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SUBSISTENCE AND COMMERCIAL AGRICULTURAL AND RURAL DEVELOPMENT STRATEGIES IN ZAMBIA

a Thesis presented by

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(Zambia)

in partial fulfilment of the requirements for obtaining the Degree of

MASTER OF DEVELOPMENT STUDIES

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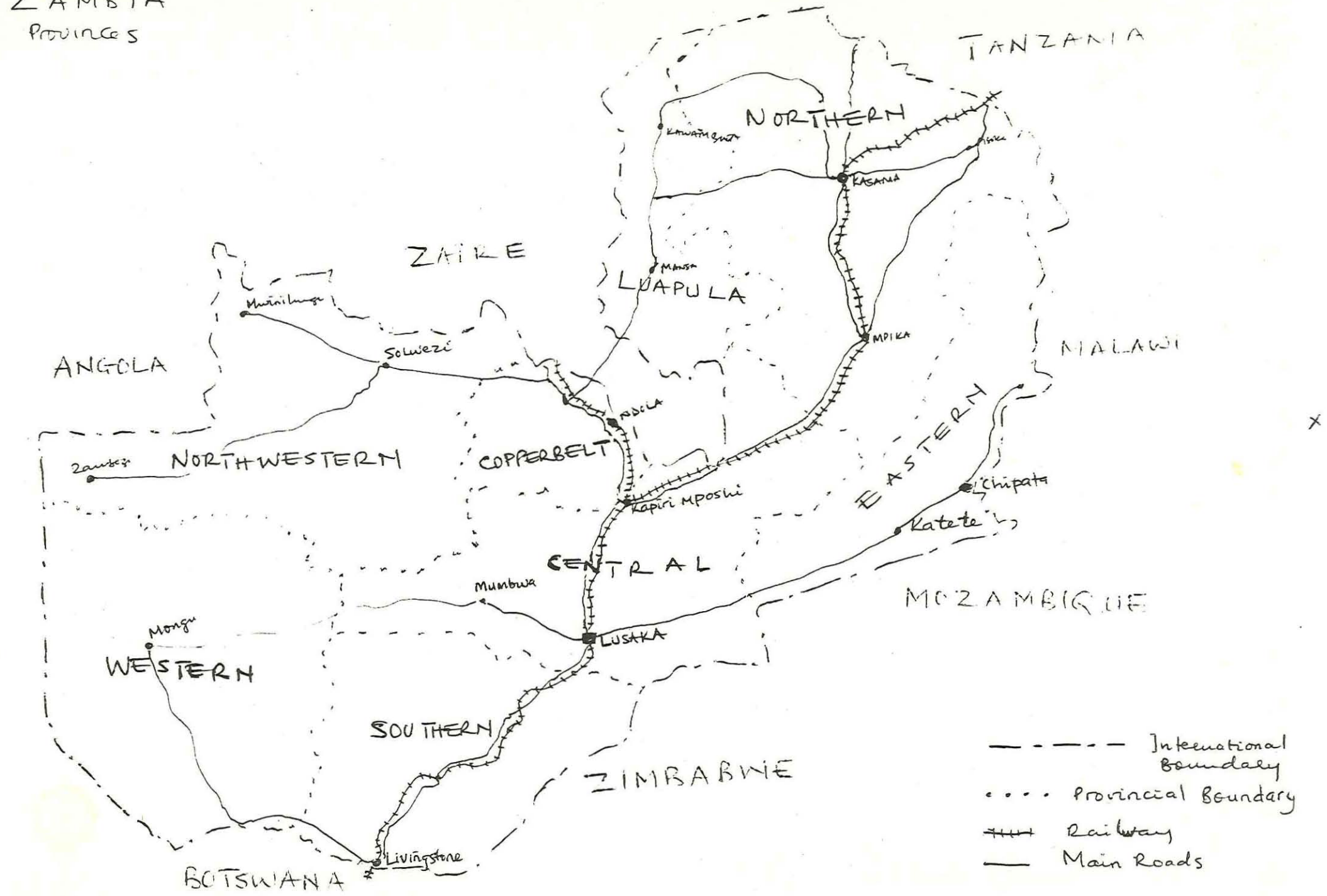
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CHAPTER I

INTRODUCTION: THE GENERAL FRAMEWORK

The Agricultural Setting

Patterns of agricultural organisation are important in the study of development for at least two reasons. First, most, if not all, societies evolve from an initial position in which agriculture is the main activity. In consequence, one finds that the constructs of rural society subsequently influence the nature of the socio-economic environment of the society as a whole. If the rural areas are characterised by low productivity and poverty, this is reflected at the national level as well. Thus, the poverty of the urban unemployed is a mere reflection of the poverty in the rural areas. Second, in most developing countries today agriculture accounts for a large percentage of all economic activity and the bulk of the population in these countries live in rural areas. Hence, whatever affects the welfare of the rural population is of great significance. The agricultural scene is important in yet another dimension: the voluminous literature on the role of agriculture in economic development has emphasized that increases in agricultural output are essential to economic development. And in this connection, we must recognize that the potential for agricultural development per se depends, in large measure, on the nature of agricultural organization and the structure of rural society.

In surveying the situation in Zambia[1)] today, we can identify certain types of agricultural systems which reflect different economic, social and political situations. A more cautious observation reveals the clear distinction that there is between the traditional subsistence and the large-scale commercial subsectors in terms of farm size; the kind of crops grown; the extent of

diversification on enterprises; livestock and crop husbandry; finance, in including capital and credit; operating efficiency of the farmers and, hence levels of income. Although some progress has admittedly been made since 1964 in the direction of improving and/or displacing traditional systems of production, dominant features, as in most other developing countries, still remain for one to safely attempt at categorisation. Broadly speaking, one can talk of agricultural producers in Zambia as falling under either the traditional subsistence system or the modern, commercial system.

By definition, on the one hand, traditional systems of agriculture are, mutatis mutandis, basically subsistence systems with the primary object of the cultivators being that of maximizing food production for direct consumption by the family: sporadic sales of output are only necessary inasfaras they go to meet the cultivator's other basic needs like clothing, school fees etc. Production techniques, although they may achieve a high standard of intensive land use, are relatively static and there is little elasticity of response to change in market demand. Maintenance of soil fertility depends to a large extent on the use of allow in some form or another and of varying durations. In addition to land the only inputs are seed, labour and simple hand tools like the axe and hoe; ox-drawn ploughs are common in some areas. Crop cultivation and animal husbandry are largely separate occupations, with little integration between the two. The organisation of production is the sole responsibility of hundreds or thousands of small family units.[2)]

Commercial systems, by distinction, are associated with modern, relatively capital-intensive systems which provide the bulk of agricultural output towards meeting export demand and domestic commercial demand for food and other agricultural products.[3)] These also do vary

depending of the scale of capital application and land usage. Thus one can talk of small-scale commercial farmers as opposed to large-scale ones. Their common object is nevertheless clear: to produce a marketable surplus which can be exchanged for some cash income to assist them pay for hired labour, seed and machinery, interest, rent and, above all, leave a profit. Commercial farmers are, in this sense, profit maximizers, who are constantly in search of ways and means of cultivating more, to sell more, and earn more. Hence, in its most advanced stage commercial agriculture, albeit it being organised and managed by family units becomes a business entity.

From the time the first settler farmers crossed the Zambezi from the south, Zambian agriculture has been modelled after a colonial vision which created crown lands (now State Lands) to be settled and cultivated by European immigrants, and pushed and/or left untouched the local people, Africans, in "Native Reserves".[4] What emerged from this colonial machination was the splitting up of agriculture into two sectors comprising a minority of (European) commercial farmers who were classified as belonging to the advanced sector of the economy and a large number of traditional, subsistence farmers, characterised by low degrees of commercialisation.[5] The latter forms the basis of the traditional sector of the country's economy. Although a number of indigenous people (now about half of the total) have since Independence joined commercial ranks, the dichotomy is maintained to the present day and the two groups are officially referred to as Commercial and Subsistence Sectors; in regard to planning, they are mainly characterized by the different qualities and quantities of statistical data at present available to planners and other interested parties.

A major distinction between the two agricultural subsectors lies in the size of holdings in each; commercial agriculture is large-scale, subsistence agriculture is small-scale. The farms on State land have been surveyed and are clearly identifiable. They include both crop land and grazing land within their boundaries. Small holdings of the subsistence farmers, on the other hand, are not demarcated nor do they have provisions for crazing domestic animals. Grazing land is at most communal.

Another major distinction between commercial and subsistence agriculture is that of regional and crop specialization. The commercial farmers specialize by area and product. For example, more than 60 per cent of the maize grown by commercial farmers in 1971 was produced on farms around Lusaka, Chipata and the Southern Province, areas most suitable for this crop.[6] The main tobacco-producing areas are located in the region best suited for profitable tobacco production. Dairying is carried on the most economic areas for the production of, mainly milk. The subsistence subsector in constrast shows very little specialization of production. The same staple crop can be found to be grown under different soil and climatic conditions. A subsistence farmer is a cultivator at the same time that he is a cattle herder, fisherman, tool maker, etc.

Yet another marked difference is in techniques of production. Commercial farmers (who are mostly of European origin) have adapted Western, modern technology to Zambian conditions and have combined resourced to meet changing economic conditions. On the other hand, the family is still the basic labour unit under subsistence production. One finds very little application of modern technology. Resources are not flexibly allocated to meet changing demand. Farming is still largely based on

principles of shifting cultivation, which requires extensive use of land. Yields per hectare are low, averaging not less than a quarter of those of comparable crops grown under commercial production.[7] The notable pieces of equipment under subsistence agriculture are hoes and axes. There are a few ploughs, storage bins, or other forms of investment in land.

Hence, though a large part of commercial land is farmed extensively, average output per hectare is higher than in subsistence areas and the value of output per cultivated hectare is far in excess of that under subsistence. Consequently, the difference in productivity and income[8] between commercial and subsistence subsectors are so great that they confirm the dichotomy in the agricultural sector.

The dichotomy that we draw between subsistence and commercial agriculture should, however, be treated with caution. It is important to distinguish between the two agricultural subsectors insofaras this may be helpful in indicating areas where agricultural improvement may be most needed. But this does not mean that there is no relationship between the subsectors. In fact, since much of the farming activities are largely run around the family unit in both the subsistence and the commercial subsectors, the main decision-maker still remains to be the head of the household. Moreover, since Independence in 1964 a number of traditional cultivators have left behind them the practices of producing merely for subsistence and have joined the ranks of what are termed as 'emergent' farmers. The emergence of this group of farmers has meant that there be fusion - to some degree - between subsistence practices, on the one hand, and commercial practices, on the other.

Furthermore, the introduction of cash into the traditional sector has meant that subsistence farmers, can, where possible, trade with the commercial agricultural sector. In most rural districts of Zambia, for instance, there is ample evidence to suggest that at some time in the year, some people from the traditional subsistence sector seek temporary work on commercial farms located near the Bomas. It also happens that some of the people who migrate to the urban areas (mostly the copper-mine towns) fail to secure wage employment within the industrial sector and find themselves working on expatriate farms where wages are lower compared to the mining sector.

Thus it cannot be denied that although some remarkable distinction may be made between the subsistence and the commercial subsector, there is some form of over-lapping to be seen in terms of the crops being produced (eg. maize and cotton); the use of cash under both systems of production; the flow of labour from one sector to the other and, mostly , the organisation of production around the family unit. These are all important factors which, with the differences in the intensities of their application are useful in the understanding of the diverse nature of agricultural subsystems in Zambia.

A Humanistic Dilemma

The division between the commercial and the sub-sistence subsector is undoubtedly there; what remains to be seen is to what extent, both the politicians and planners alike may influence the course of events within and outside the agricultural sectors to be able to achieve the stated prime objective of higher standards of living for the majority of people in the rural areas. Inasfaras the agricultural sector is concerned the main issue is

largely one of making a choice between, either adopting agricultural policies that would be aimed at initiating changes within the subsistence sector, or those in direct promotion of commercial production. The third possibility of course, would be one of taking a midway between. The final outcome, above all, might not even be clearly identifiable to match the requirements of the day.

The official philosophy of the Party and Government of Zambia is humanism. Humanism, like Ujamaa in Tanzania, seeks to offer broad perspectives within which detailed policy formulations can be worked out on all aspects of attaining a better standard of living for the good of man. It stipulates that development be spread all over the country, for the benefit of all. Thus in the words of the philosophy's main proponent, President Kaunda of Zambia, "Humanism in Zambia is a great charter for the Common Man".[9] In his interpretation of the common man, he is a representative man who takes in all the qualities of all other men; there should be no distinction based on any criteria as efficiency, success, merit, etc. - all are men who must work together as brothers or one family, to attain the goals of better living.[10] It should be understood here, however, that the standard of living so much talked about is only one component of the quality of life. Others are human relations, economic organisation, the distribution of political power, and so on. In all these, the President is determined that Zambians should benefit equally from the development of the country and that this will increase their economic and social welfare. Hence, any discussion on the development of agriculture in Zambia must be treated within the context of humanism; that the people are more important than the goods produced, and that co-operation is more important than excessive competition and individualism.

In support of the more than two-thirds (2/3) majority of the population in the rural areas President Kaunda has declared: "the philosophy of humanism leads us to place the major emphasis in the years up to 1980 on the development of the rural areas... from now on our priority is rural development".[11] Therefore production policies can be determined by production and market conditions only within the limit, set by humanism, that there should be development of and by the people.

If there is to be development everywhere, however, there should be increased participation by the majority in the national exchange economy, through an opportunity to earn money for the purchase of goods and services. Vanzetti has suggested three main ways in which income for the rural people can be earned: by the government or private industry providing non-farm or farming employment, by individuals starting "cottage" industries (i.e. industries of low capital intensity using resources normally available to peasants), or by the improvement of family farms.[12]

In Zambia, as elsewhere in Africa, the possibility of developing the rural areas via the first two alternatives seems to be very unlikely since the country has neither the financial resources nor the technical know-how to successfully accomplish them. Under the circumstances, the greatest opportunities lie in the improvement of farming. As Mellor observes, "the problem of farming development is not so much one of meeting a food crisis, but one of increasing rural incomes so the people may live better, broaden their horizons and their area of choice".[13] To President Kaunda, such development should continue to be organised around the family farm, rather than by the setting up of a large number of commercial farms with employed managers and farm labourers, as a system which may generate

agricultural surplus in the short term, but which President Kaunda does not see to be a 'humanistic' approach and is therefore unacceptable. For instance, in an introductory speech to the Second National Development Report (1972-76), he seems to place upon it the very highest priority:

> "Regarding agriculture, it is necessary to secure self-sufficiency in food crops. As a result, we will attend to both agricultural services and direct production... Our strategy to encourage food production throughout the country is geared to meet the demand for self-sufficiency in this area". 14)

President Kaunda's humanistic dilemma, on which the present study attempts to focus, is therefore one of emphasis in the selection of priorities. The basic concern of the study should therefore be seen as that of achieving agricultural development and rural development in a way which ensures increased food production together with a fair distribution of the fruits of such production over the rural population. Increased agricultural production must form the cornerstone of a strategy for the relief of rural poverty. Agriculture must provide food to back higher incomes and to improve health and it must directly account for much of the rise in employment in the short, medium and long run.

The urgency of the problem within its Zambian environment can further be seen by the poor performance of the agricultural sector over the past few years of Independence. The agricultural record of the past fourteen years is certainly not up to expectations by whatever yardstick one choses to use. Clearly, there has not been any significant productivity increase in the subsistence sector, the other alternative, that of commercial agriculture production has also, by far, lagged behind increased demand for crop and livestock

products, generated by the bourgeoining urban centres. It is unfortunate that although Zambia has the potential to produce virtually all of its food requirements, agricultural imports amounted to some 57 million Kwacha in calender 1975 for a population of only 5 million. This represents a two and half times increase over the level imported in 1965.[15)]

Value of Zambia's food imports is quite high on a per capita basis in relation to the country's gross domestic product (GDP), which has shown little improvement, even at current prices. The per capita GDP rose by only 310 per cent during the 1970 - 1976 period, corresponding to an annual population growth rate of the same percentage. The situation has been aggrevated further by a 73 per cent rise in consumer prices,[16)] a factor itself caused by the non-availability of consumer goods in adequate amounts.

Furthermore, the agricultural sector has not been able to generate adequate income for those engaged in the subsistence sector and, in addition, to produce sufficient food and raw materials to support other structures of the Zambian economy. As Dr. Mwanza of the University of Zambia rightly points out in a recent paper, this has perpetuated very low incomes for the rural areas and has widened the rural-urban gap, as well as accelerated rural-urban migration.[17)] Worse still is that much of the marketed production as indicated above still comes from a small number of commercial farmers. Their notable presence is unmistakenly to be found in the areas of good soils, in locations which are tstse-free and near large urban markets, almost entirely along the old line-of-rail (i.e. Livingstone - Copperbelt line) except for an area around Chipata in the Eastern Province.[18)]

The small number of non-Zambian commercial farmers, who are predominantly of European origin form an important nucleus, not only in the short run in terms of output, but also by influencing production methods and agricultural policy, and hence the development of future commercial production. Unfortunately, however, their numbers have drastically fallen since independence, with the consequent adverse effects on the agricultural sector's performance. Records show that there has been a shortfall in both crop and livestock products, which has been made up by increased imports and increased state participation in the production process on large-scale, commercially run enterprises in the above mentioned live-of-rail provinces. Agriculture's contribution to GDP remained low at only 12.5 per cent in 1975, when in most of free Africa, especially in countries of East Africa it averages no less than 40 per cent of G.D.P.[19] Agricultural exports declined from 2.3 per cent of total exports in 1964 to 1.4 per cent in 1975 when they totalled only K9.09 million.[20] These figures can only indicate to us that something, somewhere, has gone wrong; expectations have not been fulfilled.

From other available data, it can be observed that between 1963 and 1969 migration to the urban centres was high. In the subsequent period of 1970-74 it continued to be high but the growth rate declined slightly. It is further evident that the proportion of the urban population has grown very rapidly, rising from about 20 per cent of the total population in 1963 to 29 per cent in 1969, 35 per cent in 1974 and 38 per cent in 1977.[21] Over half of the urban population is to be found in unauthorised squatter compounds where they lack city water supplies, sewage and garbage disposal, and electricity and about 20 per cent of the urban labour force estimated to be unemployed. The rising trend has been attributed to income differentials (pull-factor theory) between the rural and urban areas.[22]

The problem is certainly enormous. The strategies for improving rural life needed for balancing the national economy are many and could be said to be greatly interrelated. The improvement of agriculture is just one way towards attaining some form of rural development. Our focusing of attention on agriculture in this study does not therefore diminish the importance of other forms of production infrastructure as communication lines, rural industries and social services; it is just that under the prevailing circumstances the great opportunities for the majority lie in the improvement of agriculture. Our task then is to appraise the general performance of both the subsistence and the commercial sector and to identify the factors which are the more important causes of success or failure. The criterion of success used is the extent to which stated or implied objectives have been, or are likely to be achieved.

In this study rural development, inasfaras we relate it to the improvement in the basic production systems, is to be understood as improving living standards of the majority of the rural poor residing in rural areas and making the process of their development self-sustaing. It requires some progressive improvement in levels of living achieved primarily through increases in subsistence incomes, output and productivity. As President Kaunda has said, "the emphasis is on rural development because it is the rural areas that are most in need of development. It is in the rural areas where the majority of our people live."[23)]

Scope and Organisation of the Study

Although the problems of low output, low productivity and low incomes in the rural areas can be tackled from a number of angles, we have decided to confine our study to agriculture. This is based on the strong conviction that the more permanent solution to the problems of rural poverty in Zambia must come from balanced food output, brought forth through agricultural development. Other socio-economic achievements would only go to reinforce this.

