the seven farming seasons (1983/84 to 1989/90) were: maize 1879.57 bags; cotton 348.71 bales; groundnuts 393.43 bags; sunflower 68.14 bags and sorghum 4.57 bags. These averages reveal the order of crop importance in Chibombo Ward and perhaps in general, the levels of production during this period.

Table 19. CROP PRODUCTION IN CHIBOMBO IN THE 1980s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1983/84 | 612 | 108 | 117 | 38 | 0 |
| 1984/85 | 1323 | 234 | 252 | 0 | 0 |
| 1985/86 | 1395 | 180 | 279 | 46 | 16 |
| 1986/87 | 1962 | 297 | 333 | 67 | 0 |
| 1987/88 | 2070 | 216 | 828 | 105 | 0 |
| 1988/89 | 1682 | 218 | 387 | 86 | 4 |
| 1989/90 | 4113 | 1188 | 558 | 135 | 12 |
| TOTAL | 13157 | 2441 | 2754 | 477 | 32 |

In the 1990/91 farming season there was a decline in rainfall with a corresponding reduction in crop production (tables 18 and 20). In the 1991/92 farming season, Chibombo Ward, like other areas of the district, experienced a drought and hence the crop production, particularly for maize, sunflower and sorghum, was lower than the crop production for earlier years (compare tables 19 and 20). This period was further compounded by the political and economic changes that the country was going through at the time from centralised planning to free market economic policies (Mwanza 1992b, GRZ 1996). In the 1992/93 farming season, rainfall improved greatly (table 18). The improvement in rainfall helped, to a large extent, to boost crop production in this year, except for sorghum. However, between the 1993/94 to 1995/96 farming seasons, rainfall was below the annual average of 800 millimetres. The low rainfall during this period, together with the policy changes the MMD government had embarked on, caused crop production fluctuations for Chibombo Ward. However, due to several coincidences in the ward such as early planting, availability of inputs (especially chemical fertilisers and seed), Chibombo Ward managed to increase its crop production slightly. In the 1996/97 farming season, rainfall was above average (table 18). As a result of good rainfall, a competitive marketing environment in the cotton and

groundnut, production improved. During this season maize, especially, failed to do well partly because of having no support infrastructure, and having had a low price on the market. Nevertheless, when compared with Chaloshi where production declined, Chibombo Ward had better mean and total production in the 1990s than in the 1980s. Thus, mean production for maize increased from 1879.57 bags to 2910.86 bags, cotton from 348.71 bales to 772.71 bales, groundnuts from 393.43 bags to 471.86 bags, sunflower from 68.14 bags to 106.86 bags and sorghum from 4.57 bags to 46.00 bags. Total crop production figures were higher for the 1990s than those for the 1980s (compare tables 19 and 20, and figures 19 and 20). This favourable crop production seems to have occurred because of a fair state of the communication infrastructure (roads) in many places, emergence of a private agricultural support system and readily available market with the ward and nearby town of Kabwe (Department of Agriculture file, 1996).

Table 20. CROP PRODUCTION IN CHIBOMBO IN THE 1990s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|-----------------------------|
| 1990/91 | 3564 | 432 | 108 | 69 | 41 |
| 1991/92 | 2916 | 522 | 189 | 48 | 36 |
| 1992/93 | 3375 | 639 | 540 | 71 | 18 |
| 1993/94 | 2502 | 729 | 756 | 87 | 54 |
| 1994/95 | 2151 | 747 | 630 | 116 | 71 |
| 1995/96 | 3438 | 1044 | 306 | 223 | 62 |
| 1996/97 | 2430 | 1296 | 774 | 134 | 40 |
| TOTAL | 20376 | 5409 | 3303 | 748 | 322 |

4.2.2.4 CROP PRODUCTION IN CHIKOBO WARD

Like for the wards discussed above, crop production in Chikobo for the 1983/84 season was lower than the crop production for the 1984/85 to 1985/86 farming seasons because the season had below normal rainfall (see tables 16 and 21). In the two

farming seasons (1984/85 and 1985/86) rainfall was way above normal (table 16). With adequate input supplies and marketing arrangements on the part of agro companies and co-operatives, crop production was high. But crop production slightly declined in the 1986/87 and 1987/88 farming seasons owing to a reduced amount of rainfall (table 16 and 21). This was despite the stability in input supply and the market. The only crop that registered an increase was sorghum and this is perhaps because of it being a drought resistant crop and the availability of a local market among beer brewers (Department of Agriculture file, Chibombo, 1995).

Table 21. CROP PRODUCTION IN CHIKOBO IN THE 1980s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1983/84 | 5040 | 585 | 495 | 333 | 333 |
| 1984/85 | 5472 | 747 | 630 | 459 | 144 |
| 1985/86 | 9783 | 540 | 927 | 594 | 99 |
| 1986/87 | 8280 | 396 | 603 | 558 | 162 |
| 1987/88 | 7992 | 558 | 675 | 468 | 108 |
| 1988/89 | 3211 | 630 | 558 | 369 | 216 |
| 1989/90 | 5724 | 711 | 855 | 459 | 189 |
| TOTAL | 45502 | 4167 | 4743 | 3240 | 1251 |

Despite an improvement in rainfall in the 1988/89 farming season, crop production continued to decline and/or fluctuate (table 21). According to the Department of Agriculture at Chibombo (information on file, 1995), this can be attributed to the overall economic pressure the country was going through at this time. In the 1989/90 farming season, rainfall was normal and hence a slight improvement in crop production was attained in Chikobo Ward (table 21) against a background of continued political and economic problems the country was going through (Department of Agriculture file, Chibombo, 1995).

During the 1990/91 farming season, crop production in Chikobo Ward, except for maize, was adversely affected by a minor reduction in rainfall (table 18) and the political transition the country was going through (Department of Agriculture file, Chibombo, 1995). In the 1991/92 farming season, despite adequate input supplies the government had given the farmers, through the agro companies and co-operatives, crop production, except for groundnuts, was low because of the drought the whole region experienced (tables 18 and 22). In the 1992/93 farming season, rainfall was abundant (table 18) and hence a slight improvement in crop production was recorded for maize and sunflower but not for cotton and groundnuts. It seems that cotton, groundnuts, and sorghum could not perform as much because farmers had put more interest in the staple food, maize. Despite the reduced rainfall in the 1993/94 farming season (table 18), farmers produced more maize because of early planting, adequate inputs and a favourable producer price (Department of Agriculture file, Chibombo, 1995). Cotton seems to have failed to perform well because of the transition from LINTCO to the private sector at the time. In the 1994/95 season, rainfall slightly improved (table 18). This improvement in the rainfall during the 1994/95 farming season seemed to have made it possible for cotton, sunflower and sorghum to do well (table 22). In the 1995/96 farming season, maize failed to perform as in earlier farming seasons (see table 22) because of the confusion in the marketing arrangements on the part of the companies responsible for supplying inputs and buying the produce (Department of Agriculture file, Chibombo, 1996). On the contrary, cotton, groundnuts, sunflower and sorghum performed better because of an elaborate privately-funded support infrastructure that had emerged at this time (Department of Agriculture file, Chibombo 1996). The 1996/97 farming season saw a continued decline in maize production despite a high rainfall amounts (see tables 18 and 22). Cotton, sunflower, sorghum and, to some extent, groundnuts continued to do well (table 22).

Comparing the mean crop production figures for the 1980s and 1990s, Chikobo Ward recorded a decline in the 1990s (graph 2 and, figures 19 and 20). Thus, maize declined from an annual average of 6,500.29 bags to 4,875.43 bags; cotton declined from an annual average of 595.29 bales to 363.00 bales; groundnuts declined from an annual average of 677.58 bags to 339.29 bags; sorghum declined from an annual average of 178.71 bags to 145.29 bags. Sunflower was the only crop that recorded an

increase in the mean crop production for the 1990s, from an annual average of 462.86 bags to 703.29 bags. This increase in sunflower was partly caused by the high market demand for this crop from local suppliers by Premium Oils Company. The changes in the total production figures are emphasised by table 27 and graph 2 below.

Table 22. CROP PRODUCTION IN CHIKOBO IN THE 1990s

| | Maize (number of bags) | Cotton (number of bales) | Ground- nuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|--|----------------------------------|--------------------------------|
| 1990/91 | 5517 | 360 | 216 | 342 | 180 |
| 1991/92 | 2538 | 351 | 279 | 225 | 117 |
| 1992/93 | 3861 | 288 | 144 | 468 | 99 |
| 1993/94 | 10710 | 190 | 926 | 297 | 126 |
| 1994/95 | 9135 | 378 | 270 | 1278 | 153 |
| 1995/96 | 1827 | 389 | 279 | 1080 | 180 |
| 1996/97 | 540 | 585 | 261 | 1233 | 162 |
| TOTAL | 34128 | 2541 | 2375 | 4923 | 1017 |

4.2.2.5 CROP PRODUCTION IN KEEMBE WARD

In the 1983/84 farming season Keembe Ward had generally a good harvest (table 23). Despite the rainfall being below average in the 1983/84 farming season (table 16), farmers in Keembe took advantage of stability in input supply, markets and early planting to produce more (Department of Agriculture file, Chibombo, 1995). With a great improvement in rainfall in the 1984/85 and 1985/86 farming seasons, farmers continued to do well except for sorghum and cotton that slid down due to the farmers' over-emphasis on maize, groundnuts and sunflower. In the 1986/87 and 1987/88 farming seasons, rainfall was below average (table 16). A reduction in rainfall, despite the relative stability in the supply of inputs, seems to have caused crop production -

especially for maize - to decline (table 23). Cotton and groundnuts did not do well in the 1986/87 farming seasons but recovered the following farming season (table 23). In the 1988/89 farming season, although rainfall had improved to normal levels (table 16), economic problems in the country seemed to have affected crop production, especially maize, which continued to decline (table 23). In the 1989/90 farming season, rainfall continued to be normal (table 16) and the government attempted to supply farmers with inputs on time despite the continuing economic problems (Mwanza 1992b, Gerrard et al 1994). This measure helped raise production slightly in Keembe Ward (table 23).

Table 23. CROP PRODUCTION IN KEEMBE IN THE 1980s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1983/84 | 14140 | 1386 | 738 | 1161 | 45 |
| 1984/85 | 15715 | 1332 | 576 | 864 | 0 |
| 1985/86 | 15985 | 900 | 729 | 837 | 0 |
| 1986/87 | 9038 | 621 | 558 | 1125 | 54 |
| 1987/88 | 4950 | 1098 | 729 | 1440 | 99 |
| 1988/89 | 3245 | 1188 | 648 | 1224 | 27 |
| 1989/90 | 8070 | 1026 | 882 | 1701 | 30 |
| TOTAL | 71143 | 7551 | 4860 | 8352 | 255 |

In the 1990/91 farming season, Keembe, like other areas in the region, faced reduced rainfall (table 18) and a transition to economic liberalisation. Crop production, however, improved (table 24) from the previous season largely because of the marketing arrangements that the government had put in place the previous season (Department of Agriculture file, Chibombo, 1995). The coming season, 1991/92 experienced a severe drought (table 18). Except for sorghum that seemed to have done relatively better because of being drought resistant, there was a reduction in production for all the other crops (table 24). During the 1992/93 farming season, crop production improved

(table 24) due to an improvement in rainfall (table 18) and government preparedness in the supply of inputs early in the season (Department of Agriculture file, Chibombo, 1995). Apart from maize that showed a steady decline, production continued to improve from this farming season to the 1996/97 season (table 24). In the 1996/97 farming season, nevertheless, maize production fell partly because the farmers did not have reliable suppliers of inputs during the planting season (Department of Agriculture file, Chibombo, 1997).

According to the Department of Agriculture at Chibombo and the farmers surveyed, the steadily increasing crop production in Keembe should be attributed to the ward's close proximity to Mumbwa town, and the local private companies around the area that continued to supply farmers with inputs and act as a market for the farm produce. In comparison to other wards in the 1980s and 1990s, Keembe performed well. The mean annual crop production among the sampled farmers improved as follows: maize from 10,163.29 bags to 16,430.29 bags; cotton from 1078.71 bales to 2967.00 bales, groundnuts from 694.29 bags to 1675.43 bags; sunflower from 1193.14 bags to 2589.86 bags and sorghum from 36.43 bags to 65.00 bags. The totals between the two time periods equally emphasise this positive change for the 1990s (table 27, graph 2, and figures 19 and 20).

Table 24. CROP PRODUCTION IN KEEMBE IN THE 1990s

| | Maize (number of bags) | Cotton (number of bales) | Ground-nuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|------------------------------------|----------------------------------|--------------------------------|
| 1990/91 | 15993 | 2835 | 1305 | 1881 | 83 |
| 1991/92 | 8622 | 2232 | 1134 | 1440 | 99 |
| 1992/93 | 13176 | 2223 | 1791 | 2826 | 27 |
| 1993/94 | 18630 | 2325 | 1539 | 2322 | 39 |
| 1994/95 | 17199 | 3213 | 1629 | 2358 | 54 |
| 1995/96 | 25767 | 3483 | 2385 | 3375 | 36 |
| 1996/97 | 15625 | 4458 | 1945 | 3927 | 117 |
| TOTAL | 115012 | 20769 | 11728 | 18129 | 455 |

4.2.2.6 CROP PRODUCTION IN LITETA WARD

Although rainfall was below average (see table 16) in the 1983/84 farming season, crop production in Liteta Ward was good (table 25), especially maize that farmers had planted early having had received the inputs on time during the planting season (Department of Agriculture file, Chibombo, 1995). In the 1984/85 farming season, rainfall improved greatly (table 18), stability in the supply of inputs and market arrangements continued to prevail (Department of Agriculture file, Chibombo, 1995, GRZ 1986). These favourable conditions, however, only seemed to have helped cotton, sunflower and sorghum to continue performing well. Maize declined marginally possibly because of the shift in emphasis to cotton on the part of the farmers. In the 1985/86 farming season rainfall was above average (table 18) and stability in input supply and marketing arrangements continued to exist. These conditions seemed to have helped maize to recover slightly. Also, among the sampled farmers groundnuts and sorghum continued to perform satisfactorily. Cotton, on the other hand, declined marginally due to excess rainfall (GRZ 1986, Department of Agriculture file, Chibombo, 1995). In the 1986/87 and 1987/88 farming seasons rainfall decreased remarkably (table 18).

Table 25. CROP PRODUCTION IN LITETA IN THE 1980s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1983/84 | 15660 | 1872 | 2142 | 4095 | 27 |
| 1984/85 | 14796 | 2286 | 1980 | 4203 | 73 |
| 1985/86 | 14850 | 1656 | 2430 | 3051 | 81 |
| 1986/87 | 9832 | 1584 | 2079 | 2655 | 99 |
| 1987/88 | 10484 | 1458 | 1998 | 3699 | 90 |
| 1988/89 | 4119 | 1647 | 1521 | 4113 | 126 |
| 1989/90 | 11365 | 2232 | 1503 | 3816 | 72 |
| TOTAL | 81106 | 12735 | 13653 | 25652 | 567 |

Although some relative stability continued in the supply of inputs and markets, crop production decreased especially in the 1986/87 farming season when it was very dry (table 18). In the 1988/89 farming season, crop production continued to fair badly (table 25) despite having normal rainfall (table 18). This low production can be attributed to the delay in payments the previous farming season and the general economic stress the farmers were facing at this time. During the 1989/90 farming season, maize and cotton seemed to have recovered (table 25) due to average rainfall received and inputs being available to farmers in the area.

During the 1990/91 farming season, crop production declined slightly mainly because of the small reduction in rainfall (table 18). The decline in production for maize and cotton continued in 1991/92 farming season when the whole region experienced a severe drought (table 18). But, despite the low rainfall in this farming season, groundnuts, sunflower and sorghum did well. The fair production among these three crops (table 26) during this season may have been due to the crops having resisted the drought (Department of Agriculture file, Chibombo, 1995). With an improvement in rainfall in the 1992/93 farming season (table 18) and the government's supply of adequate inputs early in the season, maize and cotton showed some degree of recovery (table 26). The decline in the other crops could have been due to the farmers' own shift in emphasis from the other crops to the staple food, maize. During the 1993/94 farming season, despite a low rainfall (see table 18), maize, sunflower and sorghum performed better than in the 1992/93 farming season (table 26). During this season (1992/93) cotton may have not performed well due to high rainfall (table 18). In the farming seasons 1994/95 and 1995/96 maize continued to perform well despite the rainfall that was slightly lower than average (table 18). A reduction in cotton production during these seasons coincided with the transition from LINTCO to the private companies such as LONRHO, Amaka and Mbayimbayi and Sons in the 1993/94 farming season. For two seasons (1994/95 and 1995/96) cotton production continued to be low (table 26) as farmers seemed to have failed to respond to the new agricultural environment of liberalisation. In the 1996/97 farming season maize, sunflower, and groundnut production slumped despite adequate rainfall (tables 18 and 26). Only cotton production slightly recovered (table 26). The Department of Agriculture at Chibombo, and the farmers interviewed

during the survey, attributed this decline to mixed signals received from the Meteorological Department about the amount of rainfall the season would receive. It was reported that rainfall would not be adequate, but the opposite proved the case.

In terms of mean annual crop production during the 1980s and 1990s, Liteta Ward recorded an increase in maize production from 11,586.57 bags in the 1980s to 12,645.14 bags in the 1990s and in sorghum from 81.00 bags in the 1980s to 223.00 bags in the 1990s. A sharp increase in sorghum production seems to have emanated from the increased demand of the crop in the local beer industry. But the ward had a decline in cotton from 1,819.29 bales per annum in the 1980s to 1,077.43 bales to the 1990s, groundnuts fell from 1,950.43 bags per annum in the 1980s to 1,609.71 bags per annum in the 1990s. Sunflower production among the sampled farmers dropped from 3,664.57 bags per annum in the 1980s to 1,609.71 bags per annum in the 1990s. These differences in crop production in Liteta are also displayed by the totals (tables 25, 26 and 27, graph 2).

Table 26. CROP PRODUCTION IN LITETA IN THE 1990s

| | Maize (number of bags) | Cotton (number of bales) | Groundnuts (number of bags) | Sunflower (number of bags) | Sorghum (number of bags) |
|---------|------------------------------|--------------------------------|-----------------------------------|----------------------------------|--------------------------------|
| 1990/91 | 8739 | 1395 | 972 | 2025 | 216 |
| 1991/92 | 7326 | 1188 | 1287 | 2088 | 263 |
| 1992/93 | 11673 | 1269 | 846 | 1818 | 180 |
| 1993/94 | 13239 | 1053 | 1953 | 2583 | 247 |
| 1994/95 | 13941 | 909 | 2682 | 1287 | 252 |
| 1995/96 | 22257 | 738 | 2403 | 1017 | 189 |
| 1996/97 | 11341 | 990 | 1125 | 976 | 214 |
| TOTALS | 88516 | 7542 | 11268 | 11794 | 1561 |

In summary, the total crop production figures of the surveyed farmers in the five sampled wards show that Chibombo and Keembe Wards recorded an increase from the 1980s to the 1990s. It seems that these two farming wards recorded an increase in

crop production in the 1990s mainly because of the existence of a support infrastructure in their borders or in close proximity. Chaloshi Ward recorded a decline from the 1980s to the 1990s. In the 1990s, Chikobo Ward had a decline in maize, cotton, groundnuts and sorghum, but an increase in sunflower. In the 1990s, Liteta Ward recorded an increase in maize and sorghum but a decrease in cotton, groundnuts and sunflower. The wards with crop production decline have had no established support infrastructure for individual crops within close reach. Changes in crop production are better summarised by graph 2, and figures 19 and 20.