The study focuses on the two predominant agricultural production systems, viz: the traditional subsistence system and the modern, commercial system.

The two agricultural systems are simply referred to in the text as the subsistence and the commercial subsector, respectively. Within each subsector, however, it has not been possible to cover every aspect of it, nor the many different forms that may be found to exist. In the case of the subsistence subsector, for instance, quite a number of different traditional land use systems are found to be spread throughout the country, according to ethnic/tribal groupings. Although an attempt is made to draw attention to their existence, it is on large circle 'chitemene' - a form of shifting cultivation of the Northern Province of Zambia that much of the evaluation is centred. Similarly, in the treatment of the commercial subsector, consideration is given to the small, but crucial large-scale commercial production which from the colonial days is dominated by a white settler community. State participation in commercial agriculture through state farms and ranches is considered too wide, and a relatively new field to enter the discussions. Government policies and institutions are, however, crucial to the understanding of agricultural production under the two subsectors and therefore form part of the entire study.

We look for a number of criteria in the identification of one agricultural subsector from the other. These are in general the land tenure system, degree of commercialisation, sizes of holdings, cultivation implements in use, maintenance of soil fertility, the major crops being grown, and so on and so forth. The intention here is to see how the various factors influence agricultural output and the economic activities of those who are concerned with its very production.

A number of policy issues raised within the study are important only inasfaras they go to suggest improvements and innovation in agriculture, especially that of small-scale (or in this sense subsistence) production for which the need to effect changes is greatest. This is why only some like credit availability, marketing facilities and extension and training are discussed to the exclusion of others like land reforms, which are not the immediate problem. Possible areas where emphasis should be placed, if anything of substance is to be achieved, are indicated within the context of this study.

The thesis itself is dealt with seriatim. This Chapter, then, indicates the general nature of the problem: the division between the subsistence and commercial subsectors, accompanied by a very depressing outlook. The few economic indicators that are supplied reveal, prima facie, the under-developed state in which the Zambian agricultural sector is. Basically the problem is one of low agricultural productivity, and how best this could be tackled to enable the majority of the rural, agricultural population to realize its full potential. The premise is that higher agricultural productivity is an integral part of any sound rural development policy, aimed at higher living standards of the broad masses of the people. Understandably, the

Kaunda quotations, as in subsequent chapters, provide us with current Government thinking regarding the progress of the rural areas which is to be linked to any agricultural improvement.

Chapter II is mainly theoretical. It attempts to provide an analytical framework for the study of economic development in an economy where the agricultural sector either occupies central place or is at least of crucial importance to development. The discussion opens with the need to reach some understanding as to what is meant by 'development'. (There is a bulk of literature on this subject and only a selection is made to meet the requirements of the present study.) As one learns from the on-going debate, economic development requires the initiation of growth-inducing forces which should be superior to the growth-depressing ones. While both of these forces are said to be always present in each and every economy, economic development begins if certain factors propiticus to growth are generated. The development debate is followed by a section on the role of the agricultural sector in economic development. The significance of bringing agriculture to the fore, we see, lies in the fact that agriculture still is a major economic sector in most developing countries, accounting for a large share of total employment, exports and contribution to GNP. Even in a case like Zambia where this assertion is not entirely true we find that the agricultural sector predominates in one way or another; even if this is likely to hold more for the future than for the present. Apart from the sub-sectoral contributions that agriculture can make in terms of food, jobs and incomes, it is found that it could be a valuable source of investable surplus. The historical experiences of internal accumulation of some of the now developed countries like the United Kingdom and Japan referred to are only cases in point.

Chapter III examines in the first part, the economic and social dimensions of subsistence society. It demonstrates that subsistence agriculture has certain unique characteristics inherent in traditional forms of organisation. The classical assumption that the state of the arts remains constant over a fairly long period of time appears to be valid especially as it is found that farmers continually apply those agricultural techniques and factors which have been passed on to them by their predecessors. As the farming systems of the axe and hoe cultivation demonstrate in relation to other forms of traditional production, the immediate concern among subsistence farmers is not one of improving on their means of production in order to produce more, but the application of the same old tools and methods to reduce risk and hence ensure the reaping of subsistence crops. On the whole, focus is on the organisation and operation of the traditional subsistence system in terms of crop hectarage, rotation, labour utilisation, and likely farm returns. The analysis itself is reduced to a few selected crops of finger millet, maize, cassava and groundnuts - all major crops cultivated under subsistence agriculture, except for maize which is at the same time a commercial crop. The available UNZALPI[24)] data on the agricultural labour productivity is brought forward in section 5 of the same chapter, to consolidate our analysis. Other empirical findings, from sources as 'Census of Agriculture 1970-1971' and the 'Pilot Survey of Traditional Farmers.....1977' are included. It is found, among other things, that the subsistence system operates at very low levels of production, but could at the same time be responsive to new forms of production.

The dominant role of commercial agriculture, managed mostly by expatriate farmers on whom Zambia has relied to feed the growing urban population and to supply raw materials for manufactures is discussed in Chapter IV. Despite the

fluctuations in output of this sector, it is found that if given the proper incentives of modern, large-scale production, commercial farmers are more than willing to increase their production. The major constraint is found to be the inconsistence in Government policies: it is not clear whether the Government wants 'production by the masses' or 'mass production' by the commercial farmer. Political statements seem to farvour the former, but the actual financial and institutional assistance seem to be going to the promotion of the latter. To many a commercial farmer (expatriate or Zambian), this is an uncertain situation which should be cleared, once and for all. Above all, the performance of the whole agricultural sector in Zambia is closely identified with the performance in the commercial subsector. It is on this subsector that most of the agricultural statistics are in fact kept.

Chapter V on the agricultural and rural development implications of the various government policies and institutions regarding agricultural services is brought in at what is seen to be an appropriate stage since any sound production system requires, if it has to function smoothly, a well-rounded supportive structure. The Zambian experience within the short span of Independence reveals a rather alarming picture which shows that provision of credit and extension services, marketing channels and the adoption of new and/improved farm inputs and practices, can only be achieved at huge financial costs to the nation. The unrelated manner in which some of these agricultural services are administered, leaves much to be desired. The alternative and additional policies we consider are mostly those which will go to assist the small producer in the rural areas who under the present structure benefits little, if anything at all.

The closing Chapter VI, brings together the major issues and conclusions of earlier chapters to show that the agricultural sector in Zambia, diverse as it is, is susceptible to the same political, economic and technical factors, although this in most cases has differing, both positive and negative, effects. We arrive at the general conclusion that the Zambian agricultural sector is in need of great improvement if the objects of high output, high productivity, generation of both income and employment and a general rise in the living standards of the majority of the rural population are to be achieved. We see hope in the adoption of a more tangible agricultural policy.

Footnotes to Chapter I

1) The Republic of Zambia - a landlocked country of Central Africa, situated between 8^{o} 50' and 18^{o} South of the equator and between longitudes of 22^{o} and 33^{o} 50' east has a total land area of 746,000Km^{2} or about 94 times the size of the Netherlands. It became Independent on October 24, 1964 when it ceased to be a British Protectorate of Northern Rhodesia. The territory was first administered by the British South African (BSA) Company from 1895 until 1924, when the British Government took over direct administration. From 1953 - 1963 it constituted one of the three members of the Federation of Rhodesia and Nyasaland. The Pattern of Land Use (Hectares) has been as follows:

	1961-65	1966	1970	1975
Total Area	75.261	75261	75261	75261
Land Area	74.072	74072	74072	74072
Arable and Permanent Crops	4.820	4880	4950	5000
Arable Land	4.815	4874	4944	4993
Permanent Crops	5	6	6	7
Permanent Pasture	30.000	30000	30000	30000
Forest and Woodland	37.631	37631	37330	37330
Other Land	1.621	1561	1792	1742

2) Sources are numerous, but we may here mention the following:

W. Allen: "Agricultural Development: Incentives and Disincentives" University Cambridge Overseas Studies Committee Conference, 1968.

A.I. Richards, et.al. Subsistence to Commercial Farming in Present-Day Buganda (London, Cambridge Univ. Press, 1973.

W. Allan, et.al. Land Holding and Land Usage Among the Plateau Tonga, 1945.

C.R. Wharton, Jrs. Subsistence Agriculture and Economic Development (London: Frank Cass & Co. Ltd. 1970)

C. Clark & M. Haswell: The Economics of Subsistence Agriculture 4th Edn. (London, 1970).

J.E. Bessell and M.I. Lles: "Farmer Operating Efficiency and Credit-Worthiness" UNGZAMI Bulletin No. 2, December 1972.

3) FAO: "Agricultural Development and Employment Performance and Planning: A Comparative Analysis" Agricultural Planning Studies No. 18 Rome, 1974.

The UNGZAMI Bulletin No. 2 in general distinguishes between three agricultural systems; viz:
Subsistence farmers: do not produce an agricultural surplus Emergent-Commercial farmers: produce an agricultural surplus by the use of artificial fertilisers, HYV of seeds, chemical pest and increasing amounts of mechanisation.

Commercial farmers: large-scale farmers in the real sense of the word, having at their disposal (whenever available) the use of tractors, combine harvesters, HYV seed, latest combination of techniques, etc.

Such a classification, understandably is a matter of detail and does not conflict with the two broad systems identified in the text.

4) M. Muntemba: "Thwarted Development: A Case Study of Economic Change in the Kabwe Rural District of Zambia, 1902 - 70" in R. Palmer and N. Parsons (eds.). The Roots of Rural Poverty in Central and Southern Africa, (London, Heinemann, 1977) p. 350. She gives an account of how some of the boers fled from the South African War of 1902 and were readily resettled in Northern Rhodesia by the Colonial administration which provided them the necessary incentives of land and finance capital.

5) W.J. Barber. The Economy of British Central Africa. (Oxford, 1961).

also R.E. Baldwin: Economic Development and Export Growth (Berkeley, Los Angeles, 1966)

6) C.S. Lombard and A.H.C. Tweedie: Agriculture in Zambia since Independence (Lusaka: NECZAM, 1972) p. 20.

7) G. Scott "Why Agriculture declined" in Zambia Ten Years After 1964 - 74. Survey prepared by African Development Magazine, London, 1974, p. 42.

8) According the UNGZAMI scale of commercialisation, subsistence farmers are those who are solvent but earn less than one fifth of an unskilled farm labourer, i.e. approximately K45 per month. On the other hand commercial farmers are deemed to earn more than four times the wage of an unskilled farm labourer, with the earnings averaging that of a salary of a Permanent Secretary in the Civil Service, i.e. approximately K700* per month, gross. see p. 24 of the UNGZAMI Bulletin No. 2. These are figures which are however highly questionable as the basis on which the comparison was made is not clear from the Bulletin's definitions.

* The Zambian monetary unit is the Kwacha, denoted by capital letter K. Coins are designated in Ngwee, where 100 Ngwee = 1 Kwacha. The exchange rate vis-a-vis the U.S. dollar was up to the end of 1977, K1 = $ 1.24, with the usual daily fluctuations. As of July 9, 1976, however, the Kwacha is no longer linked to the U.S. dollar but instead is pegged to the special Drawing Rights, where K1 = SDR 1.08479.

9) K.D. Kaunda: Humanism in Zambia and a Guide to its Implementation, Part II (Lusaka, Govt. printer, 1974), p. 1.

10) Passim.

11) Kaunda, "Towards Complete Independence", address to UNIP National Council, in B. de Gaay Fortman (ed.) After Mulungusin. The Economics of Zambian Humanism, (Nairobi: East African Publishing House, 1969), p. 42.

12) N.R. Vanzetti: Education and the Development of Farming in two areas of Zambia. Unpublished D. Philosophy Thesis, Univ. of Nottingham, 1972, p. 10.

13) J.W. Mellor, The Economics of Agricultural Development (Ithaca: Cornell Univ., Press, 1966) p. 129.

14) Republic of Zambia, Ministry of Development Planning and National Guidance, Lusaka, 1971, p. iv.

15) Computed from: Monthly Digest of Statistics, Vol. XIII, Nos. 11 and 12 Nov./Dec., 1977. Lusaka, CSO.

16) CSO ibid, pp. 44 - 45.

17) J. Mwanza: "Rural-Urban Migration and Urban Employment in Zambia" paper presented to a Policy Workshop on Income Distribution, Poverty and Employment, ISS. The Hague, June 1978, p. 1.

18) The 20 kilometre stretch on either side of the Zambia Railway, which runs from Livingstone in the South to Chililabombwe in the North, is here euphemistically referred to as the old line-of-rail, and the provinces through which the railway - namely, the Southern, Central (including Lusaka Province), and Copperbelt Provinces - are referred to as the old line-of-rail provinces. Perhaps another useful classification is that of CHIVUNO (1972) "Regional Planning in Zambia" - Seminar Report, Berlin, who breaks the country into three MACRO regions:
   - Central macroregion (Copperbelt, Central and Southern Provinces);
   - Western Magroregion (North-Western and Western Province);
   - Eastern Magroregion (Northern, Luapala, and Eastern Provinces).

See MAP - Provinces of Zambia p.x

19) U.N. Yearbook of National Accounts Statistics, Vol. III, 1975.

20) Computed from: Monthly Digest of Statistics, Lusaka, CSO; U.N. Yearbook of International Statistics, 1976.

21) 1963 and 1969 Population Census, CSO, and 1974. Sample of Population Statistics conducted by CSO, also Monthly Digest of Statistics.

22) Mwanza, op. cit., p. 4; A. Seidman: "A Note: Have and Have-nots in Zambia" Lusaka, UNZA, 1974. In this connection the Zambian government's policy of 'Back to the Land' is no more than an appeal to the Urban Unemployed to return to the rural areas and take up the hoe, for more food production. This in a way is a realization on the part of the policy-makers that the urban-based modern sector has been unable to grow and expand at the rate could create adequate employment opportunities to absorb both those workers leaving subsistence agriculture and the natural growth of the urban labour force.

23) Republic of Zambia, Ministry of Development Planning National Guidance.
Second National Development Plan (1972-76) p. iv.

24) UNZALPI was a joint survey by the Universities of Nottingham and Zambia under the heading of "Universities of Nottingham and Zambia Agricultural Labour Productivity Investigation". The survey was begun in November 1966 and the field-work was completed in October 1969. We based part of our analysis on the reports' findings.

CHAPTER II

ECONOMIC DEVELOPMENT AND THE CONTRIBUTIONS OF THE AGRICULTURAL SECTOR

Introduction

Perhaps as old as the social sciences themselves has been the debate on "Development". The increasing number of volumes that continue being churned out on the subject can only go to demonstrate the pace at which the discussions are moving. Surprising though is that the word 'Development' is generally qualified as 'Economic Development' regardless of its wide application. It is by no means the economist alone, who has been concerned in this field. Others, sociologists, anthropologists and political scientists have had their say too. It is a well known fact that the general concern in the study of the developing countries or the "Third World" has been connected with an awareness of the interdependence of the nations of the world and the different peoples and societies. From a number of studies, it is becoming clear by day that the challenge of 'development' is a challenge for all. Thus the desire on our part to question the basic ideas implicit in the development phenomenon - especially as it relates to specific economic activities; the agricultural sector having to receive emphasis in this study.

In the subsequent sections, the issues of development are set forth with the attendant controversies, in order to show the common links in the endeavours being undertaken. The emphasis is on the economic, because any criterion of development involves the concept of output and the changes in both input and output. Our intention will be to show that production

and the human endeavour to alter the levels of production are essential bases of investigation. Since our study is mostly done on a sectoral basis - i.e. the subsistence and the commercial forms of agricultural production, it is imperative that we in this chapter begin to distinguish between what either of the two subsectors can, and are likely to contribute to development. The aim is to get forth a theoretical stage on which we may later come to build our statistical findings. Attempt is made to identify, as much as possible, those factors which are propitious to the development of the agricultural sector, but also to rural development. Thus, through the discussion emerges the belief that some basic comprehension of how to keep agriculture moving is fundamental to the understanding of the problem of development.

2. Approaches to Development

In recent years, dissatisfaction and even disagreement have been increasingly expressed with the conventional economic analysis applied to problems of development. This is especially so among development 'experts' who have gone to the developing countries of Africa, the Caribbean, Asia and Latin America, only to come back disillusioned. Theories have not lived up to expectations. Hopes for accelerated development or take-off - often as profounded in traditional growth theories - have been difficult to realise. For one thing, the world-wide upsurge of the "revolution of the rising expectations" and the "will to modernize", Khan[1)] has put it, have hastened the pace of theorising. This has become the more especially after the liquidation of colonial and semi-colonial political systems. "Revisionist" approached to the economics of development we confront below have sought not to, however, dismiss

the terms and principles conventionally used in economic analysis, but rather to extend the scope of analysis, especially to give human factors more weight and incorporate noneconomic variables. This is a trend which comes out of a realisation that there cannot be pure economic development, but only aspects of it.

Thus, given the difference in time and space in which these theories are conceived, it is not surprising that the concept of economic development has been treated in ways of varying intensity. Moreover, the fact that economic development forms only a part of the more complex phenomenon of "social change"[2] has made some approaches more relevant than others, depending upon the specific object of the study. The mere recognition that economic development entails economic and non-economic aspects does not, however, solve the problem of ultimate choice. Any choice which weighs some factors as more important than others will obviously leave many facts unexplained. It is only in trying to understand what lie behind some of these explanations that we can be able to state our own position on the issue of development. Any stand taken should, above all, be relevant to the present study.

In development economics, a useful starting point to the study of the whole concept of development is that which distinguishes between economic "growth" and "development". Thus, in an opening to his book, Modern Economic Growth, Kuznets writes, "we identify the economic growth of nations as sustained increase in per capita or per worker product, most often accompanied by an increase in population and usually by sweeping structural changes".[3] Lewis, too, gave a similar view when he wrote a decade earlier, of "Growth of output per head of population".[4] For both, growth

at that time was being treated equally with development. It did not take long, however, before economists, Lewis and Kutznets alike, began questioning the reliability of GNP as a measure of economic progress.

The major criticisms against the use of GNP as a measure of economic progress or development is twofold: One is that the valuation of products ones the course of time does not give a true representation of the value of product or output; this is influenced according to the changes in prices over the same period. Hence, if prices rise this would indicate an "increase" in GNP when in reality there might be not a slightest alteration in the factors of production. The second criticism is that GNP per capita, which purports to measure economic welfare in most cases ignores size of distributive income, income disparities, degree of urbanisation and possible shifts in taste. Moreover, problems arise when it comes to international comparisons for, as it is to be expected, an equal amount of GNP per capita cannot hold equally in two countries with different price structures.[5] For these and other reasons to be found in economic literature, the growth of GNP has long been discarded as the main objective or index of development. Hence, up to the present efforts are being made to delineate economic growth from that of development.

On his part, Kindleberger, for instance, distinguishes between the two terms in the following manner: "..... economic growth means more output, and economic development implies both more output and changes in the technical and institutional arrangements by which it is produced".[6] However, he surprises his readers, a fact also noted by Fortman,[7] by stating that he will measure economic development by looking at national income,

a yardstick which he himself observes applies more to growth.