More specifically, evidence from the survey in this study reveal that the changes in crop preferences, hectarages and production in wards were a direct response to the emerging conditions after 1991. In Chaloshi, it seems that the changes are being influenced by the collapse of the agricultural support system at Chisamba Siding, Mupamapamo and Mwachisompola, and the increasing demand for manual labour in the nearby commercial farms from the peasant farmers. The decline of the crop hectarage and production in Chikobo, and some parts of Chibombo and Liteta, seems to be emanating from the declining state of the communication infrastructure (roads) and the collapse of the agricultural support system. The favourable crop hectarage and production in Keembe and large sections of Chibombo and Liteta seems to be a direct response to the emergence of a private agricultural support system, fair state of the communication infrastructure and effective markets in nearby towns of Mumbwa (Keembe) and Kabwe (Chibombo and Liteta).

For the district as a whole, the 1990s seem to have been characterised by an increase in crop production figures (table 28). According to the Department of Agriculture at Chibombo, crops have been able to do well particularly in places that are accessible to main roads, near markets or have alternative ways (for example buying chemical fertiliser and seed from travelling salesmen on highways) of obtaining agricultural inputs especially seed, chemical fertilisers, pesticides and farming equipment. For the areas that did not do well, the "...main problem was that farmers had no money to buy fertiliser on cash basis..." (Shamatutu 1997:2). In order to help those farmers without money obtain chemical fertiliser, the ZNFU in December 1996 said "...members stuck with maize for lack of market were...free to barter their produce with some limited

stocks of fertiliser with the union" (Times of Zambia, Wednesday, December 25, 1996:2). During the 1996/97 farming season, many farmers took advantage of this announcement to barter their maize with fertilisers. This happened particularly in remote parts of the district. Other reasons contributing to the poor performance in production among some farmers includes the poor state of communication infrastructure, lacking a reliable input supply and market networks.

Table 27 displays the crop production percentage changes in the five wards of Chibombo District among the sampled farmers.

Table 27. CHANGES IN CROP PRODUCTION FROM THE 1980s TO THE 1990s,
EXPRESSED AS ABSOLUTE FIGURES (BAGS) AND PERCENTAGES -
BASED ON TOTALS.

| | Chaloshi (bags) | Chibombo (bags) | Chikobo (bags) | Keembe (bags) | Liteta. (bags) |
|------------|--------------------|--------------------|-------------------|------------------|-------------------|
| Maize | (22827) | 7219 | (11374) | 43869 | 7410 |
| | (56.7%) | 54.9% | (25.0%) | 61.7% | 9.1% |
| Cotton | (576) | 2968 | (1626) | 13218 | (5193) |
| | (5.8%) | 121.6% | (39.0%) | 175.0% | (40.8%) |
| Groundnuts | 18 | 549 | (2368) | 6868 | (2385) |
| | 0.3% | 19.9% | (50.0%) | 141.3% | (17.5%) |
| Sunflower | (3375) | 271 | 1683 | 9777 | (13838) |
| | (62.1%) | 56.8% | 50.0% | 117.1% | (53.9%) |
| Sorghum | (25) | 290 | (234) | 200 | 994 |
| | (7.5%) | 906.3% | (18.7%) | 78.4% | 175.3% |

NB:

-Figures in brackets indicate a decrease in production.

-Percentages are rounded off to one decimal place.

This information is also displayed here in graph 2.

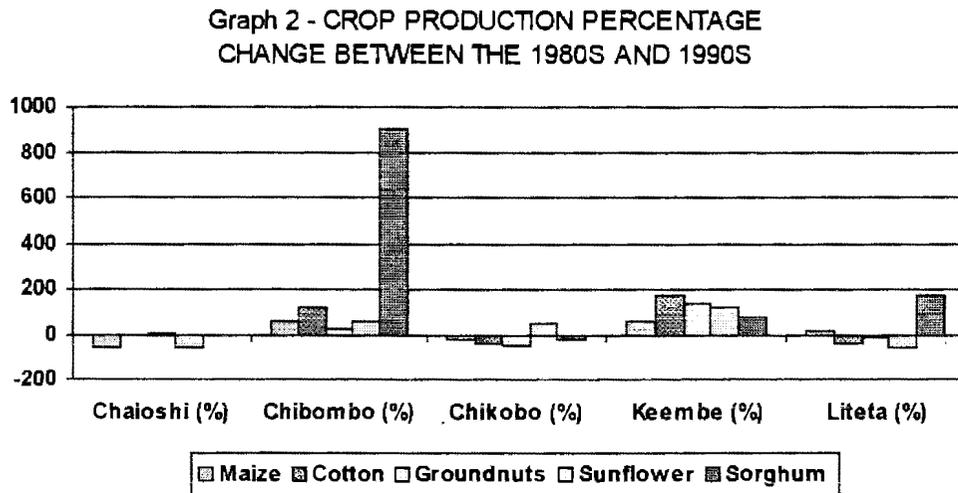


Table 28 brings out interesting points about crop production in Chibombo. Firstly, it shows that crop production in Chibombo, like other places in Central Province, fluctuates from year to year depending on the prevailing conditions. With favourable weather conditions coupled with early delivery of agricultural inputs and good market conditions, for example in the 1989/90, 1990/91, 1992/93 and 1995/96 farming seasons, crop production increased. This aspect is emphasised by the 1995/96 farming season when all crops fared above average. In years of poor rainfall (the drought years), unfavourable market conditions and late delivery of agricultural inputs, for instance in the 1991/92, 1993/94 and 1994/95 farming seasons, production of crops - particularly maize - was low. According to the field data, these three seasons were the most chaotic farming seasons in terms of rainfall, input supply and marketing arrangements. The problems in input supply and marketing arrangements affected the production of maize, cotton, soya beans, groundnuts and sorghum.

Secondly, table 28 also reveals that maize responds more to changing farming conditions from year to year than any other crop. The huge fluctuations in maize production between years may be attributed to several factors. Thus, maize seems to be too dependent on external factors such as time of planting, rainfall amount received during the growing season, amount of basal and top dressing fertilisers applied to the crop and when this is done. Furthermore, maize seems to be easily affected by the number of farmers that plant it during that particular season and the price offered by the

buyers at harvest time. With unstable market conditions in the 1990s, unlike in the 1980s, it appears that while maize production figures have increased, there are more fluctuations (positive as well as negative) from one season to the other (table 28). The 1980s, although with smaller production figures (see table 28), showed an increase in production. In the researcher's view, the production figures in the 1980s may indicate stability and predictability of market conditions during that time. In the 1990s, there seems to be instability and unpredictability in the market.

Table 28. CROP PRODUCTION ESTIMATES FOR CHIBOMBO DISTRICT

| | 1988/89 | 1989/90 | 1990/91 | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|
| Maize (90 kg bags) | 15500 | 98200 | 850000 | 841000 | 1340000 | 812000 | 603000 | 1600000 |
| Cotton (KGs) | - | 177000 | 2200000 | 3500000 | 5800000 | 3800000 | 3300000 | 15000000 |
| Sun flower (50 kg bags) | 2200 | 10300 | 5700 | 5800 | 19400 | 22000 | 31000 | 31445 |
| Soya Beans (50 kg bags) | - | - | 2500 | 8800 | 16300 | 2600 | 800 | 3912 |
| Ground nuts (80 kg bags) | 750 | 883 | 2200 | 4562 | 19700 | 4800 | 17200 | 64560 |
| Sorghum (50 kg bags) | 300 | 222 | 400 | 530 | 689 | 1800 | 4000 | 5616 |

Note: A dash (-) represents no statistics available.

SOURCE: Chibombo District Agriculture Department, 1997.

These factors may not affect the other crops in the same way as they do for maize. This is so (perhaps) because they are drought resistant, for example cotton, sorghum and to some extent sunflower. Other crops, such as sunflower, groundnuts and sorghum are less affected by the supply of inputs because they are grown without a huge dependence on chemical fertilisers. Similarly, for these crops, farmers maintain seed from one harvest for planting in the coming season. This is particularly common with groundnuts and sorghum. While cotton has a definite advantage of being a drought resistant crop, it also enjoys an elaborate field infrastructure and competitive price at harvest. The existence of this infrastructure and competitive price at harvest are responsible, to a large extent, for the rising production throughout the period shown in table 28.

To some extent, the production of sunflower and groundnuts has been influenced by the establishment of oil processing companies in the country in the late 1980s (Premium Oil Company) and (Amanita Zambia) in the 1990s. Although these are deliberately promoting the cultivation of seed oil crops in the country, they have no field infrastructure in farming areas such as Chibombo. But, the mere existence of a market is stimulating high production among the farmers as they are assured of a buyer every marketing season. When comparing the 1980s with the 1990s - particularly the years 1988/89 and 1989/90, on one hand, and the period between 1992 and 1996, on the other - one would argue that sunflower production seems to have tremendously expanded in the 1990s (see table 28). To a large extent, this can be attributed to better producer prices and emergence of oil processing machines (the yenga press).

The increase in production of sorghum in the 1990s may be attributed to the emergence of several beer-brewing companies in urban centres. Unlike in the 1980s, when brewery industries had no deliberate linkage with farmers, now there is a policy of promoting the cultivation of sorghum and millet. The companies involved in such schemes include Zambia National Breweries and Chinika Breweries. This seems to be boosting sorghum production in Chibombo District.

4.3 AGRICULTURAL SUPPORT SYSTEMS IN CHIBOMBO DISTRICT IN THE 1980s AND THE 1990s

4.3.1 INPUT SUPPLY AND PROVISION OF CREDIT

During the 1980s, the National Agricultural Marketing Board (NAMBOARD), Zambia Seed Company (ZAMSEED), Lint Company of Zambia (LINTCO), Zambia Co-operative Federation (ZCF), Kabwe Rural District Co-operative Union (KRDCU) and Credit Union and Savings Association (CUSA) had an elaborate agricultural support network in Chibombo District (figure 13). Nitrogen Chemicals of Zambia (NCZ) only had an urban network but used the field infrastructure for NAMBOARD, ZCF, Kabwe Rural District Co-operative Union and CUSA to supply its chemical fertilisers to the farmers. Lima Bank, on the other hand, only relied on its urban infrastructure to supply the farmers with cash credit. With a sustained government support during the 1980s, these companies managed to render their services to the farming community (Mwanza 1992a and b, Kokwe 1997).