Continuing the debate is Meier who cautions us when he asserts, "economic development in much more than the simple acquisition of industries".[8] He takes us a step further when he, above all others, quotes Myrdal who sees development as being nothing less than the "upward movement of the entire social system",[9] something which may here be interpreted as the attainment of 'ideals of modernisation' such as arise in productivity, social and economic equalisation, modern knowledge, improved institutions and attitudes, and a rationally coordinated system of policy measures that can remove most of the undesirable conditions in a state of underdevelopment.

There could be no doubt that these views imply that economic development involves something more than economic growth. For simplicity, development is taken to mean growth plus change; there are essential qualitative dimensions in the development process that may be absent in the growth or expansion of an economy through a simple widening process.[10] This may be explicitly stated as economic growth representing a quantitative measure and economic development that of a qualitative measure.

That is not all, for in a more penetrating contribution, Seers has talked of "development" as being "inevitably a normative term and we must ask ourselves what are the necessary conditions for a universally acceptable aim - the realisation of the potential of human personality."[11] Hence, to Seers, distribution issues become highly relevant, since less or more can be contributed to human personality depending on who consumes what is produced. Seers emphasises reducing inequality - which may or may not

take place within any given rise in total or per capita product; aside from other aspects of the society and economy. Seers is not alone on this front for Ponsioen, of the many, has expressed himself on development as being "moral in nature in as far as the idea of equality is concerned."[12] Taken this far, the policies of economic development should be professed to be in favour of the total population, of all groups. Of course, the necessity is felt to give priorities to certain sectors and regions, but this attribution and thus the postponement of other sectors or regions is said to be essentially temporal.

Coming to practical realities we see this latter view, which is normative in approach, being echoed when President Kaunda, for one, speaks of "national development is meaningless if it does not develop each one of our [five] million people in the country."[13] He meant the availability of enough food, adequate shelter and clothing. We may here add one further qualifying condition that it is not only the increases in quantum that is so much desired, but also the improvement in the quality of both goods and services being consumed. For example, there should be a marked change in the consumption pattern of energy goods away from coarse grains and tubers to wheat, rice, potatoes and sugar. The main objectives of increased food production should be both economic and nutritional. Thus, development may be measured and recorded in many ways, but is essentially about people, who seek through it to improve their conditions of living and to ensure for their children a less ardous and more prosperous life. It is how people, both as individuals and groups, perceive the attainment of material things as being normal for their well-being.[14] A genuine acceptance of this formulation would indicate that real economic development requires that each and

every individual does attain the structural possibilities of satisfying the basic needs of life: food, shelter and clothing. It is the inadequate availability (both quantitative and qualitative) of these needs that sets in problems of how a nation can best achieve its development goals.

To summarize, we have come to understand that the process of economic development involves much more than a mere increase in per capita income which is sustained over a period of time. If development is then to take place we should concern ourselves with, one, how to increase the rate of growth of output and, two, how to secure a more equitable distribution of the output produced. The level of national output is determined by the quantity and quality of various inputs, or what are sometimes called the factors of production and the techniques of production, respectively. But the process of national economic development involves much more than increasing the rates of technological change and of capital accumulation. It is a dynamic process that involves major adjustments in the structure of economy and society. People have to learn new skills as old ways of doing things are discarded; changes in the distribution of population lead to the adjustments in the distribution of political power, economic power and so on.[15)]

The whole process is complex. Here it is necessary to note only that certain preconditions must exist before development can take place. Among these, the most important, it would seem, are a highly motivated population willing and able to make the sacrifices involved, and appreciate institutional arrangements that provide the necessary incentives and reward for effort. These are matters which are of great importance to the nature of the present study. We can, for instance, try to reach

some understanding as to the role of agriculture in our search of development. How can, for example, the achievements in the field of agriculture be used, or be shifted to that of the realisation of overall development in the national economy? Even more relevant, we can try to relate how an agricultural break-through can go a long way in assisting those who participate in its improvement, or for those whom development programmes are intended for.

Agriculture and National Economic Development

The bulk of literature on the role of agriculture in economic development has emphasized that increases in agricultural productivity and expansion of agricultural output are essential to economic development. An assertion that is often made is that few nations achieve high per capita income and the necessary structural changes without first achieving substantial gains in agricultural productivity. Clark has maintained for example, that:

> "the normal and fortunate course of economic development is that when the productivity of a country's agriculture can considerably exceed the required standards of consumption of the rural population, and when circumstances are favourable, urban and industrial populations begin to grow" 16)

Clearly, this kind of reasoning is based on the historical experience of the now developed countries. Browsing through some of the literature on the subject readily reveals that some developed countries like that of the United Kingdom, West Germany, United States and Japan, countries which now rely heavily on agricultural imports with the exception of the U.S.A., experienced large increases in agricultural production during early

stages of economic development - helping make their industrial growth possible.

Eicher and Witt have correctly noted that there are no cases of successful development of a major country in which a rise in agricultural productivity did not precede or accompany industrial development.[13] And in a more specific reference to Japan, Ohkawa and Rosovsky, have observed that "revolutionary progress in Japanese agriculture occured not before but side by side with industrialisation.[18] This was not the typical European sequence where, one discovers, increases in agricultural output preceded the era of large-scale industrialisation. On the whole, however, both our sources seem to concour that agricultural progress is normally a prerequisite for industrial development, and as we are concerned, any other development, particularly that of the development of the rural areas. This is clearly the case in a closed economy, where one of the most important preconditions of industrial expansion is the achievement of a rate of increase in agricultural productivity which exceeds the concurrent rate of increase in the demand for food. But one might here observe that even in an open economy, particularly those of developing countries, rising productivity in the food sector is essential, both because it may save scarce foreign exchange needed for financing imports of industrial capital and because it contributes to the integration of the dualistic (subsistence versus commercial) agricultural economy, the existence of which has so often restricted the rate and spread of economic progress.

Hopefully, too, if agricultural productivity in the food sector is or becomes sufficiently higher, the nation may enjoy a food surplus of such a magnitude as to permit the export of food itself, with correspondingly favourable effects on the balance of payments. Meier gives four ways

in which greater agricultural productivity and output can contribute to an economy's development:

1. By supplying foodstuffs and new materials to other expanding sectors in the economy;
2. Providing an "investable surplus" of savings and taxes to support investment in another expanding sector;
3. Selling for cash a "marketable surplus" that will raise the demand of the rural population for products of other expanding sectors; and
4. Relaxing the foreign exchange constraint by earning foreign exchange through exports or by saving foreign exchange through import substitution.[19)]

The four points above are self-explanatory and are based on the assumption that the necessary changes in agriculture can be effected. For example, when Meier writes of providing an "investable surplus" we take it that he sees a situation in which either the local or central authorities can devise the means of collecting agricultural savings and taxes, before they are transferred for use in other sectors - we may add the use within the sector, where surplus is not yet being generated. This indeed compares very well to Seidman's suggestion of having to put "the mines surplus profits into agriculture".[20)] Although the two suggestions seem to be the converse of each other, the idea of transfering resources remains basically the same: the surplus should first exist and be collected before it can be put to alternative uses.

To this view Kuznets submits unsparingly that the contribution of agriculture to the economic growth of a nation is that constituted by the growth of a product within the sector itself. An increase in the net output of agriculture, in and of itself, represents a rise in

the product of the country - since this latter is the sum of the increases in the net products of the several sectors. This type, which he refers to as the product contribution, is to be regarded as a contribution first to the growth of total net or gross product, and second to the growth of product per caput. In his own words:

> "If agriculture itself grows it makes a product contribution; if it trades with others, it renders a market contribution; if it transfers resources to other sectors, these sources being productive factors, it makes a factor contribution".21)

This kind of analysis purports to reflect on the historical experiences of developed countries and projects the development process as one of structural transformation from an economy in which agricultural employment and output dominate to a decline in the share of the labour force in agriculture and a decrease in the share of agriculture in G.N.P. But this structural transformation is itself dependent on agricultural progress. On the contrary, we are concerned with a situation whereby the contribution of the agricultural sector, at present low, assumes heights of great importance in all aspects of economic life. In other words, the Zambian case with which we deal requires that there be a rise in output before surplus can be siphoned off to other sectors. However, before there could be increases in the level of output there should be, first of all, increased participation by those on the land; whose productivity in turn should be raised in order to overcome the obstacles of low yields. It is only after the impediments to agricultural growth have been overcome can we expect the sector to contribute more to economic development.

The existence of a well pronounced dual agricultural sector in Zambia only makes it necessary that we distinguish between what these two subsectors can offer or contribute to the process of development. In the case of the traditional subsistence subsector, its unquestionable contribution is to feed the farm family more adequately. The subsistence farmer who, in the main, has no other means of obtaining income must work hard on the land to grow enough food for direct consumption. Hence, a population that is based on land which fails to produce enough food for its own survival cannot be said to be contributing to development. Another traditional function of agriculture in Zambia is to produce vegetable oils, fibres and tobacco, for own consumption within the locality and the surrounding neighbourhood.

On the other hand, it is the commercial subsector which produces surpluses of food for the ever growing, non-agricultural populations, especially on the Copperbelt and other urban centres like Lusaka, Kabwe, Livingstone and the Provincial Headquarters. This is a much more difficult task, since it requires that the local market be efficiently linked to the more distant consumer by transport, intermediate markets, storage, processing where necessary, and final marketing. Without such links, home-grown food is often too costly, and the supply too uncertain, to compete with imported food. Moreover, in a country like Zambia, where most of the people are subsistence farmers, the internal market for food may well be far too small to allow food production to become an effective machinery for anything more than local or peri-urban development. Fortunately or unfortunately, the urban demand in Zambia is at present far in excess of local supply that there is a great room for improvement.

As their second contribution, commercial farmers produce raw materials for many industries - textiles and clothing; Kenaf Sacking; beverages, sugar products, tobacco; and many others. In most developing countries, these raw materials are traditional exports, but as development proceeds they are increasingly needed for domestic industries producing increasingly for the internal market. A related third contribution is to produce substitutes for imports. Zambia, for its Kafue Textiles, for example, needs each year a quantity of cotton at least equivalent to its home supply, and consequently has to import cotton from abroad. In addition, local industries have now to produce much or all of the sugar and tobacco that had formerly to be imported. The economics of import substitution are of course not always easy to handle, but as rising world prices and shortage of foreign exchange continue, the emphasis on self-sufficiency in basic agricultural goods has became a necessity.

Nor is the contribution of the agricultural sector limited to the factors mentioned above alone; there are possibilities, one soon discovers, of employment and income generation. The more people who are directly engaged in agricultural production, the less demanding it is for the Government to provide alternative job opportunities for those who are unemployed. The number of people who live and work in the Zambian rural economy is large: In 1976 it stood at 1.3 million - or 69.2 per cent of the economically active population.[22] That is, all those people whose primary occupation is reported in the census as farming, fishing, forestry, or hunting. Worthy mentioning, however, is the fact that this group, on the one hand, overstates the proportion of productive time devoted to the growing of food and fibre because these individuals are also

producing a wide range of non-agricultural goods and services consumed within their own households. On the other, this figure excludes the considerable fraction of the labour force that is engaged in rural nonfarm occupations - craftsmen, traders, transporters, teachers, civil servants, and ecclesiastics. Taking into account these data, nonetheless, the remarks by both Presidents Kaunda and Nyerere[23] that Africa is the continent of peasants seem rather appropriate.

The generation of cash income by the agricultural sector is perceived in two ways: one, the farmer, either big or small, makes a market contribution whenever he sells his surplus crop. This applies also to subsistence farmers who must, at times, sell the little that they have to realize a cash income for which they can exchange for other goods like clothing. The second type of income generation is that contributed by the commercial subsector which employs farm labour. In this way the agricultural sector contributes by providing wages to those who will later use them on the purchase of food and other consumer goods, not to mention that of a few consumer durables like bicycles, transistor radios and pots.

Hence, if the agricultural sector has to contribute even more effectively to economic growth and development, expansion in agricultural production must be achieved through increased productivity or efficiency. Greater efficiency per person employed in agriculture would provide an economic surplus that can be reinvested in agriculture, used to improve the welfare of the rural people or transferred out of agriculture to provide capital for industrial growth. As mentioned earlier above, our major concern in this study will be to see how the two agricultural subsectors (i.e.

subsistence and commercial) function in order to be able to suggest changes where they are needed as to make the whole agricultural sector geared towards the improvement in living standards of the majority of the people found in Zambia's rural areas.

The poor in the rural areas can in effect become less poor only to the extent that they themselves contribute, as producers or employees, to economic output and growth. And since the majority of the poor are farmers and their families, the government, dedicated as it is to development with social justice (explicitly stated under humanism), is bound actively to seek methods of agricultural development which involve all, or at least the great majority, of farmers.

This conception of agricultural growth, raises fundamental questions for the use of modern farm imputs and/or practices, since it requires agricultural methods based not solely upon what is scientifically and technically possible but upon what the small-scale farmer and his community want to do with the resources of land, labour, knowledge and money actually available, or being supplied to them. There is no exception to this rule, for even the large-scale farmer whom we might be thinking that he readily welcomes new technology is also constrained by the same factors of land, labour and financial resources at his disposal. The difference then in what the two production systems contribute to development lies in the type of organisation and management that prevail within each of the systems. Attention is drawn to the understanding of these in the following two chapters.

Footnotes to Chapter II

1) Khan, D.M. The Role of Agriculture in Economic Development. (Wageningen, 1966), p. 7.

2) Both improvement and deterioration of a society, measured by whatever yardsticks, are social changes. As Ponsioen states, social change is "the change of the overall society as such"; always keeping in mind that the very concept of society by its members may change during the process. Thus, Tonybee in his studies of how civilisation arose as well as succumbed; Sorokin in those about various cultural systems gaining importance as well as declining; Marx in his study on the dialectical destruction of economic systems and emergence of new ones; and Max Weber's studies on the elites replacing one another. For a full account see J.A. Ponsioen: The Analysis of Social Change Reconsidered. (The Hague, Mouton & Co. 1962).

3) Kuznets, S.: Modern Economic Growth (New Haven, London, Yale Univ., Press, 1966) p. 1.

4) Lewis, W.A.: The Theory of Economic Growth. (London: George Allen & Unwin Ltd. 1955) p. 10.

5) For an elaborate explanation see Morgan, T: Economic Development (New York and London, Halper & Raw, 1975) pp. 68-73.

6) Kindleberger, C.: Economic Development (New York), 1965) pp. 3-4.

7) Fortman, de Gaay, B.: "Rural Development in an Age of Survival" ISS Occasional Paper No. 21, 1972, p. 5.

8) Meier, G.M.: Leading Issues in Economic Development. 3rd Edn. (New York, Oxford Univ.Press, 1976) p. 6.

9) Myrdal, G. Asian Drama. p. 1869.

10) Clower, R.W. et.al. Growth Without Development (Evanston, 1966).

11) Seers, D.: "The Meaning of Development" reprinted in N.T. Uphoff and W.F. Ilchman (eds.). The Political Economy of Development (Berkeley, Univ. of California Press, 1972) pp. 123 - 129.

12) Ponsioen, J.A.: National Development. (The Hague, Mouton, 1968), p. 16.

13) Quoted in de Gaay Fortman (ed.). After Mulungushi. (Nairobi; East Africa Publishing House, 1969) p. 109.

14) Wallman: Perceptions of Development. (Cambridge, London, etc.: Cambridge Univ., Press, 1977) p. 6.

15) Similar views can be found in Gaay Fortman "Rural Development in an Age of Survival" op.cit. where he talks of the interaction between the economic process and the economic order. See especially p. 6.

16) C. Clark and M. Haswell, The Economics of Subsistence Agriculture. (London, 1967) p. 159.

17) C.K. Eicher and L.W. Witt (eds.). Agriculture and Economic Development. (New York: McGraw-Hill, 1964) p. 8.

18) K. Ohkawa and H. Rosovsky: "The Role of Agriculture in Modern Japanese Economic Development" reprinted in Eicher and Witt, ibid. pp. 45-69.
B.F. Johnson and J.W. Mellar on their part contend that the three major elements contributing to increased productivity in Japan were: (1) Agricultural research leading to the development and selection of higher-yielding varieties; (2) increased application of fertilisers; and (3) activities that facilitated wide use of the most productive plant varieties and improved farm practices - see "The Role of Agriculture in Economic Development" in American Economic Review, Sept. 1961, p. 571. Interesting to note also is that the Japanese Government provided over half the total investment during this period. Consumption levels rose much less than agricultural productivity so that a considerable portion of the rise in output could be used to finance capital formation in the industrial sector. Between 1893-97 agriculture contributed 80 per cent of tax revenues and 50 per cent during the years 1913-17. A heavy land tax was the primary device for carrying out industrial development programmes. The tax revenues were used by the government to foster economic development by constructing "model factories" subsidizing the creation of a merchant marine and shipbuilding industry, and making a strategic investment in overhead capital such as railroads, education and research.

19) Meier, op. cit. 563.

20) A. Seidman: "Putting the mines surplus profits into agriculture" in Zambia Ten Years After, p. 57.

21) Kuznets: "Economic Griwth and the Contribution of Agriculture: notes on measurements" reprinted in Eicher and Witt (eds.) op.cit., p. 114.

22) FAO Production Yearbook 1976.

23) In a major section of the Arusha Declaration entitled 'Agriculture is the basis of development' President Nyerere emphasised:

> A great part of Tanzania's land is fertile and gets sufficient rain. Our country can produce various crops for home consumption and for export. We can produce for food crops such as maize, rice, wheat, beans, groundnuts etc.... All out farmers are in areas which can produce two or three or even more of the food and cash-crops enumerated above, and each farmer could increase his production so as to get more food or more money.

There cannot be a more precise statement on the matter than that of Mwalimu; it enlightens all of us who care to read it.

CHAPTER III

AGRICULTURAL PRODUCTION UNDER THE TRADITIONAL SUBSISTENCE SUBSECTOR

1. Introduction

The existence of two diverse, and somewhat unrelated agricultural subsectors is something that has some bearing on the way Zambian farmers of all categories organize and conduct their agricultural practices. In this chapter, an attempt is made to reach some understanding as to how and why the Zambian traditional subsistence farmer organizes and runs his farming activities in the way he does. A more general definition that is applied to the traditional subsistence farmer is that he operates at very low degrees of commercialization. His horizon of agricultural production ends at the level where he grows enough to feed only himself and his family. He lacks the means and the motivation to produce beyond his subsistence needs.

The chapter is divided in four sections dealing with specific issues. The first section is restricted to the prominent characteristics of subsistence agriculture as they widely apply to most parts of the country. The type of tools and farm equipment used, crops cultivated and the manner in which they are grown are investigated. Section two is aimed at describing in more detail the various types of the basically traditional land use systems found across the entire country. The reason for doing this is that within the traditional sector, there exist a number of subsystems having and showing their own individual characteristics. Thus we find subsystems defined according to their location, the type of implements in use, the dominant economic

activity, and so on. The third section is concerned more specifically with agricultural production under chitemene - a form of shifting cultivation - which is predominant in the northern part of the country. This lowest form of agricultural production is followed in section four by a more advanced form of subsistence as it is practised on both the Eastern and Central Plateaux of Zambia. This is done by using UNZALPI data which concentrate on two survey areas within Zambia. We shall see that the information obtained does not only serve to illustrate that agriculture differs within the subsistence sector, but also that the potential exists that could be well exploited to expand agricultural production and improve on yields of the subsistence farmer.

2. The Main Characteristics of Subsistence Agriculture in Zambia

While in reality for no economy, however backward in its economic and social organization, can we make a clear-cut distinction between the various production and distribution techniques, it is nevertheless necessary to identify a few basic features. More specifically, of the marked agricultural dichotomy that obtains in Zambia's economic and social structures, the present discussion will be restricted to the basic attributes of what we have here termed as the traditional subsistence subsector; commercial agricultural production being the subject of Chapter IV.

The traditional subsistence subsector consists of small family units, with several cultivated plots which, when put together cannot stretch for more than a few hectares. In use is the unimproved 'local' seed and/or tubers without the use of chemical fertilisers.

The hoe and axe are far more common than ox-drawn equipment not to mention inanimate power, like the tractor. Market orientation in this sector is almost always constrained by a prior objective of assuring family good supplies, white land tenure is on a customary basis, in contrast with the modern commercial subsector, in which land is held by written tenures and farms are legally demercated. In short, almost all farming practices in this subsector are based predominantly on a few production factors which have been employed by the village cultivator for generations without any substantial change.

By viewing the family farm or household - members of a family living and eating together - as the basic unit of production under traditional subsistence agriculture, we are in a way looking upon the whole concept of traditional subsistence as a cultural characterization of the way particular people live. As Professot Weitz has rightly pointed out:

> For the vast number of farm families, whose members constitute the main agricultural work force, agriculture is not merely an occupation or a source of income: it is a way of life. This is particularly evident in traditional societies, where farmers are closely attached to their land and devote long, arduous days to its cultivation. 1)

Perhaps even more searching, as T.W. Schultz does, traditional subsistence agriculture is to be viewed as a particular type of 'equilibrium' in which (a) "the State of the arts remains constant", (b) "the State of preference and motives for holding and acquiring sources of income remains constant", and (c) "both of these states remain constant long enough for marginal preference and motives for acquiring agricultural factors as sources of income to arrive at an equilibrium with

the marginal productivity of these sources viewed as an investment in permanent income streams and with net savings approaching zero".[2)]

The assumption that the state of the arts remains constant over a fairly long period of time seems quite valid because the cultivators, be it a Bemba or Tonga tribesman, continually apply those agricultural techniques and factors which have been passed on to them by their predecessors. The knowledge embodied in these factors and methods is taken as authentic, hence no need is felt for change. And, since there is hardly any change, no new element of risk and uncertainty came into the picture. In this situation, when techniques are well established by custom, the motives and preferences of cultivators are also constant during the same period, and thus the marginal productivity of investment in additional factors continues to decline. In fact, what has been done here is to make an assertion that a point has already been passed where the rate of return on all agricultural factors is so low that there is hardly any incentive to make additional savings and investments: production has primarily been for home consumption.

That an equilibrium seems to exist, insofaras the demand for and supply of agricultural factors are concerned, indicates also the stability in preference and motives of the traditional farmers underlying their lack of demand for additional sources of income. The general situation that Schultz seems to visualize as to the backward nature of traditional subsistence agriculture is not much different from that which exists under the Zambian rural conditions. We quote him once more:

> "There is at best little opportunity for growth from traditional agriculture because farmers have exhausted the profitable production possibilities of the state of the arts at their disposal. Better resource allocation and more savings and investment restricted to the factors of production they are employing will not do much for growth. Despite all that has been written on how to improve the mix of factors in poor communities, the increases in real income to be had from better allocation of the existing factors are small". 3)

What he is saying, et alibi, is that traditional subsistence cultivators have made the best use of their resources and knowledge available to them. Ruthenberg[4], among others, in disputing Schultz' findings, says that agriculture in Tanzania (a case not so much different from Zambia) is not static, but knowledge and technology are continually changing, and that production is being increased by the better allocation of resources and by investment: most, but not all of these changes suggestively being influenced by external factors like Government intervention in the production process. The difference between these views is that Ruthenberg is discussing a transitional agriculture rather than a traditional one. The important point he makes, that traditional subsistence agriculture in its "pure" State does not exist, is probably valid, but this should not delude one into believing that things are moving fast within the subsistence subsector that the problems of low output and marginal returns will soon come to pass.

In our opinion, like that of many others,[5] three factors taken together seem to restrict the growth of agricultural output within the subsistence subsector.

The first one is that in spite of the existence of some unused and potentially cultivable land, production is such that only small areas can be planted and weeded by the family unit at a time, using traditional tools such as the hoe, axe and panga. Prevented in some areas from using draught animals by the tsetse fly - especially in the Luapula and Northern Provinces of Zambia - or by a mere lack of tradition to keep cattle, the subsistence cultivator greatly relies on the application of human labour to small pockets of land.

Secondly, given the traditional technology and the use of basic tools, the few plots tend to be intensively cultivated. As a result they are subject to rapidly diminishing returns (to apply the Ricardian terminology) to increased labour inputs. In such conditions, we shall see below, shifting cultivation is the most economic method of using limited supplies of labour on the more or less open countryside.

The third factor is that since the timing of planting is determined by the onset of the rains, and since much of Zambia experiences only one extended rainy season, the labour demand upon the family members at times of planting and weeding during the early weeks of the season usually exceeds all available rural supplies while some economic and social activities tend to be neglected at such peak periods.

The net result of these three factors has been that the traditional cultivators in Zambia, as elsewhere in rural Africa, "employ a high proportion of their economies' resources at low levels of productivity. Output per man, per hectare of land and even per unit of capita are low."[6] However, as long as the rural population size remains relatively stable, a factor presently being facilitated by rural emigration, the pattern of low productivity

shifting cultivation will enable most of the farm families to meet their subsistence food requirements. But this is definitely not something that will hold on for long; population densities are likely to increase, given the absolute increases in population over the past few decades.[7)]

Another important area one should consider in connection with the above concerns that of the rural cultivators' objectives and values in their day-to-day conduct of the farm unit. This should not be limited to technological standards alone. Understandably, the basic economic assumption of the traditional cultivator differs widely from that of the commercial farmer. It is for this reason that many a field agricultural expert, trained in the art of modern commercial agriculture, errs by trying to apply techniques suited to commercial production to that of the village cultivator who plans his work according to a different system of preferences.

First and foremost is the question of targets and the way they are conceptualised. The agricultural expert tends to assume that the traditional farmer has an annual target conceived in quatitative terms, that he hopes, for instance, to get X units of produce from an hectare; in other words that he wants to maximize returns from his resources. In fact, however, where the marketing of agricultural produce is not traditional, that is to say in nearly all parts of rural Zambia, producers are not accustomed to buy and sell according to any exact system of values and they may not make the cost of calculations as to the size of a field and the crops produced which the agricultural officer expects them to do. Moreover the traditional farmers' system of measurement may not be exact enough to enable them to engage in input-output calculations. All what is important to the traditional cultivator is to distinguish

between large, medium and small yields; he may not bother to calculate the number of baskets or bags of grain he gets from different-sized yields because his way of life does not make this a necessary procedure.[8)]

The traditional subsistence cultivated in addition has a different sense of economic security as compared with the that of the commercial farmer, security for him consists, among other things, not in the amassing of capital but in the maintenance of a network of social links with neighbours able to help in times of need. Under village conditions there are few forms of produce, except stock, which can be stored and forwarded to heirs. Surplus amounts of millets, groundnuts, maize or beans will not last for more than a season in granaries. Cassava, the staple food in one of the areas with which we deal, is left buried in the ground until such a time when it is needed. Under such circumstances a surplus is unlikely to occur and it is indeed no-one's concern within the community to ensure that extra supplies exist. Instead, economic security, is achieved by the maintenance of social ties with Kinsmen and neighbours who are thereby committed to help in adversity. Food must be given to relatives in trouble and it will be received in return. A temporary surplus of food supplies may in fact be valued mainly as a means of expressing important social relationships - in the case of the chief's household, for instance. The use of a seasonal surplus of grain for the brewing of beer to entertain relatives may in fact be a useful way of putting them under an obligation to help. Thus only a man prepared to step out of this traditional network of social relationships would have to be provided with a new system of security in place of the old. He would be taking big risks.

Again the rural cultivator usually has no control over a supply of labour so that it is difficult for him to clear new land in order to work on a bigger scale. Nor is it easy for him to plan ahead without some control over labour beyond that of his family; that is to say without some hired labour. The traditional system provides him with the help of his Kinsmen and neighbours, but only at the cost of giving his own labour in return. The available labour of the village is thereby redistributed and used more conveniently but the total force available is not increased. Moreover the whole population is heavily engaged at peak periods of the agricultural year, at the weeding and harvest seasons for instance, and there is not much spare labour available. In rural Zambia, where paid labour was non-existent until the colonial penetration, only the chief who had rights over tribute labour, was certain of being able to command a labour force when it was needed.

These then are the critical attributes of traditional subsistence agriculture as they broadly apply to rural Zambia. Certainly, a rural community like that found in Zambia which is closely tied to its livelihood, cannot successfully have changes in methods of agricultural production without these being accompanied by changes in social habits and customs. To turn back to Weitz, the cautious note is:

> "Any changes in farming methods perforce brings with it changes in the farmer's way of life. The introduction of biological and technical innovations must therefore be adapted not only to the natural and the economic conditions, but perhaps even more to the attitudes, values and abilities of the mass of producers, who must understand the suggested changes, must be willing to accept them, and must be capable of carrying them out." 9)

On the whole then, the concept of traditional subsistence agriculture implies long-established routines with respect to all production activities. Introducing a new factor of production would not mean only breaking with the past but coping with a problem, because the production possibilities of the new factor will be subject to risks and uncertainties as yet unknown. It is therefore not sufficient merely to adopt the new factors and reap the larger return; learning from experience what new risks and uncertainties are inherent in these factors is also required. These remain the important factors whenever one analyses whatever system of agricultural production.

3. Traditional Farming Systems of Zambia

Systems of traditional subsistence production vary considerably over the whole of Zambia as a result of different local conditions both natural, in terms of soil and climate, and social, as a result of population movements during the last century and the varying degrees of exposure to farming methods brought in by the expatriate farmers during the present century. The simplest form of traditional agriculture is chitemene, which is most common in the northern and North-Western parts of the country. Although chitemene takes a number of modified forms in different parts of the country, the basis of the system, which is a form of shifting cultivation, is to grow subsistence crops (mainly millets and cassava) in wood ash for one, or two or at the most three years on the same site before the site is allowed to revert to a bush fallow for up to twenty, or more years. A more advanced, but also relatively static traditional system is in common practice in Southern, Central and Eastern areas and increasingly so in other parts of the country, where

farm conditions are proving favourable to this kind of agricultural practice. The system itself is based on a simple rotation which is followed, after the cropping of an area up to a period of six years, by a fallow for a similar period before recultivation. Maize and bulrush millet, the main staples, are grown under this system. The two systems are not confined wholly to the areas mentioned; either system can be found in other parts of the country, but on a smaller scale.

Thus, in a more recent survey of Zambia agricultural systems, J. Schultz, has come up with a more detailed classification of 'the basically traditional land use system'.[10] His classification, which is unequalled to any other previous study, mainly encompasses those systems in which agricultural practices are largely based on local traditions, and in which traditional (or predominantly communal) rights to land still exist. The subdivisions are defined by a limited number of diagnostic variables including (a) land tenure, (b) degree of commercialisation, (c) size of holding, (d) orientation of production (i.e. proportion between crop, livestock and/or fish products), (e) intensity of cultivation, (f) implements of cultivation, (g) maintenance of soil fertility and (h) main crops and livestock.[11]

The application of all the eight variables results in the differentiation of twenty (20) basically traditional land use systems, which are in turn combined in five groups, and six commercial land use systems, which in turn are integrated into one general group. The twenty basically land use systems are listed in Table 3.1 below.

Table 3.1: Traditional Land Use Systems of Zambia

I. Shifting axe and hoe cultivation

1. Large circle chitemene system
2. Small circle chitemene system
3. Block chitemene system
4. Mwinilunga intermediate/semi-permanent cultivation system
5. Isoka mixed large circle chitemene/cattle system

II. Semi-permanent hoe cultivation

6. Luangwa system
7. Subsidiary garden system of urban employees

III. Fishing and semi-permanent hoe cultivation

8. Fishing/cassava lake and swamp system
   a. Bangwenlu System
   b. Lower Luapula System
   c. Lake Mweru System
   d. Mweru Wantipa System
   e. Lake Tanganyika System
9. Lukanga Swamp System

IV. Semi-permanent hoe and ox plough cultivation

10. Luvale System
11. Kaoma "
12. Barotse "
13. Sesheke "
14. Gwembe "
15. Mambwe "
16. Ikumbi "
17. Nyika "
18. Zambezi escarpment system

V. Semi-Commercial ox and tractor plough Cultivation

19. Maize/cattle mixed farming system
    a. Southern Plateacu System
    b. Central Plateau System
       Easter Plateau System
20. Namwala System

Source: J. Schultz: Land Use in Zambia,1976.
The table has been reconstructed from his Fig. 2, pp. 10-11.

What Schultz has done in the above classification is to have the subdivisions of the basically traditional land use systems named after the main topographical features of the region. Thus most of the systems listed above carry local names, except in a few cases like the subsidiary garden system of urban employees and that of mixed farming systems to be found in areas of semi-commercial practices.

Schultz' classification, although appears to be somewhat detailed cannot pass without comment. This is mainly to do with the nature of the differences between the listed subsystems. It does not help much, for example, to make a distinction by topographic features alone: the Eastern Plateau should not be distinguished from the Central Plateau by location alone. What we need to know are the type of implements, the method of cultivation, and the intensity of cultivation in practice, together with the social organisation of production. We need to know, for instance, whether the organisation of production is done around the family unit, and if so, to what extent do the members of the household participate in the production process.

Schultz' emphasis on the criteria which seem to draw the distinction in terms of land use practices, like the maintenance of soil fertility through shifting cultivation is important to our own understanding of how the systems differ, but we feel that he should have gone beyond what we here term as a'physical characterisation' of the land use systems. The distinction to be drawn is not only about agricultural practices, it is also about people, who consider themselves as belonging to one, or other of the many tribal groupings to be found within Zambia. Hence, the chitemene system of the Bemba does not only differ from that of the Kaonde, because of the different locations in which they find themselves , but most importantly so in terms of their traditional values and practices; although both groups might have access to similar kinds of implements like that of the hoe and axe.[12)]

Schultz' typology of the land use systems is questionable in yet another sense: by arranging the systems from the shifting axe and hoe cultivation to semi-commercial ox and tractor plough cultivation, this in itself suggests that there is a transition from one to the other. If this is so, then Schultz does not make this point clear. However, even if this was the case, it would require that the conditions through which these systems will have to evolve be relatively the same. But given the diversity in Zambia's climatic and soil conditions, coupled with different tribal traditions, the land use systems that Schultz gives should not be regarded as being transitory. Apart from the fact that some of these systems (like chitemene) have been there since time immemorial, it is difficult to displace them without, first of all, having to restructure the whole social and economic environment.

Thus, any meaningful discussion on Zambia's traditional land use systems, within the context of subsistence agriculture should take into account the basic connections between the defined mode of production (which in our case has been defined as the use of the resources - both human and capital - at the disposal of the family unit, the basic unit of production) and such variables as land tenure, population and density, area cultivated and the importance of yields, and the proportion of marketed to consumed production. These are issues of great importance to the line of argument adopted in this study.

4. Shifting axe and hoe cultivation

Shifting cultivation is usually defined as the most primitive type of agriculture.[13] Pelzer for one described it as "an economy of which the main characteristics are rotation of fields rather than of crops; clearing by means of fire; absence of draught animals and of manuring; use of human labour only; employment of the dibble stick or hoe; short periods of soil occupancy alternating with long fallow periods".[14] It is generally true that shifting cultivators clear with axes and hoes, probably virgin forest (leaving the stumps of large trees scattered over the area), burn the brushwood and raise a crop generally for one or two years in succession, after which the land is rested for a period up to twenty years or more to allow time for soil fertility to be restored by recovery of the natural vegetation.

A system of cultivation as defined above is to be found in practice in the north-eastern and north-western part of Zambia. Its area of distribution according to the Agricultural Census of Zambia 1970/76 estimate covers nearly two fifths of the country, thereby supporting about 28 per cent of the country's present rural population of 3.3 million people.[15] Although chitemene, a local term for the type of shifting cultivayion in practice, takes a number of modified forms (large circle, small circle chitemene. Block chitemene, Mwinilungo intermediate and the Isoka system) in the different locational areas so referred to, the basis of the system is to grow subsistence crops in wood as for two or at the most three seasons on the same site before the site is allowed to revert to a bush fallow up to the time that the forest regenerates. The ash is formed at the beginning of the first year through the burning (which is usually done in early October before the rains start) of branches and trees felled on the site and supplemented by branches off trees from the surrounding thicket (an activity which is done between May and mid of July).

In the first year, finger millet and cassava (which requires two seasons to mature) cuttings are planted in the ash with subsidiary crops such as pumpkins, sweet potatoes, and cucumber on the edge. Once the crops are sown little cultivation is done during growth. No animal manure is used, and generally the only fertiliser the crops receive is the ash from the initial burning which provides potash. Nor is much attempt made to control the exuberant weed growth, except possibly in the second and third years of cropping. Indeed it is the rapidity of weed growth as much as the decline in soil fertility which prompts the abandonment of a chitemene garden. In the second season the

maturing cassava is interplanted with groundnuts and beans. Each farmer will cut and burn a new area annually and will therefore have a number of chitemene circles in production at the same time.

A subsistence farmer is one who ensures against risk and uncertainty - and knows when to do it. It is thus not surprising that in addition to the ash patches away in the bush, every family owns fields near their house, where they grow cassava, beans, sweet potatoes, maize, groundnuts, pumpkins, etc. In these fields, grass turf is cut out with hoes and heaped upside down into small mounds. The layer of earth covering the grass accelerates the rotting process and compost forms quickly. This compost is further utilised when the mounds are flattened later in the rotation cycle. In addition to the compost, manure made of various kinds of refuse may be applied.[16)]

Amongst the Bemba, the major tribal grouping which dominates the north-eastern part of Zambia, land tenure is still predominantly communal and there are frequently co-operative elements in working the land, particularly in clearing the vegetation, sowing and harvesting. To the Bemba communal ownership includes the following concepts: land belongs to the tribe rather than to individuals; boundaries with neighbouring tribal groups are well-defined physical features; the allocation of the communal land is undertaken by the chief or the village headman, but every member has a right to land. But as Richards was able to observe way back in 1933, each individual Bemba person has "freedom to select ground for cultivation as against the right of his chief and his fellow commoners."[17)] That is to say the system allows some flexibility in the choice and allocation of land, which should suit each cultivator the way he sees fit.

Each family unit has the right over the crops grown within the boundaries of his fields. When a field or garden is left fallow, rights to it lapse, except in cases for the fruit of perennial trees. The idea of land alienation has been virtually unknown. Such type of land tenure has in the past been re-inforced by methods of agriculture which only allow a man to cultivate a field two to three years. It would then appear that chitemene works against the likelihood of formalized land tenure because of the instability of residence and settlement and the extent or land brought under cultivation. As White was able to observe way back in 1960, "the limited life of a garden precludes any but the most limited inheritance of land, and this and the absence of population pressure or commercialization of land has likewise prevented land acquiring a value which might find expression in sales of land".[18)]

One should be careful however, when dealing with the issue of land-tenure in Zambia for although it might be communal in some regards, it is certainly individual in others. Except that land is not held for sale under the traditional subsector, specific land rights are acquired and exercised by individuals. Individual land rights can be said to be acquired from society with labour effort employed on a piece of land and seen by society to have been so employed with a view to making it productive.[19)] The rights of an individual once thus established remain permanent unless the individual transfers them to other kinsmen, relinguishes them by abandonment, or he dies.