With the advent of economic liberalisation in 1991, the government of Zambia discontinued its financial, material and logistical support to the agricultural companies and the co-operatives (Kokwe 1997, GRZ 1996). The government's withdrawal of support led to the collapse of the old institutions such as NAMBOARD, ZCF, CUSA, Chibombo District (Kabwe Rural) Co-operative Union and Lima Bank. Although ZAMSEED and NCZ seem to have survived the wind of change, their operations are not as smooth as they were in the past. The collapse of these agro companies brought about the cessation of the once elaborate agricultural support system in Chibombo.

In place of the collapsed government-sponsored agricultural support system, a number of new private companies emerged. The new companies largely occupied the physical infrastructure of the collapsed companies, particularly along the major roads (figure 14). The new private companies include Omnia and Kynoch that supply chemical fertilisers; Pannar, Seed-CO, Cargill, and Carnia responsible for supplying hybrid seed through stockists; LONRHO, Mbayimbayi and Sons, Amaka, Swarp Spinning and Cotmark that supply inputs and buy cotton; Chisamba Marketing and Tazcor that supply inputs and

buy maize (see figure 14 for the companies with a field network). Although the new companies have a field support system that is limited in spatial extent as compared to the wide spread support system of the collapsed companies of the 1980s (see figures 13 and 14), their operations seem to be more competitive and efficient. Other companies involved with the supply of chemical fertilisers are, though without a field support system of their own, the two commodity exchanges. Thus, the Agricultural Commodity Exchange (ACE), established in 1994 as a commodity market by the Zambia National Farmers' Union (ZNFU) and based in Lusaka; and the Kapiri Mposhi Commodity Exchange (KCE) established in 1997 and based at Kapiri Mposhi. Of the two Commodity Exchanges, only the former has expressed intentions of establishing a field infrastructure. This proposal is actually in agreement with the views of the Minister of Agriculture, Food and Fisheries. At one time, he was quoted directing the Agricultural Commodity Exchange to "...build depots in the rural areas so fertiliser can be delivered to the farmers who need not travel to Lusaka to buy fertiliser as the cost of production shoots up" (Times of Zambia, Thursday, January 2, 1997:1).

Since the demise in the middle 1990s of Lima Bank, ZCF Finance Services and CUSA, there has been no supplier of cash credit to peasant farmers in Chibombo District and perhaps - other parts of Central Zambia. The government has made some attempts to entice the private sector to fill up this void but to no avail. In comparison to the 1980s when farmers were provided with cash loans annually, the lack of this facility in the 1990s has resulted in operational difficulties for the smallholder farmers. Since the collapse of the cash lending institutions, there is evidence that several farmers in different parts of Chibombo are not able to buy inputs and other farming requisites.

Nevertheless, in terms of spatial distribution the agricultural support system of the 1980s was more widely spread than the agricultural support system of the 1990s (see figures 13 and 14). Further, it may be said that the agricultural support system of the 1980s had such a wide network due to its long history in agriculture and the financial, material and logistical support it had enjoyed for many years from government. On the other hand, the new agricultural support network is still confined to the main roads and other communication networks due to its limited financial resources and short history in

the agricultural industry. With more time, the new infrastructure may expand into the more remote areas.

Research information has shown that the private companies now operating in Chibombo District, perhaps owing to their self-sustaining base and competitive nature, seem to be serving the peasant farmers better than the parastatals of the 1980s. For instance, cotton companies now supply inputs (seed and chemicals) and equipment early and at competitive prices. Additionally, their loan recovery rate is far above 70 percent as compared to the government controlled structures that had a loan recovery of as "...low as 3.34% for SGS and 17.51% for Cavmont" (Mwanakasale 1996:6).

4.3.2 EXTENSION SERVICES

In the 1980s, the Department of Agriculture and LINTCO provided farmers with extension services through an extensive field network (figure 3). Because of the monopolistic nature of the market at this time, these two extension providers focussed more on production than marketing. According to the farmers in the study area, the monopoly enjoyed by the two bodies caused the quality of the service to be poor. The low quality extension services were common with the Department of Agriculture mainly because of limited resources.

With the coming of economic liberalisation in 1991, the providers of extension services increased in number. In addition to the Department of Agriculture, the service is now being provided by LONRHO, Amaka, Mbayimbayi and Sons, Cotmark and other new private companies (see figures 4 and 14). The increase in number of extension service providers has resulted in competition and a marked improvement in the quality of services. Moreover, the private companies and the Department of Agriculture are offering production extension services free of charge. In the 1990s, field evidence revealed that extension officers visited the farmers more often (than in the 1980s) to monitor the progress of crops. Such visits are very common among the extension officers from private companies because of their capacity to cover large distances with motor cycles, unlike extension officers under the Department of Agriculture.

Despite the wide availability of extension services in the 1990s, the type of information they provide is still – as it has always been - about production. This is not completely appropriate and not adequate, as farmers also require information about storage, processing and marketing.

4.3.3 PROVISION OF STORAGE FACILITIES

During the period of centralised planning, the state-funded companies provided crop storage facilities within the premises of their widespread field infrastructure (figure 13). On the farms, there were granaries to store food reserves for the whole year and temporary structures to keep crops meant for selling only for a short period. According to Chabala and Sakufiwa "...there was no incentive for farmers to develop on-farm storage, since... all their produce were purchased during the dry season. The... government was meeting storage and other marketing related costs..." (Chabala and Sakufiwa 1993:44). One major incentive lacking during the 1980s to encourage the development of on-farm storage facilities, was the change in prices of farm produce at different times of the year (Chabala and Sakufiwa 1993:44). The government-set prices of farm produce remained the same throughout the year and hence farmers did not see the need to hold back their produce in the year.

With the coming of liberalisation in 1991 and the eventual collapse of agro parastatals, crop storage had to be provided by the emerging private sector. On its part, the government through its agricultural policy, undertook to "...making public storage facilities available to the private sector (for hire)" (GRZ 1992:12). In line with this policy of hire, a number of private companies operating in Chibombo District took over the premises previously used by the collapsed parastatals (figure 14). Among the companies that took advantage of this policy of hire were LONRHO, Amaka, Mbayimbayi and Sons, Swarp Spinning, Tazcor and Chisamba Marketing Company. In addition to adopting some old infrastructure, LONRHO has created some new depots in the farming community. According to field evidence, this was done to reduce the length of distances farmers are expected to cover when delivering their produce. To a large extent, one would argue that this is a remarkable improvement brought about by liberalisation. However, many of these depots operate during the marketing season

only. When one compares the distribution of the depots in Chibombo District in the 1980s to the 1990s, it is clear that the infrastructure of the 1980s was more widespread than the present one. With differences in prices of farm produce at different times of the year, there is some limited evidence that farmers are also starting to develop on-farm storage facilities for marketable crops. It appears that this is being done to take advantage of marketing opportunities that arise later in the year when prices increase. The only problem at the moment, however, is that farmers that have started developing such on-farm storage facilities are still few.

4.3.4 BUYERS OF AGRICULTURAL PRODUCE

During the 1980s, NAMBOARD, KRDCU, CPCMU, CUSA and ZCF (figure 13) bought the farm produce from farmers at government-set prices (Mwanza 1992a and b, Chabala and Sakufiwa 1993, GRZ 1996). These companies used their wide spread field network to buy the farm produce from the farmers. With the introduction of economic liberalisation in 1991 these organisations collapsed.

After 1991, new buyers of crops appeared. In Chibombo District, the list of new entrants in the market included Chisamba Marketing, Tazcor, LONRHO, Amaka, Mbayimbayi and Sons, and Cotmark. Most of these organisations inherited field network of the collapsed companies, especially the facilities along major communication networks (figure 14). In comparison to the network of the 1980s, their network is limited in distribution (figures 13 and 14). However, while these companies cover only small farming areas, field evidence shows that they are efficient, competitive, self-supporting and generally more effective in servicing the peasant farmers than the collapsed parastatals or government appointed buyers of the 1980s.

Other companies involved with buying farm produce are Amanita Zambiana which buys sunflower and groundnuts; National Milling Company, Simba Milling Company and Antelope Milling Company which buy mainly maize; National Breweries and other breweries which buy sorghum. Amanita Zambiana, National Milling, Simba Milling, Antelope Milling, and National Breweries all have no field infrastructure in the farming community. Their purchases are dependent on the farmers' deliveries to their

premises. The advantage they have is that they pay the farmers promptly in cash for any deliveries made. However, the fact that they only rely on deliveries from farmers means that they only cater for those farmers that have transport, owned or hired. This limitation entails that the majority of the peasant farmers, particularly those in outlying areas, are not catered for.

4.4 THE COMMUNICATION INFRASTRUCTURE IN CHIBOMBO DISTRICT IN THE 1980s AND THE 1990s

The total length of the rail line in Chibombo District in the 1980s, and it is still so today, was 71 kilometres (Chibombo District Council file, 1996). This passes through the eastern part of Chibombo District (figure 11). No marked change either in length or condition has taken place on the railway.

In the 1980s, Chibombo District had a total length of 120 kilometres of tarred roads. This included 81 kilometres of the Great North road, 25 kilometres of the road from Chisamba turnoff to Chisamba Siding, and 14 kilometres of the road from Lusaka to Mumbwa (figure 11). In the 1990s, Chibombo has a total of 95 kilometres of tarred roads. The 95-kilometre network includes the 81-kilometre stretch of the Great North road and the 14-kilometre stretch of the road from Lusaka to Mumbwa. The 25-kilometre road linking Chisamba turnoff to Chisamba Siding is now a maintained road. The Chisamba turnoff-Chisamba Siding road has deteriorated into a maintained road due to lack of regular maintenance (Chibombo District Council file, 1996). So, the length of tarred roads has decreased by 20.8 percent.

During the 1980s, Chibombo District had a total of 156 kilometres of main gravel roads. This length comprised 74 kilometres of the road from Landless Corner to Mumbwa and 82 kilometres of the road from Lusaka through Chamuka to Kabwe (figure 11). These roads were passable all-year round. In the 1990s, the total length of main gravel roads in Chibombo has remained at 156 kilometres. But the length of passable roads throughout the year has declined to 74 kilometres. Thus, the road from Landless Corner to Mumbwa is the gravel road one can drive through at any time of the year.