The size and layout of the chitemene fields vary quite remarkably. Each family may have a number of plots in crops at one time, widely scattered around the village and often at considerable distances away. The size and number of plots, however, varies according to the fertility of the soil, the density of population, the length of the fallow, and to some extent, the likelihood of realising a surplus that could possibly be marketed or exchanged for other goods. Thus, for example, the mean size of area under cultivation for Northern Province has been estimated at 2.38 hectares in the Schultz study, but a more recent survey indicates that this is actually somewhere around 1.89 hectares; this from an average number of four scattered plots per cultivator. This is obviously a low farm size when compared to cultivated fields of the Central Province where they average 6 hectares and reaching up to 20 hectares in some areas.[20)]

The other important distinction to be made when analysing chitemene agriculture concerns the length of the fallow, which in most cases is influenced by the population density and the rate at which it grows, A number of writers have argued that shifting cultivation was once a universal system of farming, that was replaced by more intensive forms of farming as population grew.[21)] Thus Boserup has discounted the significance of environment in causing differences in types of farming and has seen the growth of permanent and intensive systems as a response to the need for greater outputs per hectare to feed an increasing population. She has classified types of land use into forest-fallow, with a fallow of 20-25 years, bush-fallow, with a fallow of 6-10 years, short-fallow, with only a year or two of grass fallow, annual cropping, and finally multi-cropping where the same

plot of land bears two or three crops in the same year.[22] The mechanism of change is population growth. As the fallow is reduced the farmer is compelled to adopt methods of farming which maintain yields, which involves more weeding, more preparation of the soil before seeding, and some method of maintaining soil fertility, such as keeping livestock for their manure, growing complementary crops in rotation, or planting legumes and grasses in leys. This of course involves more work, so that although yields per hectare may be higher than in shifting cultivation, output per man-hour declines.

This explanation is in some way valid, for in Northern Zambia where about twenty years of fallow has been the usual practice for the restoration of soil fertility, the land available for new chitemene preparations becomes increasingly scarce; the village cultivator has either to travel long distances to new areas or has to shorten the fallow. In the area of large circle chitemene, that is Bembaland, the average population density (number of persons per sq.Km.) has been estimated at 3.7. On the other hand however, the critical population density (i.e. the maximum carrying capacity of land at given levels agricultural production) has been calculated at 3.9.[23] The implication behind this is that once population density in the area approach this mark (which is very close indeed), it would prove increasingly difficult for the chitemene cultivator to continue with present-day practices, and if the given estimates are anything to go by, closing the 0.2 gap should not take long for a province which experienced a 0.6 average annual rate of growth for the 1963-1969 period. Since the movement of a village (a rare occasion) and the fields is clearly limited

by the territories of neighbouring communities, our prediction here would be that the chitemene man would be compelled to reduce the period under fallow and clear secondary vegetation before the restoration of soil fertility by the natural fallow is complete.

But in an original study in the late forties Peters found the Lala shifting cultivators, south of the Bemba country, growing millet on poor soils, operating an average cycle of 17 years. Attempts to reduce the cycle to 9-12 years resulted in a loss of yield of 25 per cent, which brought the community below subsistence level.[24] Similarly, Haswell has observed that shifting cultivation (now abandoned) in a region of Gambia could only be operated on a 20-year cycle - on soils exceptionally poor, even by this type of agricultural production.[25]

Hence further increases in population numbers of the tribes of northern Zambia is not likely to lead to the shortening of the fallow season, but more to that of further adjustments in the methods of cultivation. It is not surprising, thus, to find few isolated cases within the province of people slowly adopting new methods of cultivation. Maize, for instance, has for some years now since Independence been grown in northern province and is proving to be a viable commodity, but not without the application of large quantities of chemical fertilisers. Depending on how this turns out in the near future, chitemene at present-day levels may be regarded as a residual feature remaining only in those areas as yet unpenetrated by the plough and where population densities are low enough to allow an adequate fallow.

Nevertheless, under the conditions of poor soils as those prevail in Northern Province, chitemene is a remarkable adjustment to the environment. It certainly has some positive advantages. Burning the felled trees and branches not only clears the underworth but makes it more friable, and thus allow seeding to be undertaken with the minimum of effort. Although burning destroys organic matter, it does provide other nutrients. The intermixture of crops (the majority of farmers cultivate cassava (87% of all holdings), maize (74%), finger millet (65%), groundnuts (60%) and beans (57%))[26] on the same plot of land provides a cover for plants; it protects the soil against leaching and erosion, and this halts a rapid decline in soil fertility. And as we have already described above, chitemene agriculture can be carried on with a minimum of implements - axe, hoe and a match for the fire.

To obtain statistics on the kind of traditional economy set above is a very difficult endeavour to come by an much work has already gone into it but with inconclusive results. Not only is the cost of labour input difficult to determine, but so are the areas under cultivators, the yields from them and the final disposal of the harvested crop.

In the 1977 random pilot survey of traditional farmers in the Central and Northern Provinces, for example, estimates arrived at could not confirm much apart from indicating that the systems of agricultural production existing in the two areas, particularly that of the latter, where at very low production levels only expected of subsistence agriculture. The present writer actively participated in interviewing 35 of the 112 respondents who were covered from eight districts of Northern Province. 106 households were

included in the Central Province Survey. However, since we are here more or less concerned with the Northern Province it is only desirable that we restrict ourselves to the results concerning this region. Incidentally, 95% (or nineteen out of the twenty clusters covered) of the households included in the Northern Province survey were located within the shifting axe and hoe cultivation land use system.[27)]

A wide range of information, including that on size of households, hectarages of crops, farm equipment, distribution of farm income, average hours of farm work and major crops grown, was sought in order to get a fair view of existing agricultural practices under traditional subsistence agriculture. The information has now been processed and we here analyse some of it relevant to the present study.

Accompanying the average of five people per household (rural villages), it was found that the land under maize cultivation in Northern Province is approximately 0.82 of an hectare (or 0.76 under Schultz study, 0.98 in the 1970/71 census); 0.77 for cassava, 0.6' for millets; 0.46 for groundnuts and 0.38 for beans.[28)] Total hectarage adds up to 3.03 which is very low indeed and can only be expected to yield minimal crops for household consumption. In addition, only a few households were found to be keeping livestock of one kind or another. The highest count of cattle went up to a mere 93 heads for one Isoka traditional farmer. This is considered to be very high in an area where usually only a few local chickens are reared.

Table 3.2

Technology systems of major crops under traditional subsistence agriculture: Northern Province

Crop	No. growing	Percentage	Mean Hectares grown	% of Crop mixed	Tillage			Planting			Spacing				Seeding		
					Hand	Oxen	Tractor	Hand/ Oxen	Hand	Behind Plough	Planter	Broadcast	Rows without spacing	Rows with spacing	Perc. using fertiliser	H/ brid	Local	Average variable cost per/ Ha.K.
Maize	73	65.2	0.82	27.5	92.4	-	7.6	-	100.0	-	-	6.1	12.1	81.8	75.8	66.7	33.3	58.53
Millets	84	75.0	0.60	73.3	95.2	-	4.8	-	100.0	-	-	92.9	5.9	1.2	10.7	-	100.0	17.87
Cassava	91	81.3	0.77	50.0	100	-	-	-	100	-	-	39.1	50.7	10.2	-	-	100	16.89
G/nuts	73	65.2	0.46	61.9	95.8	-	4.2	-	100	-	-	70.8	16.7	12.5	8.3	-	100	45.58
Beans	69	61.6	0.38	36.2	96.3	1.8	1.8	-	100	-	-	57.4	27.8	14.8	5.6	-	100	36.59

Source: Report of a Random Pilot Survey of Traditional Farmers in the Central and Northern Provinces of Zambia by C.R. Joseph, Min. of Lands and Agriculture, Lusaka, September 1977. P.44

Note: Figures for tillage, planting, spacing and seeding are given in percentage terms.

In addition, the results showed that most of the cultivation is still being done by hand, i.e. using either hoe or axe. As evident from Table 3.2, planting for all crops was entirely done by hand; tillage of cassava fields was also by hand and few of other implements were used in the case of other crops like maize and finger millet. Thus, while the use of oxen plough is in predominant use in other traditional land use systems this does not seem to be the case under chitemene where the hoe and axe are seen as authentic and cannot therefore easily be abandoned in preference of other "unknown" tools.

Similarly, the majority of traditional farmers in northern province prefer to broadcast their seeds when planting since this is the only way they can ensure maximum returns, particularly in chitemene fields where the goal is to maximize land utilisation. Under such practices it has been estimated from the same data that for the whole Province a traditional farmer needs to cultivate at least 0.33 of an hectare for every individual supported by subsistence agriculture.[29] There can be only one meaning to this: rural households have to toil before they can ensure that the level of crop production for survival has been reached.

Also evident from Table 3.2 is the fact that the average variable cost per hectare, that is, labour and other farm inputs, is tremendously low under chitemene. The figure was arrived at by asking each of the traditional farmers interviewed to give a cash equivalent of their expenditure on farm inputs of particular crops. This was found to be lowest in the case of cassava where the only input paid for was the occasional hire of labour to clear the land and

make earth mounds, both activities which are very much labour demanding. It was only K16.89 as compared to that of maize cultivation in which costs amounted to K58.53 on average. For all the granaries of various sizes that are filled at the end of each harvest season, it would appear that the factor input under subsistence agriculture is low.

Another factor which makes the calculation of costs of production under subsistence agriculture difficult is that nearly all the produce is home processed before consumption. In the case of finger millet, for instance, it is threshed by women before it is ground under a slab to make flour. On the other hand costs of processing maize differ, depending on the method used. Those who cannot afford, or want to save the little cash that they have, do not take their maize to established millers but instead grind their own in mortars using a pestle. The cost of processing a 90 Kg bag of maize by a roller mill stood at K 2.30 in April 1977 and excludes transportation costs to and from a mill.[30)]

Furthermore, although the data on labour inputs under chitemene are of necessity difficult to come by, a certain minimum number of hours are needed to ensure that the farmer and his family do not starve in any one year. Contrary to what is generally claimed by most Western Scholars like Allan[31)] that the African village cultivators is a lazy person who spends most of his day-time squatting around a pot of local beer, the Pilot Survey... established that he must at least devote 5.59 hours per day to land clearing, 5.84 hour for tilling the land, 5.53 hours for planting; 5.49 goes into weeding and at least 6.03 hours daily, according to the season of the year. A detailed break-down of these averages is presented in Table 3.3.

Table 3.3

Average daily hours of farm work according to activities

	Land clearing			Ploughing			Planting			Weeding			Harvesting		
District	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
Mpika	12	5.83	1.85	11	6.00	2.14	12	5.58	1.62	12	5.75	2.26	12	6.08	2.02
Isoka	13	5.23	1.92	16	5.62	1.93	16	5.50	1.90	16	5.50	1.75	16	5.69	1.96
Mbala	21	6.00	1.82	22	6.54	1.69	22	6.36	1.55	22	6.00	1.45	22	6.54	1.78
Luwingu	14	5.00	1.75	18	5.11	1.30	18	4.72	1.53	18	5.05	1.39	18	5.67	2.05
Mporokoso	6	5.00	1.09	6	5.17	0.98	6	5.00	0.89	6	5.00	1.09	6	5.00	0.89
Kapta	5	4.40	2.07	6	5.17	1.83	6	4.17	0.98	6	4.50	0.84	6	4.67	2.06
Chinsali	10	4.40	1.07	10	4.80	1.13	10	4.60	0.97	10	4.10	1.29	10	5.40	1.43
Kasama	17	6.94	1.72	22	6.64	1.99	22	6.27	1.97	21	6.24	1.97	22	7.00	1.93
Total Northern	98	5.59	1.85	111	5.84	1.77	112	5.53	1.72	111	5.49	1.75	112	6.03	1.92

Source: Report on a Random Pilot Survey of Traditional Farmers in the Central and Northern Provinces of Zambia compiled by C.R. Joseph, Min. of Lands and Agriculture, Lusaka, September 1977 p. 25.

The most laborious period is that of clearing the bush (both felling trees and uprooting shrubs); this is followed by tilling and weeding. However, as the Pilot Survey... data show, more time, especially by women, is spent on harvesting - the most labour-demanding activity being that of harvesting groundnuts and finger millet.

Yields were very difficult to determine from the survey. Cassava for one is a tuber that can be left lying in the ground for a long time without spoiling and therefore the rural farmer does not care to know (if he could) the number of tubers still in the gound, and this is thus difficult to measure. For other crops like millet, groundnuts and maize, the harvesting of which is done mostly using home-made baskets of varying sizes, also is difficult to determine. To the traditional farmer, a good harvest is told by the bigness of a granary that is filled; its size also unknown in available units of measurement. More important, the sowing of crop seeds at different times of the season, twice for beans for example, and the great variety grown (enumerated above), ensure a regular supply of food over a long period, rather than a concentration of harvesting in a short spell.

Banda, in line with F.A.O., has recommended that in order to estimate production of major food crops (maize, millet, sorghum, cassava, groundnuts and beans), periodic censuses of subsistence agriculture should be conducted throughout Zambia, preferably at intervals of five to ten years.[32] He goes further to assert that the estimate of rural household consumption could be taken as equivalent to the quantities assumed available to the households, less sales to the official marketing boards.[33] The major handicap with such, and

other similar recommendations is that although they may sound grand ideas at the first hearing, they rarely provide for the measuring instruments by which subsistence production may be weighted. Banda's suggestion that rural household consumption be valued at producer price equivalents for each crop,[34] is only valid insofaras one can determine the produce retained by rural households in measurable, quantitative terms. This is the big problem, for no recordings are made of that part of the rural produce which does not enter the monetary sector. The situation is further complicated by the baster transactions taking place within the subsistence sector which, if anything, would be very difficult to calculate. However, countrywide applicable prices for various food crops are not available for the calculation of value.

One study which has so far come closer to estimating the production and consumption levels of food crops under subsistence agriculture in Zambia has been the F.A.O. Food consumption survey conducted between 1969 and 1972.[35] According to the F.A.O. survey, which was based on more than 2,000 households observed at two different seasons from all regions of Zambia except the Luapula Province, average food intake figures (per capita) have been calculated and grouped by farming regions. For large circle chitemene, for example, the mean annual food intake (excluding, livestock products) has been estimated at per capita 121.1 Kgs. for cassava; 36.0 Kgs. for finger millet; 26.4 for vegetables; 17.1 Kgs. for maize and 3.8 Kgs. for groundnuts - nearly all of which are provided by the family farm.[36] Similar distributions are to be observed for the other farming regions, depending on the importance attached to the various food crops in each of the regions. Maize (156.5 Kgs.) and Sorghum

(9.9 Kgs.) for instance, predominate on the Central Plateau.[37] The full distribution for all farming regions is given in Appendix A.

However, like the income per capita for a given region or country, the food intake per capita arrived at in the F.A.O. survey does not take into account the differences that exist within and between households. It assumes that every member of the family (from the young to the very old) consume equal quantities of the food crops grown on the family farm. Since this is not the consumption pattern which one is likely to find in reality (given the differences in taste and availability of food per household), the F.A.O. figures are, by and large, mere approximations which might not hold to be true when subjected to further empirical investigation. Nonetheless, the whole F.A.O. exercise was worthy undertaking as it gives us some clue to the agricultural and consumption patterns to be found under subsistence agriculture, particularly that of the large circle chitemene system of the Bemba people of the Northern Province of Zambia. Full credit should go to the F.A.O. survey team.

For all what has been said above, chitemene can be seen to have fortified itself as the only method of cultivation which gives the Bemba man a reasonable return for a limited input of labour, and negligible inputs of capital. Thus in chitemene, the crucial aspects of traditional subsistence agriculture are defined.

5. Semi-Commercial ox and tractor plough

The land use system which represents a rather more advanced type of subsistence agriculture is that under which the farmers do not only aim at growing enough to feed their families, but also aspire to produce a surplus which they can put on the market to give them some cash income. A notable factor which distinguishes this type of farmer from those in the traditional sector is that he has been able over the years to adopt new methods of production. A farmer in this category, to be referred to as "emergent farmer" is one who has began "using artificial fertilisers, high yielding varieties of seeds, chemical pest and weed control and increasing amounts of mechanisation".[38] The presence of cattle in areas where this form of agriculture is now predominant, that is, the Southern Plateau, the Namwala region, the Southern part of the Central Plateau and Eastern Plateau, offers the opportunity for ox-drawn ploughing and hence the area under cultivation is certainly larger. Moreover, the cattle dung in most cases can be applied as manure, assisting in the maintenance of soil fertility, and replacing the role that ash plays under chitemene. In all, the emergent farmer is associated with an increasing scale of production, employment of labour and much higher intensity of capital utilisation than with those in the traditional sector. But like the chitemene cultivator, an emergent farmer does not grow a predominant crop, prefering to first ensure for his own subsistence - a factor which puts him a step behind a fully-fledged commercial farmer.

Again, based on information supplied by the Agricultural Census of Zambia, 1970/71 Schultz has calculated that this farming system encompasses 10 per cent of Zambia's land surface. It incorporates 20 per cent of the total and 28 per cent of the rural population.[39] The high proportion of population to land clearly points to the fact that this is a fertile region ideal for the kind of farming to be found.

In the mentioned areas where the use of ox and tractor cultivation predominate, one finds comparatively large, rectangular fields in block or strict formation, which are linked closely together in places and show a well-laid out pattern. The application of chemical fertilizers and cattle manure enables the emergent farmer to cultivate on a more permanent basis, ensuring that he concentrates on a fewer number of crops than under traditional subsistence agriculture.

However, like their fellow countrymen in the north, the administering of customary law among the Tonga of the Southern Plateau, the Ila-Kaonde of the Central Plateau and the Chewa-Ngomi of the Eastern Plateau, remains such that no one lacks sufficient land for his crops while any cultivable land remains not actually in crop, and kinship obligations ensure that no one starves while the community has food. In fact, Schultz sees this lack of formal titles to land as being decisive for grouping agricultural practices of emergent farmers together with that of the basically traditional systems.[40] We feel, however, it is the proportion of consumed production that should be the main indication of whether a farmer aims at subsistence first, and the market second.

Some authorities would not describe the Tonga as a tribe but rather as a collection of related peoples. The fact, that they lacked a strongly centralized organization, has made them to develop along the lines of individualism rather more strongly than other tribes.[41] As Vaux noted, "communal land tenure, which suited the era of shifting cultivation and provides the Keystone of tribal administration, was threatened immediately the first European settler took up land in the district, and is now on the road to eventual collapse. The weak tribal structures do not promise much support against the pressures of modern conditions".[42] The same holds true of the Chewa - Nsenga on the Eastern Plateau and the Ila-Kaonde of the Central Plateau; both regions in which "peasant farms" were being tried as early as 1948.[43] They are the somewhat fortunate traditional cultivators who have had the opportunity of being in close proximity of modern methods of farming introduced by White settlers along the old line-of-rail. Whereas a study of the emulative effects that might have been brought about as a result of such a contact, would not be in line with the aims of the present study, it is reasonable to assume that there has been some considerable impact on traditional agriculture found in these parts of the country. The subsistence farmer has broken away, or is steadily breaking away from the arts of his predecessors; hence the divergence from the chitemene system of the North. In addition, the high demand for foodstuffs on the copperbelt and the rail link which exists to this market (with the exception of Eastern Plateau) have favoured the agricultural development of these regions since many years.

The data, for the empirical investigations of this part of the study, are from two areas: one on the Central Platean and the other from the Eastern Plateau. In a well known research project, the Universities of Nottingham and Zambia Agricultural Labour Productivity Investigation (hereafter UNZALPI), it is stated that "the need to raise agricultural productivity as an essential component in economic development is well known, but the most effective ways of bringing about the needed improvement are not always self-evident and scarce resources for the development can easily be misapplied."[44] Working on the assumption that there are large areas of potentially productive uncultivated, and a high proportion of population engaged in subsistence farming and operating at comparatively low levels, the UNZALPI survey was an attempt to provide detailed information for achieving a better knowledge of the underlying relationship. The extent to which this goes to meet the requirements of the present study remains to be seen.

The data supplied by the UNZALPI project include: "information about the families, the land which they cultivated, their activities during the whole of the 12-hour working day, their incomes and expenditures, the means of production which they used and the quantity and disposal of the agricultural products obtained."[45] In this study we intend to look into the results of these variables, except the one about families which we do not consider to be important. At the same time we do not hesitate to incorporate other data which might make our analysis even more realistic.

The areas were carefully selected, one around Mumbwa district in the Central Province and the other, near and around Katete district in the Eastern Province.

The rainfall in the two areas is similar at, an average, 88 cm and falling between the month of November and March. The soils also are known, from past surveys,[46] to be similar. Both rainfall and soils being important constraints on productivity.

The tribes in the Mumbwa area are mixed, the Kaonde/Ila group being in majority, followed by a group of African immigrant farmers (about a fifth of total of approx., 60,000) from Rhodesia. The only tribe represented in the survey from Katete district was the Chewa.

Maize occupies most of the cropped land in both areas, while sargum and groundnuts are grown around Mumbwa, but the growing of groundnuts is more important around Katete contributing more to the cash income than maize. Cattle are kept by a few farmers in both areas and are not regarded as income earner but are for status and stores of wealth. A few of them are used for draught purposes, however.

The services, including a vetenary service office, a credit board office, a marketing depot are concentrated around the town (Boma) of Mumbwa. However, it must be emphasized that these services only meet the farmers' minimal requirements and cannot therefore be expected to cope with individual problems. In fact, from the survey information, very little contact was made except with the marketing depot. The services for Katete are a little different, in that there is a marketing co-operative society which provides an important economic agent for the farmers. The Eastern Co-operative Union (E.C.U.)* is made up of many private co-operative societies. Each society has a store, a shop and a meeting place for farmers. The society provides farmers with their equipment and other consumer goods. Marketing arrangements are made by the society which then exports the crops, mainly maize and groundnuts to Lusaka.

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* formerly, Eastern Province Cooperative Marketing Association (EPCMA)

The only big difference between the two survey areas is that, whereas Mumbwa is only some 160 kilometres nort-west of the Capital City, Lusaka, Katete is three times (about 512 kilometres) further away to the east.

At the end of the survey period (running from the 1966/67 to 1968/69 crop season), a total number of 239 households from both areas had been adequately covered. The realibility of these data cannot be overemphasized. The accuracy of the information obtained from the survey is said to be "...unusually detailed, involving daily observations of the activies, income and expenditure of the whole sample of families. A complex system of cross checks was developed which entailed competitive checks on village enumerators by their own colleagues, financial bonuses and penalties determined by the accuracy of the data, visual checks on data sheets by Field Officers and computer checks on variables which would normally fall within definable limits".[47] On top of that, the first season 1967/68 was designated as a pilot year for data collection, to override any unforeseen difficulties. It was in fact the data collected in year 3 that were used most for the final processing.

Perhaps the ingenuity of the UNZALPI survey lay in the classification of the respondents into 'villagers' and 'farmers', a characterisation somewhat familiar to those working in the Department of Agriculture. It is stated in one of the UNZALPI reports that "villagers have no real interest in making a cash income..... they are cultivators because that is a way to live and because it is the way their father lived.... they do not view their farming activities as a source of income and are not anxious to expand production".

By contrast, "farmers endeavour to produce a surplus to generate income....they intend to become more productive and therefore wealthier through farming".[48)]

Understandably, the villager-farmer distinction given in the UNZALPI survey is a matter of attitude towards farming on the part of cultivators concerned. It is a distinction which is based on subjective evaluation of a cultivator's intention rather than achievement. More than anything else, it assumes that cultivators either have the motivation to produce more, or it is the lack of it that keeps their production levels low. Motivation, in this context, has been defined as "a couscious desire to earn money regularly through farming...., in order to participate in the modern way of life".[49)] Thus based on this definition, on the one hand, "villagers" in the UNZALPI survey become those cultivators who do not possess the motivation to produce more in order to earn more and, on the other, "farmers" are those who are motivated to earn money through farming to raise their standard of living.[50)]

On our part, it is difficult to imagine how one can proceed on this criterion alone to classify cultivators into "villagers" and "farmers". If anything, the UNZALPI definition of the two categories of cultivators sounds tautological and remains ambiguous. It should have clearly been stated that other factors also were important in distinguishing between the two broad categories of cultivators. We have in mind here the differences in the use of motive power, the engagement of hired labour; the differences in acreages and production levels and so on. These differences may be based on physical and economic constraints rather than attitudes. It is from such data in fact that the distinction between villager and farmer could have

been arrived at. Hence, the grouping of respondents into 'villagers' and 'farmers' could only have been done after the survey had been completed and not before.

Table 3.4 below has been constructed on the basis of the UNZALPI survey data, showing the relative distribution of 'villagers' and 'farmers' in the two areas of Mumbwa and Katete.

Table 3.4

Distribution of 'Villagers' and 'Farmers' in the UNZALPI Survey

	Mumbwa		Katete		
	No.	%	No.	%	% Total
Villagers	68	50	77	74	61
Farmers	67	50	26	27	39
	135		103		
Total	238				

Source: Compiled from UNZALPI Report No. 3

Motivation apart, the above classification was based on the differences that exist among any group of cultivators. It was established that 'farmers' have larger acreages, higher production levels, greater utilisation of motive power and labour is used more intensively. In addition, it was found that 'farmers' have more experience of commercial farming, are better informed about it, are more highly educated and are more alert to their wider environment. In Mumbwa, for example, and with respect to maize growing in Year 3, the UNZALPI survey showed that 'villagers' planted only 3.5 acres on the average compared with over 16 acres planted by

'farmers'. Total production by villagers was only one eighththat of farmers, though the number of each were nearly the same at 68 and 67 respondents, respectively. Farmers were much greater users of motive power. On the average they used 44 hours of tractor-power and 172 hours of oxen-power per year: villagers by contrast used only 4 tractor-hours and 11 oxen-hours. Farmers had access to greater supplies of labour and used that labour to a greater extent, and so on.[51)]

Presented in Table 3.5 is a summary for the major crops the acreage decisions of villagers and farmers in each of the sample areas for year 3. From it two

Table 3.5

Total Acreages under Cultivation amongst Mumbwa/Katete Cultivators: selected crops

	Mumbwa		Katete	
	Farmers (N=67)	Villagers (N=68)	Farmers (N=27)	Villagers (N=77)
Crop	Major crops Acres	Major crops Acres	Major crops Acres	Major crops Acres
Beans	11.9	1.7	2.9	1.7
Bullrush millet	23.5	-	-	-
Cotton	24.6	-	3.2	-
Cow beans (peas)	0.1	-	8.8	17.1
Groundnuts	172.0	7.9	59.9	49.5
Maize	1091.8	235.9	250.3	250.3
Sweat potatoes	1.6	2.9	4.1	9.0
Burley tobacco	-	0.3	6.7	-
Vegetables	7.8	3.9	7.9	4.2
Totals	1333.3	256.8	343.8	331.8

Sources: Extracted from Tables 1 & 2 of UNZALPI no. 3, p. 11.

points emerge clearly. First, farmers grow a wider range of crops than villagers. Although this difference is more marked in Mumbwa than Katete, it is clear that the range of crops grown as major crops by farmers results from their greater orientation to market demands - for example the production of cotton, tobacco, beans and vegetables. Mambwa farmers are therefore likely to be more responsive to market conditions than their Katete counterparts. Secondly, it is evident that the farmers have greater average in production than the villagers. This is true of every crop except sweet potatoes, which is basically a subsistence crop. As it is to be expected the difference is most pronounced in the staple crops, i.e. maize, millet and groundnuts. In Mumbwa, for instance, the difference per head is nearly fivefold in maize and much greater in groundnuts. On the basis of total cropped areas, farmers had 22.8 acres and villagers. 4.9 acres in Mumbwa: in Katete farmers had 9.2 acres under cultivation compared to 4.3 acres by villagers.[52)] The differences in acreage are less market in Katete than in Mumbwa. What could be the explanation to this difference?

From above we learn that the farmer is, among his many other characteristics, one who is motivated by the desire to each more cash income by growing more crops for sale and therefore has an incentive to increase production by increasing acreage. The area under cultivation has to be extended because very little oportunities exist for obtaining higher yields on the same piece of cropped land. But motivation alone is not enough. Adequate resources must also be available; for therein lies the explanation as to how the farmer underscores the village cultivator. As Marter and Honeybone have argued, "a large proportion of households

resources in particular are likely to act as a major constraint and this situation is aggravated by the distribution of farm equipment."[53)]

Thus, in the case of farmers who have a relatively higher acreage illustrated by the figures in Table 3.5 above, it is a necessity that they also get adequate supply of labour and motive power. Likewise, the UNZALPI data showed that farmers tend to have larger families than village cultivators, placing them at an advantage with an average labour supply for maize growers at about 5.6 persons as compared to 3.9 persons for the villager in the Mumbwa area. This was 4.5 persons contrasted to 3.5 persons in the Katete sample.[54)] These figures are, in our opinion, gross underestimates of the average household size (rural villages). For as the Zambian National Food Consumption Survey of FAO showed, this is around the mark of 6.1 persons per household for Central Province.[55)] Nevertheless, this does not diminish the significance of the UNZALPI data which clearly point to the relative difference in household sizes of village cultivators and farmers.

Furthermore, it was found that farmers had in addition access to substantially greater amounts of motive power for both maize and groundnut cultivation than did villagers. Predictably, this distinction was more marked in Mumbwa than in Katete. This is given for maize in Table 3.6 below.

Katete maize growers were found to have the lowest figure for the use of a tractor. The main explanation to this difference lay in that whereas some farmers at Mumbwa owned tractors, those around Katete depended entirely on Government contracting, a service ineffectively operated. The disparity was even more

Table 3.6

Average Motive Power Supply for Maize Production amongst Survey Cultivators

	Farmers				Villagers			
	Mumbwa		Katete		Mumbwa		Katete	
	Hours[1]	Index[2]	Hours	Indes	Hours	Index	Hours	Index
Tractor	44.16	100	0.41	1	4.01	9	0.25	1
Oxen	171.66	100	155.59	91	11.32	7	35.90	21

Source: UNZALPI No. 3 Table 5, p. 15.
Note: 1. Hours shown are averages per cultivator growing maize.
2. Index based on Mumbwa farmer = 100.

pronounced between the supply of oxen power. In Mumbwa, farmers used over 15 times as much oxen power as villagers on their maize. However, as the authors of UNZALPI reports observed, "these figures are somewhat misleading" since some farmers used their tractors for purposes (e.g. as personal transport vehicle) other than ploughing.

This leads us to investigate the time requirement for the cultivation of crops given the wide range of equipment (both animate and inanimate) in use. Perhaps it helps more to analyse such utilisation figures on a per acre basis for maize, for which data are available.

Table 3.7

Average Hours per Acre of Labour and Motive Power for Maize amongst Survey Cultivators

	Mumbwa		Katete	
	Farmers	Villagers	Farmers	Villagers
Tractor	2.71	1.16	0.07	0.08
Oxen	10.54	3.28	27.39	11.05
Adult males	56.29[1]	101.40	103.35	135.02
Adult females	80.00	124.46	156.87	231.71
Children 8 years	18.16	8.78	24.44	25.47

Source: UNZALPI report no. 3. Table 11 p. 21.

Note 1: Labour figures were collected on the basis of a twelve-hour day.

Evident from Table 3.7 above is that, on a per acre basis, villagers devote substantially more labour to the production of their crops. That this is not simply the result of greater use of tractors of farmers is suggested by the Katete figures and by the limited degree of substitutability between motive power and human labour unless the villager or farmer has access to a full range of implements. The willingness of villagers to spend so many hours working in the fields derives from traditional farming practices. Traditional agriculture is based on the mazimisation of security: villagers cannot afford to let the crop fail for they depend upon it for their subsistence. For this reason we can argue that, contrary to the UNZALPI definition, the ordinary village cultivator has also motivation to maintain his crop, a motivation to reduce on risks and attend to the cultivation of those crops which provide him with the necessary security he so much requires.

On the other hand, a farmer aims at the maximisation of profit, and in so doing take risks which a traditional cultivator would not take. It is not just a matter of his workingharder, but also of his adopting the improved practices of modern farm technology.[56] Thus it was found under the UNZALPI survey that the farmer spreads his labour more thinly over a greater acreage in the hope of producing a substantial surplus for sale. Because his management decisions tend to be much better, his lower labour input per acre is on average accompanied by a higher yield.

Hence the village cultivator must devote more labour time to an acre where the farmer, because of his ... management skills and the use of modern farming practices devotes less. From this it follows that the farmer is more efficient per acre than the village cultivator, but it is difficult to tell whether the farmer, as an individual, is more efficient than the villager who might be allocating his time more efficientyly under traditional agriculture. Since any labour inputs under two systems of production are difficult to compare, it is better to compare the efficiency of each cultivator per acre, which can be based on the yields per acre under each system of production. Even then however, the whole notion of efficiency is incomplete unless we know the efficiency levels in other sectors of the economy. For the requirements of this study, suffice it to say that the village cultivator and the improved farmer operate at different levels of production, given the different nature of their farming practices.

This brings us to another important factor we should consider: yields associated with input utilisation. The case of maize production is again taken up, for consistency. In Table 3.8 a number of interesting points come up.

Table 3.8

Yields of Maize Associated with the use of Labour and Motive Power for Survey Cultivators

Resource	Mumbwa				Katete			
	Farmers		Villagers		Farmers		Villagers	
	Pound(lb) maize and Ngwee value per hour of resource use							
	lb.[a]	Ngwee	lb.	Ngwee	lb.	Ngwee	lb.	Ngwee
Tractor	101	151.8	35	52.5	215	236.5	228	250.8
Oxen	17	25.5	14	21.0	55	60.5	8	8.8
Labour	3	5.0	10	15.5	4	4.8	4	1.5

Source: UNZALPI Report no. 3, p. 47.

Note: a) Nearly all yields by the various means of input utilisation at Mumbwa were found to be significant, and only some at Katete were significant.

The first point is that the average return per hour of labour for villagers and farmers who were not using motive power varied between 1.5 (Katete villager) and 5 Ngwee (Mumbwa farmer) per labour hour. Given the low wage rates in the agricultural sector (about 20 Ngwee per day at the time of the survey), those farmers using motive power should not have found it difficult to hire labour to help in weeding and harvesting on relatively larger acreages. For the poor villager, however, even at these low rates of engaging labour, could not have paid much in return, given the small acreages normally cultivated under traditional subsistence agriculture. Secondly, it is clear from the Table that for those villagers and farmers who were using oxen (for ploughing, cultivating and carting) the average productivities from maize were high.[57] They fell

within the range of 9 Ngwee per hour to 60 Ngwee per hour, both the lower and upper limits being for Katete farmers. These figures compared with the use of human labour were highly profitable, and, given the financial difficulties of acquiring inanimate power like tractors, could be applied on an extended scale.

At the upper end of the scale, though expensive, remained the possibility of using tractor motive power. As can be seen from Table 3.8, favourable conditions for its introduction seemed to exist in the Mumbwa area. There, average returns per hour of tractor use ranged from 52 Ngwee for the villages to approximately 152 Ngwee per tractor-hour for the farmer. The introduction of highly mechanised agriculture should, however, be carefully considered. It is clear that a tractor is a highly capital-intensive farm equipment, capable of replacing more than 100 people working with hoes.[58] But, although the introduction of tractors may lead to increased agricultural production on a national level, it is unlikely to lead to the desired development of, and by the majority of the people. It may raise by ten-fold the returns of farmers, but it is unlikely to have any effect upon the thousands of villagers who do not have the resource to hire or purchase a tractor.

Moreover, the introduction of a tractor into a traditional subsistence economy disrupts the organisation of production since very rarely is it accompanied by changes that could facilitate its very adoption. One may find, for instance, that an increase in acreage ploughed using a tractor which is not accompanied by a corresponding increase in labour for weeding and harvesting may soon go to waste since the limited family labour cannot cope with the new situation. At

the other extreme, the limited marketing facilities may not also be sufficient to cope with increased production, and so on.

Seen from another angle, the introduction of a highly mechanised equipment like a tractor among a group of subsistence farmers who are used to less sophisticated farm equipment may have disastrous results. From Zambia's rural districts, there are numerous reports of village farmer who discard the hoe and every ploughing season, therefore, have to await the arrival of a tractor from the Government's Mechanised Services Unit. This implies that if the ploughing by tractor is done late (as has become the norm in some areas), then everything that follows definitely falls behind schedule.

In the final analysis, however, the adoption of either the oxen or tractor, if not both, depends on their availability, hire charges, how many owners are prepared to hire their oxen or tractor out, and the attitude of those who adopt the use of new farm inputs.

An assertion that was earlier made was that the proportion of marketed produce to the total should be a good indicator of the type of a cultivator one is supposed to be. If the proportion of marketed production is high, we are inclined to believe that such a cultivator aims at producing not only for subsistence needs, but also for something extra that he can put on the market in exchange for cash. If the proportion is low, or not significant, then such a cultivator is a subsistence farmer in the most sense of the word. To substantiate, the data came from the first year of the UNZALPI Survey. The procedure was simply one of estimating the utilisation of maize produced under different methods of production. The results from a smaller sample of 72 respondents are presented in Table 3.9 on the next page.

Table 3.9

Utilisation of Maize Production under Different Methods of Planning

Year 1

	Broadcast[1]		Rows without spacing[2]				Rows with spacing[3]	
	Mumbwa		Mumbwa		Katete		Mumbwa	
	bags	%	bags	%	bags	%	bags	%
Own consumption	107	57	114	23	468	82	154	14
Sold to either Namboard or E.C.V.[4]	69	37	371	74	102	18	879	82
Sold through other channels	13	6	15	3			37	4
Totals	189	100	500	100	570	100	1,070	100
Kept for human consumption lb. per person a day	1.15		1.15		1.75		1.03	

Source: UNZALPI Report no. 2, p. 14.

1. Seeds are dropped regularly either by a random slashing with a hoe or in a furrow behind an ox or tractor-drawn plough. This method was found to be used mostly by "villagers" especially using the hoe.
2. The seeds are dropped in marked rows but without regular spacing between them. A method applied by those cultivators slightly beyond a common villager.
3. Seeds are placed in the ground at regular intervals, between 9 and 18 inches. This could be done by using a line, wire; or a planter.
4. Namboard is the main marketing channel in the Central Province and the Eastern Cooperative Union (E.C.U.) the main channel in Eastern Province.