The 82 kilometres stretch of the road from Lusaka through Chamuka to Kabwe is passable only during the dry season (Chibombo District Council file, 1996).

In the 1980s, Chibombo had a total of 288 kilometres of maintained roads. This length of maintained roads included 65 km of the road from Keembe through Muchenje to the Great North road; 7 km of the road from Chibombo Boma to the Great North road; 19 km of the road from Mwachisompola through Chibombo to Chitanda; 50 km of the road from Chisamba Siding to Chongwe; 35 km of the road from Chitanda turnoff to Chitanda (figure 11). Of these roads, a total length of 176 kilometres (61.1%) was passable throughout the year and 112 kilometres only passable during the dry season (Chibombo District Council file, 1996). The 112-kilometre stretch of road network included 44 km of the road from Chitanda to Kasonkomona; 51 km of the road from Chitanda to Chibombo; 17 km of the road from the Great North road to Chabusha (figure 11).

In the 1990s, Chibombo District has a total length of 313 kilometres of maintained roads. The increase has been brought about by a stretch of 25 kilometres of the road from Chisamba turnoff to Chisamba Siding. This stretch of the road was tarred in the 1980s. This 313 kilometres of maintained roads includes 65 kilometres of the road from Keembe through Muchenje to the Great North road; 7 km of the road from Chibombo Boma to the Great North road; 19 km of the road from Mwachisompola through Chibombo to Chitanda; 25 km of the road from Chisamba turnoff to Chisamba Siding; 35 kilometres of the road from Chitanda turnoff to Chitanda (figure 11). Of the 313 kilometres of maintained roads, 151 kilometres (48.2%) are passable throughout the year and 162 kilometres (51.8%) are passable only during the dry season (Chibombo District Council file, 1996). The roads that are passable during the dry season only include 44 km of the road from Chitanda to Kasonkomona; 51 km of the road from Chitanda to Chibombo Boma; 17 km of the road from the Great North road to Chabusha; 50 km of the road from Chisamba Siding to Chongwe (figure 11).

In the 1980s, Chibombo District had a total length of 170 kilometres of motorable tracks (Chibombo District Council file, 1996). Of the 170 kilometres, a total of 51 kilometres of road network was passable throughout the year (Chibombo District Council file, 1996).

The passable roads (throughout the year) were the 46 km road from Mwachisompola to Kabile, and the 5 km of the road from Off-Mumbwa road to Chitanda (figure 11). 119 kilometres stretch of roads, on the other hand, was passable during the dry season only. This category of roads included the 25 km of the road from Chabusha to Kamano; 21 km of the road from Mwachisompola to Kabile; 5 km of the road from Off Mumbwa road to Chitanda; 46 km of the road from Chongwe to the town of Kabwe (figure 11).

In the 1990s, the total length of motorable tracks has remained at 170 kilometres (Chibombo District Council file, 1996). Of this length, only 25 kilometres is passable throughout the year – the road from Off-Mumbwa road to Kabile (Chibombo District Council file, 1996, figure 11). In addition to this, a 97-kilometre network of roads is passable during the dry season only. The 97-kilometre stretch of roads comprise 25 km of the road from Chabusha to Kamano; 21 km of the road from Mwachisompola to Kabile; 5 km of the road from Mwachisompola to Chitanda; 46 km of the road from Chongwe to the town of Kabwe (figure 11). In the 1990s a total length of 48 kilometres roads are impassable. The impassable roads include a 40 km stretch of road from Off-Chibombo road to Chitanda, and an 8 km stretch of road from Chitanda through Kasonkomona to Lukanga (figure 11).

In summary, one would say that Chibombo District has had a total of 734 kilometres of road networks both in the 1980s and 1990s. In the 1980s, a total length of 503 kilometres (68.5%) was passable throughout the year against a total length of 345 kilometres (47.0%) in the 1990s. In the 1980s, a total length of 231 kilometres (31.5%) of roads was only passable during the dry season, compared to a total length of 341 kilometres (46.5%) in the 1990s. In the 1980s, there was no record of impassable roads against a total length of 48 kilometres (6.5%) of impassable roads in the 1990s. These records seem to indicate that the 1980s had better roads than the 1990s. This change in the quality of road networks in Chibombo District may be attributed to the lapse in the government's road maintenance policy (Chibombo District Council file, 1996).

4.5 SUMMARY OF CHAPTER 4

This Chapter has argued that from the 1980s to the 1990s, substantial changes had taken place in the cropping patterns and crop production figures, agricultural support systems and the road infrastructure of Chibombo. Some changes have been beneficial to the farmers while others have not. Beneficial developments highlighted include a shift by the smallholder farmers to the crops previously neglected such as groundnuts, sunflower, sorghum and vegetables; an expansion of the farmed hectareage for such crops as cotton and hence an increase in their production; emergence of a private agricultural support system such as Pannar, Carnia, Cargill, Seed-CO, LONRHO, Amaka, Cotmark, Mbayimbayi and Sons; and the changes in the farmers' attitude towards the ever changing market environment in the days of liberalisation.

Negative developments have also taken place. First, there seems to be a growing reduction in the hectare of maize. Secondly, the removal of government support (in terms of subsidies) and protection (through monopolistic statutes) for agricultural parastatals have resulted in the collapse of NAMBOARD, Lima Bank, ZCF Finance Services and the district co-operatives. From the old agricultural support system only ZAMSEED and NCZ have survived. The collapsed companies had a more extensive field network throughout Chibombo than the agro companies of the 1990s. The road infrastructure has also suffered from neglect and its state is deteriorating. The poor state of roads seem to have started affecting the farmers in far-flung areas where transporters are unwilling to go to, either to deliver inputs or buy farm produce.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The previous chapters have covered the historical development of small-scale farming in Chibombo District, and to some extent, Zambia's pre-independence days, highlighted the post-independence agricultural policies of centralised planning, in which agriculture in the country was run through parastatals and strict government regulation. Finally, they have given an account of the liberalisation policies of the 1990s and their impact on the spatial patterns of peasant crop farming in Chibombo District.

With the introduction of economic liberalisation in 1991, particularly after 1994/95 farming season when the new agricultural policies started to take root, the spatial patterns of peasant crop farming in Chibombo District began to change. Some of the changes were positive and others negative. Conclusions drawn under each of the three sub-hypotheses follow.

1. **The spatial pattern of crop production and cropping systems of peasant farmers in the 1990s differs markedly from the pattern that existed in the 1980s.**

First, despite the introduction of liberalisation in agriculture in 1991, farmers in Chibombo District continued to grow mainly maize, cotton, groundnuts, sunflower and sorghum.

At this level, the hypothesis is rejected as not completely correct. Although some shift has started evolving, farmers are yet to show major changes in the crops the types of crops they grow. Changes that have been noticed are more to do with crop emphasis than complete change in crops grown.

But in terms of land-use, the pattern which has emerged is that there was a decline in land hectares for maize in most wards such as Chaloshi, Chibombo, and Chikobo but

an increase in Keembe and Liteta; cotton hectares increased in all wards; groundnut hectares remained the same in Chaloshi but declined in Chibombo and increased in Chikobo, Keembe and Liteta; sunflower hectares declined in all sampled wards (compare figures 15 and 16). Against this background of changes in hectarage, crop production faired as follows: maize declined in Chaloshi and Chikobo, increased in Chibombo, Keembe and Liteta; cotton declined in Chaloshi, Chikobo and Liteta but increased in Chibombo and Keembe; groundnuts production declined in Chaloshi, Chikobo and Liteta but increased in Chibombo and Keembe; sunflower declined in Chaloshi and Liteta but increased in Chibombo, Chikobo and Keembe, and sorghum production declined in Chaloshi and Chikobo but increased in Chibombo, Keembe and Liteta (compare figures 19 and 20). These changes seem to have been a direct response to rainfall conditions, and changes in the communication infrastructure (especially in Chikobo) and the agricultural support system (for example in Chaloshi).

As explained earlier, the agricultural policy of the 1980s encouraged the direct government involvement in agriculture either through financial and logistical support to agro companies and co-operatives, determination of the producer prices of various crops or the government's establishment of farms in different parts of the country (Mwanza 1992a and b, World Bank 1994, GRZ 1996, Kokwe 1997). After 1991, this policy changed. In the 1990s, the government has discontinued the financial and logistical support it gave the agro companies and co-operatives, the setting and announcement of producer prices and the ownership of state farms (Mwanza 1992a and b, Chabala and Sakufiwa 1993, World Bank 1994, GRZ 1996, Kokwe 1997). Without government support, farmers have no access to adequate cash and commodity loans, predictable markets and the stimulating agricultural environment of the 1980s. With these marked changes, this hypothesis is accepted as correct.

2. The spatial pattern of the agricultural support system in the 1990s differs markedly from the pattern that existed in the 1980s.

This hypothesis is accepted on the following accounts:

With the introduction of economic liberalisation in 1991, the existing institutions such as NAMBOARD, LINTCO, Lima Bank, Kabwe Rural District Co-operative Union, Central Province Co-operative Marketing Union, CUSA and ZCF Finance Services collapsed. NCZ scaled down its production to a point that it started importing the same products it used to export (GRZ 1996, Department of Agriculture file, Chibombo, 1996). ZAMSEED and NCZ have survived and continue to operate. TBZ, though operating, is facing serious financial problems (GRZ 1996 and 1997). This agricultural support system either collapsed or changed in the way of operation because the government withdrew the financial and logistical support it had rendered previously (Mwanza 1992a and b, GRZ 1996, and World Bank 1996). The collapse of the majority of these agricultural support institutions created room for the emergence a new support system but also left the farmers without a support system, especially in the transition period (GRZ 1996, Kokwe 1997). Of the five wards sampled, Chaloshi and Chikobo were the most affect.

In the place of the collapsed agricultural support system of the 1980s, a privately funded and controlled agricultural support system has emerged. This includes Chisamba Marketing Company, Tazcor, LONRHO, Amaka, and Mbayimbayi and Sons (figure 14). Unlike the agricultural support system of the 1980s that was very widespread in Chibombo and other areas of Central Zambia, the new system is limited only to the areas near the main communication networks and occupy the structures of the collapsed infrastructure (see figures 13 and 14). Despite being new in the agricultural industry and limited to a few areas only, however, the new agricultural system is self-supporting and has proved to be more efficient and competitive in its delivery of services to the farmers (Department of Agriculture file, Chibombo, 1996, World Bank 1996, GRZ 1996 and 1997, Kokwe 1997).

This study reveals that in other parts of Central Zambia several other private institutions have emerged. This includes firms selling chemical fertilisers (Omnia and Kynoch), a buyer of groundnuts and sunflower (Amanita Zambiana), traders in various agricultural products (Agricultural Commodity Exchange, Petauke Commodity Exchange and Kapiri Commodity Exchange), suppliers of hybrid seed and agricultural chemicals (Pannar and Seed-Co). In Chibombo District, none of these companies has a field network. Omnia, Kynoch, Pannar and Seed-Co sell their products either through stockists (these are commercial farmers and any interested retailers in farming areas) or farmers buy directly from the urban outlets of these companies. Amanita Zambiana, on the other hand, deals with individual farmers. The Agricultural Commodity Exchange, Petauke and Kapiri Commodity Exchanges are yet to make an impact in Chibombo.

3. The spatial pattern of communication infrastructure in the 1990s differs markedly from the pattern that existed in the 1980s.

Firstly, this hypothesis is rejected on the premise that in the 1990s the 71 kilometre length and state of the railway have remained the same as they were in the 1980s. From the 1980s to the 1990s, no marked developments have taken place in the rail line or its effectiveness to deliver services to the people of Chibombo District.

The hypothesis, however, is accepted on the ground that there have been marked changes to the road infrastructure in the 1990s. The changes that have taken place to the road infrastructure in Chibombo District are discussed below.

After 1991, certain changes have occurred in the 734 kilometres of road network in Chibombo District. Firstly, the total length of tarred roads has declined from 120 kilometres in the 1980s to 95 kilometres in the 1990s. Secondly, the total length of passable gravel roads throughout the year has declined from 156 kilometres in the 1980s to 74 kilometres in the 1990s. A length of 82 kilometres of gravel roads is now passable only during the dry season. In the 1990s, the total length of maintained roads has increased from 288 in the 1980s to 313 kilometres. Of this total length, 151 kilometres is passable throughout the year and 162 kilometres is passable only during

the dry season. For motorable tracks, of the 170 kilometres only 25 kilometres is passable throughout the year, 97 kilometres is passable during the dry season only and 48 kilometres is impassable throughout the year. These changes can be summarised as follows: of the 734 kilometres of road network in Chibombo District, a total of 503 kilometres (68.5%) were passable throughout the year in the 1980s against a length of 345 kilometres (47.0%) in the 1990s; in the 1980s, a total of 231 kilometres (31.5%) were passable during the dry season against 341 kilometres (46.5%) in the 1990s; in the 1980s, there was no record of impassable roads (0%) against a total length of 48 kilometres (6.5%) in the 1990s (Chibombo District Council file, 1997). These statistics reveal that the state of the road infrastructure in Chibombo District has declined in the 1990s. The decline is attributed to lack of regular maintenance in the 1990s (World Bank 1994).

In the sampled wards, the road infrastructure has particularly deteriorated in Chikobo, parts of Chaloshi, Chibombo, Keembe and Liteta. In other wards, they have deteriorated in Kakoma, Katuba, Chamuka North and South, Ipongo, Chitanda, Muchenje, Mungule, Mashikili, parts of Chunga and Chisamba.

5.2. RECOMMENDATIONS

Below are recommendations for consideration. These recommendations have been divided into three categories: (1) the farmers' ways of solving the problems facing them; (2) the private sector's role and (3) the government's role in surmounting the many problems facing the peasant farmers in Chibombo today. These suggestions are confined to the abilities of each of the parties involved to find solutions to the problems facing peasant farmers.

5.2.1 RECOMMENDATIONS FOR PEASANT FARMERS

It is recommended that peasant farmers should consider the following:

(a) Establishing temporary groups based on their needs at a given time. This means that, for convenience and practical reasons, farmers should pool their resources

together both at planting and selling seasons to buy inputs or sell their produce to the market as a group. This suggestion is more applicable to farmers who have no transport or any other resources of their own, especially in remote wards such as Chamuka North and South, Ipongo, Chitanda, Chikobo, Kakoma and Mashikili. If this suggestion is implemented costs of obtaining inputs and delivery of produce to the market could be minimised.

What is being suggested here is that each farmer puts his financial or commodity resources in the community pool. The pooled resources will be used to source inputs from suppliers in bulk using transport hired by the whole group and on arrival share the bought inputs according to money or resources contributed. In the same way, when it comes to selling the produce to, perhaps, a distant market, the whole group will put their produce together, hire transport and deliver the produce as a single entity. On getting the proceeds, the farmers merely sit down to share the money according to the number of bags sold by each one of them. The cost of hiring transport, depending on what the farmers agree, may be calculated on the basis of the individual amounts of inputs and/or produce sold by each farmer. In the researcher's view, this will allow farmers to enjoy the advantages of a group while still retaining their individual interests.

(b) Farmers should consider promoting barter trade. Here, they need to seriously go into exchanging their produce with farming inputs and other resources, as is the case already in some parts of Chibombo District where fertiliser is being exchanged with two bags of 90 kilograms of maize at harvest. Others are paying transporters of eggplants (Impwa) with an agreed number of Impwa bags for the provision of transport. Both the farmer and the trading partners gain mutually in such an arrangement. The only aspect the farmers need to be careful with is the quality of information that they have to use at bargaining time so that they avoid being cheated as has been the case in some parts of Chibombo. This consideration will help farmers to deal with the problem of cash that they usually face. This suggestion is applicable to wards where buyers with ready cash may not be found. For instance, remote wards like Ipongo.

(c) Farmers with a high level of education should consider forming permanent business ventures such as co-operatives. These 'businesses' should operate on the basis of

capital contributed by individual farmers in a given area. To make them more business oriented, each firm should be allowed to employ full-time employees with basic business training. As suggested in the Co-operative Act of 1998, the farmers should have limited control over the operations of their businesses only through an elected board of directors or committee of management and policy formulation through annual general meetings. As shareholders, each farmer should receive dividends at the end of each financial year when the business has made profit.

To avoid the problems of the collapsed co-operatives in Zambia, the new ventures could include a clause in their regulations not to allow shareholders to have executive powers in the daily operations of each firm. The collapsed co-operatives showed that interference by the members leads to misuse of resources, corruption, bickering and the destruction of the profit motive of the firm.

(d) Individual farmers and groups of farmers should consider on-farm processing of their produce to increase product value as they enter the market and provide nutritional improvements. Technologies that farmers may consider acquiring include the Yenga Press Machine (oil extracting machine from groundnuts and sunflower) and mealie meal grinders. Such machines will help farmers improve food processing and provide each family with cheap edible oils and other food stuffs within easy reach, provide them with income and generally will help each farm family to sell their produce at a higher price than they do now. However, where farmers are unable to acquire such technologies in their individual capacities, co-operatives established could buy and hire them to members.

(e) Peasant farmers in Chibombo District, and probably the rest of Central Zambia, should consider improving their on-farm storage, as suggested also by Chabala and Sakufiwa (1993) and the World Bank (1994, 1996). Presently, the crop storage facilities available in Chibombo are either inadequate in size or not just able to maintain the crop in a good state for the whole year. The absence of appropriate on-farm storage technology is making smallholder farmers fail to keep their produce long enough to ensure household food security and take advantage of market opportunities that arise at certain times of the year. In the researcher's view, there is need for each

farm family to consider building brick walled structures with concrete or clay smeared floors and walls so that the crop can last long. At the base of the granary or storage facility, a farmer should spread some ash, or some pesticide or insecticide to kill insects and rodents attacking crops. While ash can be afforded by every farmer, chemicals may only be used by those farmers with a good financial base.

(f) Farmers should consider revisiting their old cropping patterns of intercropping, multicropping, crop rotation, manuring and the cultivation of indigenous crops that are adapted to particular ecological zones. As Kajoba (1993) has suggested, the cultivation of indigenous crops such as finger millet, sorghum, pumpkins, sweet potatoes and local maize breeds and, the use of known cropping methods could enable many farm families in the whole of Chibombo District have adequate food supplies and ensure all-year round food security at the household, district and perhaps national level.

Moreover, the old methods may be improved upon by incorporating new but adapted technologies. For instance, those farm families living in *dambo* areas or along rivers should consider irrigation of crops during the dry season as they used to in the past than relying on the unpredictable rainfall in Central Zambia. The use of cow dung among cattle keeping tribes like the Tonga and Lenje should be a serious consideration as a substitute for chemical fertilisers.

5.2.2. RECOMMENDATIONS FOR THE PRIVATE SECTOR

(a) The private sector should consider setting up crop processing ventures in farming areas. Such ventures would help process crops that are too heavy to carry from production wards. Such a measure would help to cut on transport costs and at the same time provide markets and employment to the local people. This step would improve the value of crops on entering the market and bring about an increase in crop production. Such a measure is recommended for wards far away from already existing processing infrastructure. Chikobo, Chaloshi, parts of keembe and Liteta, Ipongo, Mashikili and Chitanda are some of the wards that would greatly benefit from such a measure.

(b) The private sector should consider expanding their input manufacturing or supplying infrastructure in farming areas to enable the small-holder farmers obtain the inputs at more competitive prices than is the case at the moment where these facilities only exist in few areas, particularly the urban centres. The present practice of having the infrastructure limited to a few centres, mostly away from the main farming areas has made input supply expensive and/or inaccessible especially for farmers in remote areas. For instance, it is unpractical for a small-scale farmer from Ipongo Ward to reach Lusaka, which is over 200 kilometres away, for fertiliser. What Omnia and Kynoch need to do is to have a base in places like Ipongo, Chamuka North and South to help farmers obtain fertiliser at near proximity. The same thing should be said about crop buyers.