It was evident that 57 per cent of the crop obtained by those cultivators who broadcast their maize seeds was retained for home consumption. While, at the other end of the scale of yield per acre, only 14 per cent was kept by those farmers who planted in rows with regular spacing of the seed. But when we look at the category of cultivators who planted their seeds in 'rows without spacing', we find that the same expected differences between Mumbwa and Katete cultivators did occur. Their patterns of utilisation were approximately the converse of one another, with 82 per cent being consumed in Katete; but only 23 per cent in Mumbwa. Clearly, the difference was the result of higher yields in Mumbwa compared to Katete, although the apparent difference in diets should not be ruled out. Even more interesting a comparison was what is given at the bottom of the Table. Whilst the farmers in Mumbwe kept only 1.15 lb per day the farmers in Katete kept 1.75 lb of maize per person a day. Thus, we should expect Katete cultivators to be spending a great deal less on food than farmers in Mumbwa. A fact supported by Katete villagers having a greater variety of vegetables and other subsistence crops (see Table 3.5) than the farmers have in Mumbwa.

Still interesting was the observation that although money has increasingly been used as a form of exchange since the advent of European settlers, some form of barter trade prevails.[49] It was found that maize in particular is still commonly used for barter, especially in exchange for salt or fish; for payment of labour, especially during weeding; and in exchange for baskets and other handicraft items like stools, floor mats, tin containers and braizers. For most, however, barter

was used only to fulfil the small needs of cultivators and was seldom undertaken for the sake of profit. That barter is deeply entrenched in the social and economic life of the villager, and is, therefore, more than a substitute for a cash transaction, is suggested by the fact that there was no observable relationship between income levels and the incidence of barter. In addition, the rate at which commodities changed hands in barter was independent of their cash values. The relatively wealthy Mumbwa farmers were conducting as many barter transactions as poor Katete farmers.[59)]

6. A Summary Assessment

From what has been said in the last two sections, it is clear that the subsistence sector is by no means one homogeneous production system. Within it, a number of subsystems can be identified. From that of low level Shifting agriculture or chitemene, one can proceed upwards to a system that is not only different from low forms of agriculture, but resembles that of more modern forms of production. The second section which dealt with a form of semi-commercial ox and tractor plough cultivation within the context of the two survey areas is of particular importance in that we have been able to demonstrate that good cultivation techniques and the efficient employment of labour will result in higher yields than those which can be obtained from better seeds used in conjunction with poor practices and the inefficient employment of labour.

Admittedly, the cost of labour input is particularly difficult to determine. As we have seen under the two basically traditional land use systems, labour still is the most important means of influencing output, either through its importance as a creater of land

through clearing activities and of capital through its use to build cultivators houses and mould basic farm equipment. On this issue alone, the critical question is not whether added labour or capital would increase production but whether the incremental increase in value of production is greater than the incremental cost of the added labour or capital. It may be appropriate under certain conditions, to view such labour and capital as costless to society, but it is certainly not costless to the individual. Moreover there is the question of kinship obligations which prevent an individual subsistance farmer from making full use of his resources and which also tend to prevent him accumulate capital and applying such capital as he can accumulate to the improvement of his own holding.

As part of some preliminary observations it can here be stated that the level of capital at present employment is remarkably low; the degree of technical competence by modern standards is also low, even within the limits set by lack of capital. The isolation of this sector (although not necessarily of the people practising it) from the rest of the economy is also remarkable.

Because of the very low level of capital stock common to most of the subsistence sector, the return to investment is certainly high. To this extent, because of a low input of capital is sufficient to bring substantial development, the opportunity cost in terms of investment is low. With regard to human development, the opportunity cost is rather higher, in that a larger effort by the extension officers, community development officers, and such people is necessary to achieve any remarkable changes.

Thus, all in all, Zambia's subsistence agricultural subsector is still largely one where cultivators have for years, not experienced any significant alteration in the way they organize and conduct their farming practices. They continue, year after year, to cultivate the same type of land, sowthe same crops, use the same techniques of production, and bring the same skills to bear on agricultural production. Low standards of efficiency and organisation of labour are as a consequence the final outcome. But as we have already pointed out above, the full effects of the conduct of agriculture in Zambia cannot be fully analysed without looking at the role of commercial agriculture in national development, to which we now turn.

Footnotes to Chapter III

1) R. Weitz: From Peasant to Farmer: a revolutionary strategy for development. (Columbia Univ., Press, 1971) p. 9.

2) T.W. Schultz: Transforming Traditional Agriculture. (New Haven, London: Yale Univ.Press, 1964) p. 30.

3) Ibid, pp. 131-132.

4) H. Ruthenberg (ed.) Smallholder Farming and Smallholder Development in Tanzania. (Munchen: Weltform Verlag, 1968), p. 329.

5) T.W. Schultz for one, and others include: D.B. Grigg. The Agricultural Systems of the World: An Evolutionary Approach (London, 1974); M.P. Todaro: Economics for a Developing World (London 1977) especially Chapters 15 and 16 and Wharton (ed.) Subsistence Agriculture and Economic Development.

6) J.W. Mellor: "Production Economics and the Modernization of Traditional Agriculture". Cornell International Agricultural Development Reprint. No. 35, 1969, p. 1.

7) The concern with absolute increases in population is usually, but not always, a matter to do with the actual available cultivable land. Thus one can distinguish between 'land carrying capacity' and 'population density' of a given region. To arrive at a population density is more straightforward: all one has to do is to divide total population by the total land area. This for Zambia is roughly 6.7 persons per Km^2 (i.e. $\frac{5 \text{ million people}}{746{,}000\ Km^2}$).
It is important, however, to take into account the differences in concentration of human settlements, giving low densities to sparcely populated areas (i.e. rural areas in the case of Zambia) and vice versa. The calculation of a land carrying capacity (or the critical population density); on the other hand, takes into account a number of factors: One should know the percentage of cultivable land (which is approximately 6.5 per cent - or 48,544 Km^2 in Zambia) - this is land which would normally be included in the cropping sequence and land rotation of the balanced system unaffected by pressure. Hence, under shifting cultivation, soils are in most cases so poor that one, or two, or at the most three years of cultivation must be followed by a very long fallow period, of the order of twenty to thirty years, for regeneration of woodland or the restoration of soil fertility (see W. Allan: The

African Husbandman. London, Olives & Boyd, 1965 pp. 20-37). Based on the percentage of cultivable land, level of technology and cropping patterns - all factors influencing crop yields, one can then estimate the land carrying capacity. This has been estimated at 3.9 persons per Km^2 in the regions of chitemene cultivation - see footnote 23 below.

8) A.I. Richards has given a full description of the Bemba of northern Zambia, whom she says failed completely to give accurate estimates of the contents of their granaries. See her book, Land, Labour and Diet in Northern Rhodesia (1962) especially Chapter XII. What Richards fails to mention, however, is that even if the Bemba cannot give estimates of their farm output (preferably in modern units of measure), they can tell when the harvest is good and how long they expect it to last.

9) Weitz, op.cit., p. 9.

10) J. Schultz: Land Use in Zambia, Part I: The Basically Traditional Land Use Systems and their Regions. (Munchen: Veltoforum Verlag, 1976).

11) Ibid, pp. 8-10, 36. It might be of interest here to compare this system of classification to that first used by D. Whittlesey (1936) in his article. "Major Agricultural regions of the earth". According to him five criteria by which characteristic types of agriculture could be recognized were as follows:
    i) crop and livestick association;
    ii) The methods used to grow the crops and produce the stock;
    iii) the itensity of application to land of labour, capital and organisation, and the out-turn of product which results;
    iv) the disposal of the products for consumption (i.e. whether used for subsistence of the farm or sold off for cash or other goods) and
    v) the ensemble of structures used to house and facilitate the farming operations.

    But in a later study, based on a similar classification, Grigg, op.cit. chapter 1, has added two more characteristics, i.e. the type of land tenure and the size and layout of the farm. All the seven factors put together yield nine major types of farming: 1) Shifting agriculture 2) wet-rice cultivation in Asia, 3) Pastoral nomadism, 4) Mediterranean agriculture, 5) Mixed farming in Western Europe and North America, 6) Dairying, 7) The Plantation System, 8) Ranching and 9) Large-scale grain production.

The similarities in the classifications are, if anything, quite remarkable and should go a step further in making Schultz' classification to be more understood.

12) One may further add here that even at the family level, the functions of one family would be found to differ from that of the other. By way of example, the same composition of a family unit may be found to be performing different duties depending on whether or not it combines its cultivation of crops with that of fishing. Since most of the fishing is done by men, a family with more grown-up males will benefit more than a family of the same size, but in which women outnumber men. The same can be said to be applicable to other forms of farming systems.

13) See, for example, D.B. Grigg cited above; R. Weitz, also already referred to; C.C. Clark and M. Haswell: The Economics of Subsistence Agriculture (1970); E. Boserup: The Conditions of Agricultural Growth (1965) and, of course, the controversial work of T.W. Schultz (1964).

14) K.J. Pelzer, Pioneer settlement in the Asiatic Tropics (1954), as quoted in Clark and Haswell, ibid, p. 39.

15) J. Schultz (1976) op.cit. p. 37 and Monthly Digest of Statistics. Vol. XIII November/December 1977.

16) Schultz (1976) p. 58.

17) Richards, op.cit., p. 274.

18) C.M.N. White: "Factors Determining the content of African Land-Tenure Systems in Northern Rhodesia" in D. Biebuyck African Agrarian Systems (London: International African Institute, 1963) p. 366.

19) C.O.M. Ng'andwe: "African Traditional Land Tenure and Agricultural Development: case study of the Kunda people in Jumbe". in African social research, Number Twenty-one, June 1976 p. 55.

20) See both Schultz (1976) p. 61 - figures which were originally prepared from the 1970/71 Census Survey by CSO, and Report of a Random Pilot Survey of Traditional Farmers in the Central and Northern Provinces of Zambia by C.R. Joseph, Min. of Lands and Agriculture, Lusaka, September 1977, p. 12.

21) See E. Boserup: The Conditions of Agricultural Growth: the economics of agrarian change under population pressure (London, G. Allen and Unwin Ltd., 1965) and D.E. Dumon "Swidden agriculture and the rise of Maya Civilisation", South-Western Journal of Anthropology, 1961, pp. 301 - 316.

22) Boserup, p. 15.

23) Schultz (1976) p. 57.

24) D.W. Peters: "Land Use in Serenje District", Rhodes-Livingstone Paper, No. 19, 1950.

25) M.R. Haswell: The Changing Pattern of Economic Activity in a Gambia Village (London: Dept. of Technical Co-operation Overseas Research Publication No. 2, 1963).

26) Schultz (1976) op.cit., p. 58.

27) Pilot Survey..p. 2.

28) Ibid, special reference is here made to Table 3.6.

29) Ibid, Table 14a.

30) Information supplied by the District Agricultural Officer in Kasama, Northern Province of Zambia.

31) W. Allen, The African Husbanman, passim.

32) L.S.D. Banda: "The Estimation of the Rural Household Subsistence Activities in Zambia and their Integration within the National Accounts". Diploma paper, 1972. Institute of Social Studies, SNA 1971/72, R.P. No. 2 p. 10.
F.A.O. has recommended census items to include: holding, holder, tenure and the type of holding; crops, livestock and poultry production see Programme for the 1970 World Census of Agriculture, a FAO publication.

33) Ibid, p. 11.

34) Ibid, p. 28.

35) FAO, "Zambian National Food Consumption Survey". Due to the lack of access to the first-hand material collected by the FAO survey team, the discussion in this study is based mainly on Schultz' (1976) secondary material; see pp. 162-171.

36) Schultz (1976) op.cit., p. 164.

37) Idem.

38) UNGZAMI Bulletin No. 2, p. 71.

39) Schultz (1976) op.cit., p. 42.

40) Ibid, p. 117.

41) E. Colson: "Land Right an Land Use among the Valley Tonga of the Rhodesian Federation: the Background to the Kariba Resettlement Programme" in D. Biebuyck (ed.) op. cit. pp. 137-156; W. Allen et.al. Land Holding and Land Use Among the Plateau Tonga of Mazabuka District, 1945.

42) H. Vaux: "Unusual aspects of Native Land Tenure in Mazabuka District, Northern Rhodesia Journal no. 2, 1955 p. 18.

43) Hellen, op.cit., p. 129 and R.N. Coster "Peasant Farming in Petauke and Katete Areas of the Eastern Province of Northern Rhodesia" Agricultural Bulletin no. 15 Lusaka, 1958 p. 4.

44) UNZALPI Report No. 3: "Some Determinants of Agricultural labour productivity in Zambia" p. ix.

45) UNZALPI Report no. 1: "Survey Field Work" pp. 22-25.

46) C.G. Trapnell et.al. Vegetation-soil map of Northern Rhodesia, Govt. Printer, Lusaka, 1948.

47) UNZALPI Report No. 3 p. 5.

48) Ibid. p. 7.

49) N.R. Vanzetti: Education and the Development of Farming in two Areas of Zambia Unpublished D. Philosophy Thesis, Univ. of Nothingham, 1972, p. 37.

50) Idem.

51) UNZALPI, passim. Please not that the imperial weights have been retained in this section of the study in conformity with the original weights used, before Zambia adopted the Metric System in 1968...and in case some of the data lose significance.

52) Since the data in our Table 3.5 has been readjusted, these figures are 19.9 acres and 3.8 acres; and 12.7 and 4.3 acres for Mumbwa and Katete, respectively.

53) A. Marter and D. Honeybone: The Economic Resources of Rural Households and the Distribution of Agricultural Development (Lusaka, UNZA, 1976) p. 113.

54) UNZALPI Report no. 3 - Summary figures have been extracted from Table 3.

55) F.A.O., op.cit.

56) Schultz (1964) op.cit. p. 37.

57) The field officers also found that there was no evidence from their results of non-linear relationships between labour and motive power use and maize production. The average production were also, therefore, marginal productivities within the range of the survey experience.

58) de Gaay Fortman (1972), op.cit. p. 11.

59) UNZALPI Report No. 3, p. 14.

CHAPTER IV

AGRICULTURAL PRODUCTION UNDER THE COMMERCIAL SUBSECTOR

1. Introduction

Commercial farming in Zambia, as elsewhere in Africa, has an important role to play in any meaningful agricultural development programme. Although it account for only a small fraction of the people directly engaged in agricultural production, it is the most important in terms of marketed output, employment and income generation, and holds the key to any successful import-substitution and/or self-sufficiency policy. Commercial farmers, few as they are, and mostly of European origin, have up to the present limited their farming practices to the narrow stretch of land along the Livingstone-Copperbelt line-of-rail: an area of good soils free from tsetse fly investigation and strategically near large urban markets. One area of remarkable exception, however, is the area around Chipata in the Eastern Province, where a small group of commercial farmers has existed since the early fifties. Moreover, since Independence there has also emerged a small but increasing number of Zambian commercial farmers in the other remaining Provinces.

The purpose of this chapter is to present and analyse available data inasfaras it relates to Government policy and, within the context of commercial agricultural production, attempt to explain the underlying causes of the lack of satisfactory development within the subsector. This is dealt with by first looking at the organisation of production within the commercial subsector - that is, land tenure, farm sizes, main crops and livestock, credit availability and labour requirements, field costs, etc.

Attention is then drawn to issues concerning attempts to commercialise agriculture beyond the line of rail; price incentives to large-scale farmers and the actual levels of production that have been achieved since Independence. The overall objective of the chapter is to provide an overview assessment of commercial agriculture in Zambia and see how it ties in with other forms of agricultural production.

2. The Commercial Land use System

Large-scale commercial farming in Zambia differs from traditional subsistence farming in many characteristics. The most obvious of these is that whereas under the traditional subsistence system farm-land is in the main communally held, inasfaras customary law permits, commercial practice is carried out under grants on statutory tenure.[1)] And mostly due to the historical factors alluded to in chapter II, the distribution of commercial farms on State Land (which was designated as Crown Land during the Colonial period) inevitably follows the old line-of-rail, and area with the most suitable soils and climatic conditions. To this group, one can add, with some degree of certainty, a few smaller areas found on the Eastern Plateau where a more pronounced and longer presence of a settler community (both of European and Asian origin) has resulted in the availability of modern farming techniques which, to some extent, have been adopted by the local community.

Commercial farming on State Land also differs from traditional subsistence farming discussed in chapter III in that a large-scale producer usually produces for the market.

In addition, farm sizes are on average over twenty hectares; the orientation of production is such that cropping is most often combined with cattle raising and sometimes cattle raising is the entire function; cultivation is done on a more permanent basis and the use of a tractor-plough and industrial fertilisers being accepted practices of modern agricultural production.

The development of commercial agriculture in post-Independent Zambia has, however, not been without difficulties. Apart from the legal wrangle of who can and cannot settle on State Land, one problem manifests itself in the small number of farmers whom one can refer to with exuberant confidence as large-scale commercial farmers. Although in no one year can we say the exact number, an estimate for December 1976 puts these at 600, of which 400 - or 67 per cent were non-Zambians of mostly European origin.[2)] This figure would have been much lower had it not been for the increasing number of Zambians who have recently entered the commercial ranks. Records at the Lusaka - based Commercial Farmers' Bureau give a more clear picture to these estimates:

Table 4.1

The fluctuation in Membership to the Commercial Farmers Bureau of Zambia, June 1975

1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
910	854	667	586	508	468	450	434	433	441	442	451
of which the following were new producers per year:											
?	82	51	37	27	29	46	46	42	38	26	29

Source: Commercial Farmers Bureau 1975; African Development, November 1975, z.15.

According to these estimates the number of commercial farmers dropped considerably before and immediately after Independence from about 1,200 to a level of about 450. Presumably this decline has resulted in an increase in the average size of farms of those who remained behind and those entering at a later date. But of course such an increase would depend much on the farmer's ability (given the level of knowledge and technology at their disposal) to bring more land under cultivation. Hence. according to the Schultz study more than half of the commercial farmers - or 269 out of the total number of 483 farmers, still have maize fields not reaching 90 hectares.[3] Such farm sizes are however incomparable with those found under traditional agriculture where the area cultivated is limited by both the low level of technology to be found and the lack of motivation to produce for the market. In an attempt to maintain the level of agricultural production however, part of the land which became available after the departure of European farmers has been allocated to small-scale farmers and settlement schemes, direct production schemes and parastatal farming enterprises. As a result of this re-allocation on State Land, approximately 1,200 registered farm units were believed to be in existence by the end of 1972.[4] It should be pointed out nevertheless that this figure does in no way correspond to the pre-Independence number of commercial farmholds.

Commercial farming in Zambia is at the same time beset with increases in production costs. Between the period 1965-68, for example, average costs rose from K32 to K42 per acre of maize.[5] More alarming however has been the increase in cost required to start farming. Not only have prices of essential inputs like fertilizers, herbicides and tractors gone up, labour and

marketing costs have gone up quite highly over the past few years of Independence. A more remarkable example is that of the increase in the price of pedigree bulls. In 1965 one pedigree bull was being sold at between K120-K150, whereas in 1975 a record price was paid for a Zambian bred pedigree bull of K2,080, with average bull prices for pedigree animals being around K1,000.[6] With this kind of increases in cost, it is difficult to see how far a farmer could engage in a new farm without a capital investment of K100,000: a figure which leaves out many Zambians from reaching the production levels which the expatriates are currently able to attain.