(c) Private firms involved in agro business should consider adopting some farmers to grow individual crops on contract or out-grower scheme basis. To begin with, companies would have to contract farmers in accessible places near the main communication networks and later expand in the more remote areas. At the moment, some cotton and horticultural companies in some parts of the country are undertaking this mechanism. What needs to be done is to include all crops, for instance millers and exporters can target maize. With an assured market and guaranteed price, crop production would improve. Such a measure has worked well with cotton.

(d) Private companies in agro business should consider focussing on or specialising in a few crops and maintaining a relatively small field-network in farming areas to minimise the operational difficulties that always arise from large sizes of businesses. For instance, due to a massive field infrastructure LONRHO failed to pay some cotton farmers on time in the 1996/97 farming seasons. This was in total contrast to the field goodwill it established in previous farming seasons of prompt payments when the field network was still manageable. Also, LONRHO failed during the 1996/97 farming season to compete favourably with cotton companies (such as Amaka Cotmark and Mbayimbayi and Sons) with a relatively manageable network in paying farmers promptly for their produce. The idea of "small size is more effective than large size" should be adopted by many agro businesses for the sake of efficiency and effectiveness. Alternatively, they may consider expanding their operations cautiously without

undermining their goodwill. Accessible Wards like Chibombo, Chaloshi and parts of Chikobo would be good areas to begin with.

(e) The private firms should consider expanding the content of the extension services, which they give the farmers. Extension services should include crop production, storage, processing and marketing. In the researcher's view, this would provide farmers in all wards with adequate information at all levels of the production line. Such a strategy would enable the smallholder farmers make informed decisions that will lead to the maximisation of liberalisation opportunities. The fieldwork data revealed that most smallholder farmers are unable to compete favourably in a liberalised environment because they lack vital information on crop processing, storage, and effective marketing.

5.2.3. RECOMMENDATIONS FOR THE GOVERNMENT

(a) While sustaining the policies of liberalisation, the government should consider establishing an elaborate policy, through the National Roads Board, on road development and maintenance in farming areas, for instance in Chikobo Ward where the road infrastructure has become bad. The present set-up of concentrating on urban roads may be promoting economic growth, but injuring agricultural production. As long as roads in farming areas are poor, the cost of production on the part of farmers will remain high. Ultimately, the high cost of agricultural production is passed over to the consumer through final prices of agricultural produce. As a spin-off effect, the high cost of agricultural production will cause the products of agriculture in the country to be less competitive against foreign ones.

Similarly, the poor state of roads causes transporters to decline reaching out to remote areas or if they do, at great cost. As transporters can only deliver inputs or produce at high cost, the final price of the merchandise is equally increased, further disadvantaging peasant farmers and agriculture as a whole. In order to reduce the cost of transportation, the government, through District councils, should regularly maintain feeder roads in the farming areas.

(b) Government should consider establishing policies that give firms involved in promoting agricultural development tax incentives or direct capital loans of low interest if they set up bases in peasant farming areas. Such policies should target agro industries involved in supplying inputs, those involved in processing agriculture produce or mere buyers. If this strategy is used, the cost of agricultural production would be lowered and then farmers would have ready markets for their produce and nearby sources of inputs. This strategy would, in turn, make local agriculture competitive. In the researcher's view, such a measure would help remote farming areas (for example Chitanda, Chamuka North and South) more than the farming areas already near such infrastructure (for example Chibombo Ward).

(c) Government should consider improving the operations of field extension officers through the provision of appropriate transport. The extension officers need motor cycles more than they need bicycles. The use of motor cycles could enable the officers to reach out to all farmers in their wards with more ease than the current practice of using bicycles. It is important for the government to realise that the people who need more effective transport are field extension officers, not the principal officers based at the district or national levels. Partly, the bias in the provision of transport to high-ranking officers at the district and national levels should be blamed for the failure of agricultural programmes in Chibombo and other parts of Central Zambia. For high ranking officers to make good decisions they need correct information from the bottom. Evidence from this research reveals that extension officers at the grassroots level, at the moment, usually provide the top with their 'approximations' of reality on the ground rather than the truth because they are immobile. The recommendation applies to all wards.

(d) The Zambian government should rethink the limits of the Rural Investment Fund (RIF) and Agricultural Sector Investment Programme (ASIP). Government policies should be designed in a manner that they have a clear and definite mechanism to take care of the individual profit motive of farmers even when group work is encouraged. Accepting that farmers are primarily individuals with personal interests is crucial in making any policy or programme successful.

Similarly, when such policies are vigorously pursued at the individual level, an impression will be created among farmers that farming is a business each one of them is capable of handling as an individual not as groups of individuals. When people are encouraged to work in groups, inasmuch as they may benefit from the advantages of a group, many will normally remain inactive. The best example of agro businesses failing to prosper in Zambia due to indiscipline arising from members are producer co-operatives (Kokwe 1997). The other disadvantage of groups, as many authorities have pointed out, is their inability to encourage and reward individual initiative and hard work among farmers. In the researcher's view, individual interests of farmers should always be accounted for if any policy or programme is to succeed. This demand is even more important now that economic liberalisation policies are gaining ground. Groups can succeed if the individual profit motive of farmers is included in the governing policies.

(e) Government should consider promoting the use of donkeys for draught among peasant farmers in combination with the oxen. Donkeys are more resistant to animal diseases than cattle. The present efforts being made by institutions like Palabana to introduce donkey draught power among peasant farmers are important but not enough. Government should supplement them. The environmental impact of large numbers of donkeys should, however, be assessed before such a scheme is embarked on. Since almost all wards have lost large numbers of oxen through foot-and-mouth disease, this recommendation applies to the entire district.

(f) Government should consider re-introducing tractor hire schemes in farming areas as was the case in the 1970s. This scheme, according to many farmers spoken to, can help solve the problem of farming implements farmers are facing due to the large scale death of their oxen from animal diseases in recent years. To begin with, the government would have to use the existing infrastructure at Keembe Institute and the National Service Camp near Chisamba turnoff to serve the nearby farming areas such as Chaloshi and Keembe.

The findings, conclusions and recommendations above, nevertheless, are all grounded on a study carried out in five wards of one district of the 72 districts in the whole country. Further the study covers the formative years of the liberalisation policies in

which the old spatial units, structures and policies still had some spillover effects. These limitations entail that a fair assessment of the liberalisation policies either in Chibombo District or the rest of the country cannot be made. The research was not able to cover a wider area due to relatively short time. In order to find out how liberalisation has affected peasant farming in the country as a whole, research in other areas and over a longer time is imperative. Any future study in Chibombo District would be more beneficial if it focussed on those farming wards in which farming activities have either markedly declined (for example Chaloshi) or improved (for example Keembe) since the introduction of economic liberalisation policies in 1991. Such a focussed study would enable the researcher(s) or any interested individuals to have a fair assessment of the impact of these policies on peasant farming. The view of the researcher for this current study is that a similar study at the national level would help to cultivate reliable results for the whole country.

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NOTABLE OFFICIALS SPOKEN TO DURING THE RESEARCH

1. Chibombo District Officials, especially the Council Secretary and Director of Works.
2. Chiefs Chamuka, Chitanda and Liteta.
3. District Agricultural Co-ordinator for Chibombo.
4. Principal Extension Services Officer for Chibombo.
5. Provincial Agricultural Officer for Central Province.
6. Senior Economist for the Ministry of Agriculture, Food and Fisheries at the Ministry Head Office in Lusaka.
7. Various Village Headmen in the sampled wards.

APPENDIX 1

QUESTIONNAIRE FOR PEASANT FARMERS (SMALL-SCALE FARMERS).

RESEARCH TOPIC: IMPACT OF ECONOMIC LIBERALISATION ON THE SPATIAL PATTERNS OF PEASANT CROP FARMING IN ZAMBIA SINCE 1991: THE CASE OF CHIBOMBO DISTRICT IN CENTRAL ZAMBIA.

Number: A.....

INSTRUCTIONS.

Dear farmer,

Please attempt to answer the questions below from a student interested in knowing the development of peasant farming in Chibombo district. The information you will provide is needed for academic purposes only. Answer questions as per instruction given or as per structure.

- 1. (a) What is your name?.....
(b) How old are you? (state number of years):.....
(c) What is the name of your village?.....
(d) In which Farming Ward is your village located? (i.e. Ipongo, Chitanda, Mashikili, Kakoma, Chibombo, Keembe, Kabile, Kalola, Chaloshi, Muchenje, Liteta, Chisamba, Chamuka North, Chamuka South, Kaluba, Mungule, Chunga, Chikobo):
.....
- 2. (a) For how long have you been a farmer? (give number of years):.....
(b) When did you settle on this farm? (give year):.....
- 3. (a) What is the size of your farm? (give number of hectares):.....
(b) At the time you first settled on this farm, how much land was cultivated? (give hectares):.....
(c) How much of your land is currently under cultivation? (state number of hectares):.....
- 4. (a) If you started farming before 1991, list the type of crops you used to grow on your farm:

(b) Give the amount of land, in hectares, you used to use for each crop above:

| <u>Type of Crop</u> | <u>Hectares.</u> |
|---------------------|------------------|
| | |
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| | |

(c) What crops do you grow now (since 1991)?.....

.....

.....

.....

.....

.....

.....

.....

(d) Give the amount of land, in hectares, you use for each crop you grow now:

| <u>Type of Crop</u> | <u>Hectares</u> |
|---------------------|-----------------|
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(e) If you have changed crops from what you used to grow in the 1980s to what you now grow, give reasons why you have changed:.....

.....

.....

.....

5. (a) Which of the following farming resources do you own? (tick):

Tractor..... Trailer..... Cattle (oxen and cows)..... Tractor plough..... Oxen plough..... Tractor planter..... Oxen planter..... Tractor sprayer..... Oxen sprayer..... Harrow..... Axe..... Hoe..... Ox-cart..... Other (including cash capital):.....

(b) How many oxen do you own? (state exact number).....

6. Since you became a farmer, have you been producing a surplus? (state Yes or No).

.....

7. If your answer in 6 above is Yes, give the number of bags you have produced in the following seasons for the crops listed here:

PRE - 1991 FARMING SEASONS

| | Maize | Cotton | Groundnuts | Sunflower | Sorghum | Others |
|---------|-------|--------|------------|-----------|---------|--------|
| 1983/84 | | | | | | |
| 1984/85 | | | | | | |
| 1985/86 | | | | | | |
| 1986/87 | | | | | | |
| 1987/88 | | | | | | |
| 1988/89 | | | | | | |
| 1989/90 | | | | | | |

POST -1991 FARMING SEASONS.

| | Maize | Cotton | Groundnuts | Sunflower | Sorghum | Others |
|---------|-------|--------|------------|-----------|---------|--------|
| 1990/91 | | | | | | |
| 1991/92 | | | | | | |
| 1992/93 | | | | | | |
| 1993/94 | | | | | | |
| 1994/95 | | | | | | |
| 1995/96 | | | | | | |
| 1996/97 | | | | | | |

8. (a) Below, give the names of the institutions which supplied you with the following inputs in the 1980s:

Fertiliser:.....

Seed:.....

Chemicals:.....

Cash loans:.....

Others:.....

(b) In kilometres, state how far each of the institutions in 8 (a) above were from your farm:

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |
| | |
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| | |
| | |

9. (a) Below list the names of the institutions which have been supplying you with inputs since 1991:

Fertiliser:.....

Seed:.....

Chemicals:.....

Cash loans:.....

Others:.....

(b) Below state, in kilometres, how far the above institutions are from your farm:

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |

| | |
|-------|-------|
| | |
| | |
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| | |

10. (a) In the 1980s, which institutions provided you with extension services?

.....

(b) In kilometres, how far were these institutions from your farm?

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |
| | |
| | |

11. (a) Which institutions give you extension services now (after 1991)?

.....

(b) In kilometres, how far are these institutions from your farm?

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |
| | |

12. (a) Below, list the names of the institutions which used to buy your produce in the 1980s:

.....

(b) In kilometres, how far were these institutions from your farm?

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |
| | |
| | |

(c) Below, list the names of institutions that buy your produce now:

.....

(d) In kilometres, how far are these institutions from your farm?

| <u>Institution</u> | <u>Distance (Kilometres)</u> |
|--------------------|------------------------------|
| | |
| | |
| | |

13. (a) Using Better, Worse or Same, state whether input supply (of fertilisers, seed, chemicals, cash loans, etc) were better in the 1980s than they are now.....
- (b) Using Better, Worse or Same, state whether extension services were better in the 1980s than they are now.....
- (c) Using Better, Worse or Same, state whether markets for your produce were better in the 1980s than they are now.....
14. (a) Using Good, Average, Bad or Impassable, describe the state of the road network in your farming ward in the 1980s than they are now.....
- (b) How did the state of the roads described in 14 (a) above affect your crop production in the 1980s? (State helped increase production, decreased production, or had no effect).....
- (c) How is the state of roads in your ward affecting your crop production now? (Answer as in 14 (b) above).....
15. Generally, as a peasant farmer, are you better off today than in the 1980s? (State better off today or worse off today).....

Thank you very much for your co-operation.

A.H. Malambo (Researcher)

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LUSAKA.

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APPENDIX 2

(c) If there has been a change in the type of crops grown by farmers now (after 1991), briefly explain why there has been this development:.....

(d) As an official of the Ministry of Agriculture in the Ward, have you noticed the following developments among peasant farmers (state Yes or No):

- (i) An increase in hectareage for crops with a readily available market.....
- (ii) A decrease in hectareage for crops with expensive inputs, like fertilisers.....
- (iii) A shift from food to cash crops.....

4. Below list the crop production figures for your Ward for each of the two time periods:

Pre-1991

| | Maize | Cotton | Groundnuts | Sunflower | Sorghum | Others |
|---------|-------|--------|------------|-----------|---------|--------|
| 1983/84 | | | | | | |
| 1984/85 | | | | | | |
| 1985/86 | | | | | | |
| 1986/87 | | | | | | |
| 1987/88 | | | | | | |
| 1988/89 | | | | | | |
| 1989/90 | | | | | | |

Post-1991

| | Maize | Cotton | Groundnuts | Sunflower | Sorghum | Others |
|---------|-------|--------|------------|-----------|---------|--------|
| 1990/91 | | | | | | |
| 1991/92 | | | | | | |
| 1992/93 | | | | | | |
| 1993/94 | | | | | | |
| 1994/95 | | | | | | |
| 1995/96 | | | | | | |
| 1996/97 | | | | | | |

5. Using the statistics in 4 above, what factors have caused the following:

(a) Increase in production of some crops now (post 1991).....

(b) Decrease in production of some crops now (post 1991).....

6. (a) Below list the names of institutions that provided farmers with the following services in the 1980s in your Ward:

- Cash credit.....
- Fertiliser.....
- Seed.....
- Chemicals.....
- Equipment (for example sprayers on loan).....

Extension Services.....
 Markets.....
 Storage facilities (depots).....
 (b) List the names of the actual places in the Ward or Chibombo district where these institutions were located:.....

7 (a) Below list the names of institutions that provide the peasant farmer with the following services now in your Ward:
 Cash credit.....
 Fertiliser.....
 Seed.....
 Chemicals.....
 Equipment.....
 Extension Services.....
 Markets.....
 Storage facilities (depots).....
 (b) List the names of the actual places in the Ward or Chibombo district where the above institutions are located.....

8. Between the institutions in 6 (a) and 7 (a) above, which ones served the farmer better (state 6 (a) or 7 (a)).....

9. (a) How do you describe the state of roads in your Ward (Use passable, impassable, or average).....
 (b) Do you think the state of roads described above has an effect on crop production among farmers in your Ward (Yes or No).....
 (c) If your answer in 9 (b) is Yes, what effect do they have on crop production (they increase production, decrease production or uncertain).....

10. In your Ward, how many farmers have (own) the following farming resources (state number):
 Tractor..... Trailer..... Plough..... Planter..... Harrow..... Ox-cart.....
 Sprayer..... :Axe..... Hoe..... Cattle (oxen or cows)..... Others.....
 (state).....

11. Generally, is the peasant farmer in your Ward better off today than he was in the 1980s before the introduction of economic liberalisation (state Better, Worse or Same).....

12. (a) How do you view the future of the peasant farmer in your Ward with the current agricultural policies in Zambia (state Bright, Bleak or Uncertain).....
 (b) Briefly explain your answer in 12 (a) above.....

Thank you very much for your co-operation.

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APPENDIX 3

(c) Now (after 1991) how many cotton centres/depots are there in your Ward?

(d) Of the number of cotton centres in 3 (c) how many are there in each village of your Ward?

| <u>Village name</u> | <u>Number of centres/depots</u> |
|---------------------|---------------------------------|
| | |
| | |
| | |
| | |
| | |

4. (a) How many small-scale cotton farmers were there in this Ward in the 1980s?

(b) Of the number of farmers in 4 (a) above, how many were found in each village of your Ward?

| <u>Village</u> | <u>Number of farmers</u> |
|----------------|--------------------------|
| | |
| | |
| | |
| | |
| | |
| | |

(c) How many small-scale cotton farmers are there now (after 1991) in your Ward?

(d) Of the number of farmers in 4 (c) above, how many are there in each village of your Ward now?

| <u>Village</u> | <u>Number of farmers</u> |
|----------------|--------------------------|
| | |
| | |
| | |
| | |
| | |
| | |

5. (a) In the 1980s, what was the total cotton production by small-scale farmers in your Ward for the following periods? (state number of bags and/or kilograms)

| <u>Years</u> | <u>Production</u> |
|--------------|-------------------|
| 1983/84 | |
| 1984/85 | |
| 1985/86 | |
| 1986/87 | |
| 1987/88 | |
| 1988/89 | |
| 1989/90 | |

(b) Now (after 1991), what is the total cotton production by small-scale farmers in your Ward for the following periods? (state the number of bags and/or kilograms)

| Year | Production |
|---------|------------|
| 1990/91 | |
| 1991/92 | |
| 1992/93 | |
| 1993/94 | |
| 1994/95 | |
| 1995/96 | |
| 1996/97 | |

6. (a) In the 1980s, what was the average cotton hectare per farmer in your Ward?.....

(b) What is the average cotton hectare per farmer in your Ward now (after 1991)?.....

(c) If the cotton hectare per farmer has increased from the 1980s to now, give the reason(s) why this change has taken place:.....

(d) If the cotton hectare per farmer has declined from the 1980s to now, give the reason(s) why this change has taken place:.....

7. (a) What services did your company provide farmers in your Ward in the 1980s? (list them).....

(b) What services does your company provide farmers in your Ward now? (list them).....

(c) How do you compare services offered by your company to the cotton farmer now to those offered in the 1980s? (state Better, Worse or Same).....

8. (a) How would you describe the state of the roads in your Ward in the 1980s? (state Good, Average, Bad or Impassable).....

(b) How did the state of the roads described in 8 (a) above affect cotton production in your Ward? (state helped increase production, decreased production, had no effect on production, or uncertain).....

(c) How do you describe the state of the roads in your Ward now? (state Good, Average, Bad or Impassable).....

(d) How does the state of the roads described in 8 (c) above affect cotton production in your Ward now? (state help to increase production, decrease production, have no effect, or uncertain).....

9. (a) In the 1980s, how many small-scale cotton farmers in your Ward had the following farming resources?

Tractor..... Trailer..... Cattle (oxen or cows)..... Plough..... Planter.....
Sprayer..... Harrow..... Axe..... Hoe..... Ox-cart..... Cash capital.....
Other (state them).....

(b) How many small-scale cotton farmers in your Ward have these farming resources now (after 1991)?

Tractor..... Trailer..... Cattle (oxen or cows)..... Plough..... Planter.....
Sprayer..... Harrow..... Axe..... Hoe..... Ox-cart..... Cash capital...
Other (state them).....

10. Do you think a small-scale cotton farmer in your Ward is better off today than he was in the 1980s? (state Better, Worse, or Same).....

11. How do you view the future of small-scale cotton farmers in your Ward under the current agricultural policies of liberalisation? (state Bright, Bleak, or Uncertain)
.....

12. Under the current agricultural policies in Zambia, how can a small-scale farmer in your Ward use his cotton growing experience to increase the production of other crops? (briefly explain).....
.....
.....
.....
.....
.....

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APPENDIX 4