The commercial sector has in the past been a substantial borrower,primarily but not exclusively on a crop-season basis. The major source of credit for the large-scale farmer are the commercial banks for which seasonal loans are an ideal investment. Institutional lending from the commercial banks remained fairly constant over the period 1971 to 1973 (the latest information that could be obtained) at about K10 million per annum. The extent of lending through these sources is controlled by the Development Bank of Zambia, the commercial banks not being permitted to grant individual loans in excess of K50,000. The Development Bank considers larger loans although the limit for expatriate farmers is K100,000. Rates of interest vary between 8 and 10 per cent according to the purpose of the loan and the period of repayment.[7]

This does not however mean that credit is readily available to those who need it. The cumbersome procedures that have to be followed in a loan application may prove to be unbearable for one who has had no experience nor the determination of chasing application forms from one office to the other. It often happens that loans are not

granted in time and farmers do not get to purchase the necessary farm inputs in time. Thus it has become a known fact over past years that unless realistic steps are taken to ensure an adequate, properly administered flow of credit to the commercial sector, production will be further distorted, and is likely to stagnate.

One other factor which has been crucial to the development of commercial agriculture in Zambia has been that of the availability of labour, and the type of labour required. Commercial agriculture has always been a major employer of labour in Zambia, but the number employed on farms dropped in the years following Independence. It is estimated that the number employed in commercial agriculture fell from about 23,000 in 1965 to 19,000 employees by mid 1971.[8] The main reason given for the decline was the reduction in the acreage of Virginia tobacco, the largest single employer of agricultural labour on commercial farms. At the time of Independence, probably 50 per cent of all agricultural labourers were employed in tobacco production. Although employment in agriculture is now on the increase, agricultural wages are lower than in other occupations, with which it competes poorly. For example whereas the average annual earnings of employees in agriculture stood K528 in 1975, it was K2,322 in mining, K1,445 in manufacturing industry and K2,226 in communications and transport industry.[9] This is a clear reason to discourage job seekers to turn to agriculture for employment. Thus the agricultural industry has suffered from a general shortage of skilled labour which gets readily absorbed in better paying industries.

The importance of commercial agriculture, however, lies in that of the total land area of over 75 million hectares, the commercial farmers produce from about 1.5 million hectares (of this, about 150,000 hectares have been cleared and stumped, and an even smaller portion, 80,000 hectares, is under cultivation at any one time) around 55 per cent of the maize, 60 per cent of the beef, 70 per cent of the fruit and vegetables, 65 per cent of the poultry and pigs and 45 per cent of the tobacco.[10] They are also expanding into crops such as soya beans, sunflower and wheat. Furthermore, some sources contend that commercial maize outyields traditional yields 10 to 6; the commercial beef herd outyields the traditional herd by 5 to 1; commercial vegetables outyield traditional ones by anything up to 50 to 1.[11] The marketed contribution of the commercial farmers is even more remarkable when related to cropland and the number of farming households which make up for only 1 per cent and for less than 1 per cent of the corresponding Zambian totals.

Based on these rough estimates then, it should be clear that a large part of the agricultural surplus comes from the farms on State Land, and increasingly also from semi-commercial farms in the neighbouring plateau areas. Certainly, it is no mere coincidence that it is along this same stretch of land, that is following the old line-of-rail, that the main processing and consumption areas are found. On the one hand, this has meant that it is only the commercial farmer who has a ready market at his disposal for his crop and thus can aspire to produce more; on the other, the farmer in the outlying rural districts (far removed from urban demand) has to shoulder substantial transport costs. Although in the post-Independence period the government has introduced

a number of transport subsidies, both of inputs and of produce, the fact remains that the enhanced costs of inputs and the reduced value of output, cut on what would otherwise be a profitable return. It is also for this reason that those with the greatest technical skill and accumulation of capital are situated in the line-of-rail provinces.

Thus, confined to this narrow strip of land, commercial agriculture is at present a relatively small economic sector. Statistics in the manner in which they are now compiled make its precise measurement difficult, but in 1976 it accounted for perhaps about 38 per cent of the total agricultural production.[12)] The subsistence sector accounts for a larger proportion, but most of this is not, of course, marketed. The range of crops grown under commercial production does not include groundnuts, burley tobacco, rice or the traditional staples except, maize. The most common enterprise combinations centre around maize with either Virginia tobacco or beef as subsidiary enterprises. This combination makes commercial farmers to have the most diversified farm enterprises compared to the other agricultural subsectors.

One other visible characteristic of commercial production in Zambia is that most of the produce is still being marketed within the country, where it has yet to satisfy local demand. Thus the size of the market and the degree to which production matches consumption needs. is to some extent within government control. The limits on the production side are in some cases similar to those outlined in relation to the subsistence subsector. The high level of dependence on a cash economy, however, renders it easier to influence attitudes and to encourage the recognition of new consumer wants as an incentive to expand production.

Over most of the subsector however, the economic links that are required to be established with other sectors of the economy demand that direct capital investments be made if there is to be any considerable change in output. As with subsistence production, however, the opportunity cost in terms of increased allocation of advisory personnel (eg. extension services) may be fairly high. The main difference from subsistence is that investment in other sectors of the economy is necessary in many cases for the further expansion of this sector, and in some cases this may be very high calling for transport and storage facilities, processing factories and the like. Hence, the development of commercial agriculture in Zambia is to a large extent dependent on the development of other sectors. In particular the demand for cash food crops depends on both the size of, and the level of remuneration in sectors employing people who do not produce their own food. The urban markets of the copperbelt and towns along the line-of-rail constitute demand, which at the moment outweighs supply. But where the agricultural product, as in the case of tobacco, requires industrial processing the demand for it depends on both the state of demand for the final product, and on the provision of manufacturing facilities. Thus no easy generalisation can be made about the development desirable in this subsector. What is done in this study is to highlight some of the important characteristics of Zambian commercial agriculture to see how far it goes in meeting the requirements for commercial production.

Table 4.2

Planned Public Investment under the First National Development Plan: 1966 - 1970

Sector	Kwacha (millions)	Percent of Total
Infrastructure and transport		
Housing and construction	86.3	
Roads	69.8	
Railways	19.5	
Aerodromes	15.1	
Telecommunications	12.9	
Meterology	.7	
Supporting services	11.3	
Subtotal	215.7	38.3 %
Agriculture and Lands		
Crops and livestock	69.0	(12.2)
Forestry	2.7	
Game and fisheries	6.6	
Research	5.6	
Other	3.2	
Subtotal	87.0	15.4
Industry and mining		
Industrial development	50.1	
Mines	12.1	
Tourism	5.5	
Electricity	53.4	
Subtotal	121.0	21.4
Social infrastructure		
Health	18.5	
Education	79.5	
Labour and Social Welfare	4.1	
Subtotal	102.1	18.1

Other		
Office of the President	29.5	
Secretary to the Cabinet	1.1	
Office of National Developm. and Planning	1.2	
Foreign Affairs	.6	
Justice	.8	
National Assembly	.5	
Home affairs	3.1	
Finance	1.0	
Subtotal	37.9	6.7
TOTAL	563.7	100.0 %

Source: Zambia, Office of National Development and Planning. First National Development Plan 1966-1970 (July 1966) p. 12. Figures have been converted from pounds to Kwacha.

3. Attempts to Commercialize Agriculture beyond the old line-of-rail

Ever since Independence Agricultural Policy in Zambia has closely been identified with the development of rural areas. The national policy goal has been described as "production by the masses, not mass production". As the stated objectives[13] of the First National Development Plan seemed to indicate, Agriculture was essentially looked upon as fourfold:

1) To aid in diversifying the economy away from copper;
2) To increase personal incomes and employment especially in rural areas;
3) To decrease dependence on imports;
4) To increase purchasing power in the rural areas and thus provide an expanded market for the industrial sector.[14]

To carry out such an ambitious programme, the Office of National Development and Planning allocated a sum of K87 million to Agriculture and Lands, of which K69 million was designated for crops and livestock.[15] But surprisingly enough this amount represented only 12 per cent of the total planned government investment of K563.7 million. As Table 4.2 shows this sum was far below that given to other sectors like industry and mining or the social infrastructure. However, one might argue here that some of the expenditure for infrastructure and transport and health and education was surely going to contribute to rural development, but this does not dispute the fact that planners gave low priority to the agricultural sector --in monetary terms at least.

The explanation of this shortcoming might be found in the government's prejudice of the sector"s "time lags and bottlenecks absent from other sectors".[16] It was believed at the time that except for mining, the agricultural sector was to have the lowest rate of growth of all the major sectors. Over the period 1964-1970 the annual growth rate for agriculture was projected to increase at 9 per cent, compared with 14 per cent for manufacturing, 12 per cent for construction, 17 per cent for government services - and 11.7 per cent for all sectors.[17] Another factor likely to have slowed down the rate of agricultural growth was the need to spend huge sums on programmes such as economic infrastructure and training, which were to begin showing results only after some years of actual implementation.

However, to attain the kind of production by the rural masses that was being advocated, emphasis in the FNDP was put on cooperatives. The indigenous people of Zambia had to be persuaded that there was room for them in the commercial sector of agriculture, formerly dominated by Europeans. They had to be shown that, with training, they could one day be masters of thousands of well-stocked hectares and masters also of the complicated technique of modern agriculture. Thus planned expenditure under FNDP was to provide for the opening up of 24,300 hectares for cooperative farms - with at least one farm in every district in the country. Provision was also made for stumping grants, tractor loans, and general credit, as well as for the hiring by the Government of farm managers to assist with the development of the cooperative farms.[18)]

In all respects such a policy formulation was in direct response to President Kaunda who, as early as 1965, had called on all the unemployed in Zambia to form cooperative societies and put their labour power together to work on agricultural and construction projects which the Government had planned for them. He had then declared: "The money is there, and the know-how is there. You can form these cooperative societies anywhere in Zambia and we shall assist you in getting on".[19)] The Government was quick to act. As an incentive the Government gave a subsidy of K30 for each acre (or 0.405 ha.) of land officially certified (by agricultural extension officers) as completely cleared of woodland for farming of cash crops by a registered cooperative with at least ten members. Moreover, any such group which cleared fifty acres would qualify for a grant to purchase a tractor.

The money might have been there, and as Government accounts were later to show, millions of Kwacha came to be handed out to prospective cooperative societies. The first few years of Independence were favourable in that Copper, Zambia's main foreign exchange earner, was experiencing high prices on the International Market. The problem for the Government remained one of how to spend the money it got from Copper on other, equally desirable economic and social activities. Regarding the cooperative movement, the great attention that was attached to it after Independence meant the availability of more Government funds at its disposal. Thus by 1969, the Government's own statutory board, the Credit Organisation of Zambia (C.O.Z.), had processed over K14 million to be spent on loans, tractor hire and stumping subsidies.[20] (A discussion on the functions and shortcomings of C.O.Z. and other credit institutions in Zambia is given in Section 2 of Chapter V below). But the lack of skills, necessary farm inputs, and market opportunities (also reviewed below in Chapter V) obstructed the actual increase of output and sale of the few cash crops that became available. As Ann Seidman was to observe a few years later:

> "The cooperatives remained little more than discouraged groups whose members eventually lost interest and returned to traditional farming methods, or left the rural areas to seek employment in the towns." 21)

Seidman might have been harsh in passing judgement on Zambia's producer cooperatives, but in siding with her, we feel that the 'production by the masses' as was visualized by both President Kaunda and the U.N.I.P. Government had, in Rostovian jargon, failed to take-off.

The whole affair was more like a repetition of French history where, during the 1789 Revolution the Unemployed of Paris communes were told to dig trenches and only to fill them up with the same soil later!

The end result was that the Government loans given to Cooperatives were not repaid and cleared land reverted to bush. It might be difficult to try and get at what might have been the real cause of the failure of the cooperative movement, but a few things were obvious. The giving of a K30 subsidy to all those who cleared an acre of land was, in all respects, uneconomic. It could have benefited less both the Government and the Villagers themselves. There are numerous reports that those who got cash for cleared land regarded it as a reward, something amounting to a wage. For this reason, many never bothered to plant the land they had cleared. After all, many would argue, the cash that they got was going to get them the few consumer goods that they needed. In fact there were cases of extended families getting together to claim that they were a Cooperative Society and should therefore be 'paid' for the cleared land: the head of the family pocketed the cash, and that was all what happened to it. What the Government should have done in the first place was to stump the areas selected for farming purposes before handing them to cooperatives; this would have minimized on the expenditure on subsidies because only those who were willing to enter commercial production would have moved into cooperative areas. Worse still, we shall see below, direct loans and not subsidies were also not being repaid simply because the people in the villages thought that this was some kind of goodwill from the Government for which they had just won Independence. To say the least, something, somewhere had been miscalculated and the whole thing turned out to be a fiasco.

A more general review of the performance of the agricultural sector within the context of the whole Zambian economy during the 1966-1970 period appeared in the first thirty pages of the Second National Development Plan report, 1972-76 (hereinafter SNDP). According to the resumé, the overall rate of growth of the economy over the six year period had been satisfactory mostly because of the boom in the Copper industry. We concur. Hence over the FNDP period, real GDP was observed to have increased by 83 per cent at an average annual rate of 10.6 per cent: a rate which was much closer to the projected annual increase of 11.7 per cent.[22)]

The picture given of the agricultural sector over the same period, on the other hand, was not all that much encouraging. The agricultural achievements, if one chooses to call them that, were no where to be compared with those of the other sectors and not so much with the plan targets. If we may here restrict ourselves to the agricultural sector alone, we find that the actual rate of agricultural growth was a mere 3.3 per cent per annum - or three times lower than the target rate of 9 per cent per annum. Meanwhile, only 76 per cent of the K88.4 million planned capital expenditure for the rural sector had been spent - the shortfall being attributed to the lack of skilled manpower to carry out detailed planning and to implement plans.

Table 4.3 shows that the 1970 targets in the FNDP for marketed production of individual commodities had not been met except for raw sugar, poultry, and eggs. Apart from the fact that the success of sugar production cannot be credited to the rural sector as it is grown on an industrial estate, the production targets of the FNDP were in most cases unduly ambitious, but the Plan

Table 4.3

Comparison of Marketed Agricultural Production and 1970 First National Development Plan Targets for Indisivual Commodities: 1966 - 1970

Commodity	Unit	Peak Annual Production 1966 - 1970	Average Annual Production 1968 - 1970	FNDP Target for 1970
Maize	tonne[a]	377,580	208,917	361,100
Groundnuts	tonne	14,810	5,493	19,500
Raw sugar	tonne	40,100	30,667	36,900
Beef	tonne	11,800	9,733	18,400
Pork and bacon	tonne	1,150	1,000	2,000
Dressed poultry	tonne	5,440	4,987	2,950
Eggs	OOO	99,000	82,000	42,000
Milk	OOO litres	19,000	16,633	31,400
Virginia tobacco	tonne	6,570	5,367	16,060
Burby tobacco	tonne	860	260	2,090
Oriental tobacco	tonne	210	71	1,000
Seed cotton	tonne	6,920	5,593	8,490

Source: Zambia, Min. of Development Planning and National Guidance, Second National Development Plan, Jan. 1972 - Dec. 1976 p. 14 Table 15 (also reprinted in Dodge, 1977)

Note : a) Metrix ton

did not foresee accurately what were the conditions necessary for their achievement. Some explanation to the below-target performance of the agricultural sector during this early period lay in that: the extent of the exodus of the expatriate farmers was not fully detected before necessary steps could be taken. The effect of this factor alone had been most significant in the case of maize, Virginia tobacco, dairy and beef production. In addition, state schemes that had been established proved to be too costly and were engaged in the production of specialized crops like bananas, tea, sugar and livestock rearing - all activities that take long to yield major production results. Furthermore, the prices received for produce widely contrasted with the rising costs of inputs and industrial consumer goods during the FNDP period. Last but not least, the shortage of skilled manpower in the Public sector, rapid turnover and frequent re-postings had been serious handicaps in raising agricultural production.[23)]

4. The Role of the large-scale farmer

Meanwhile, as the rural sector failed to pull through in producing more and more agricultural commodities, the nation needed food and agricultural raw materials to meet the requirements of budding towns along the line-of-rail. This is where the large-scale commercial farmer had an important role to play. He had to grow more food if Zambia was to reduce on its high imports bill and aspire for self-sufficiency and non-mining exports and generate some agricultural employment. What was lacking, however, was a clear agricultural policy to enable him to plan his farm activities well in advance.

Some people, farmers among them, have argued that due to the lack of a definite policy on the role of commercial agriculture in Humanist Zambia, the commercial farmer, whether Zambian or expatriate, is faced with some degree of uncertainty.[24] True enough, at the time the expatriate farmer was losing confidence in the farming industry and many were leaving the country in numbers, President Kaunda and the Ministers responsible for agriculture were preoccupied with 'production by the masses'. The commercial farmer was largely ignored on the pretext that he was already standing on his two feet. What was overlooked was that he also urgently needed modern hardware in order to raise the level of production, as expected of him.

Thus one of the problems facing the commercial farmer has been one of ideology. From the day of the inception of the philosophy of humanism sometime in 1967, it became obvious that the individualistic nature of the commercial farmer was not compatible with the ideals of the Zambian society. The policy expressed through humanism dictated that there was to be no place for capitalists in Zambia. Many commercial farmers have therefore wondered if they have any place in Zambia, which is opposed to capitalists, and point out that if the definition of a capitalist entails utilising your own resources to secure profit, then capitalists they are. But if capitalism means exploitation of fellow men, then most certainly they do not regard themselves as capitalists.[25]

But humanism itself is not all that rigid. Private production is allowed to exist to the extent that it does not come into conflict with the general objective of effecting higher levels of production in the interest of all. As President Kaunda was quick to admit, "even

the most ultra-left Governments are allowing private enterprise to continue, especially in areas where Government may not have the know-how".[26] In fact, past experience has shown that the Zambia government is prepared to go along with some form of a mixed economy. We would here add, however, that what are needed are clearly formulated policies that will convince the large-scale commercial farmer that there are limitless opportunities for him to expand production. One certain way of doing this is setting of a price that will act as an incentive to the would-be large-scale producer. In this regard, it is therefore important that we dwell a bit more on what has been government policy on producer prices of especially those commodities being produced by the large-scale commercial farmer.

5. Producer Prices as Incentives

Ever since Independence it has been the government's intention to pursue price policies that will transform, in time, the output patterns of the agricultural sector. According to the official wording: ".... the pricing policy with respect to maize and many other agricultural commodities remained that of encouraging Zambian farmers to shift from subsistence to commercial farming, and to ensure provincial and national self-sufficiency, as much as possible, in those products which can be economically produced at home, and also to take advantage of export opportunities".[27] This implies that for most products the government will have to raise prices, or allow prices to rise, to a significant degree. However, the extent to which such a policy could be said to have been geared towards achieving the goals of the government may be seen in terms of two factors:

one, what has been the actual operation of producer prices and, two, the effect these have had on the agricultural industry itself. Thus Table 4.4 has been adapted to give the government's producer prices for selected crops from the 1964/65 to the 1975/76 crop season. Our examination of the fixation of prices for individual crops, makes specific reference to it.

In the year of Independence (1964) a statutory board known as the Agricultural Prices and Marketing Committee (A.M.C.) was set up by the government to advise the Minister of Agriculture on all aspects of marketing but which restricted itself mainly to price policy. The commodities considered by the Committee were maize, malting sorgum, wheat, Virginia and Burley tobacco, cotton, groundnuts, beef and milk with pork being added in 1970.[28] It was the duty of the A.M.C. to make detailed studies and recommendations on both short- and long-term pricing policy. This it continued to do until its function was taken over by the Department of Marketing in the Ministry of Lands and Agriculture (formerly Ministry of Rural Development) in 1971. Since then it has been the Department of Marketing which makes annual recommendations with respect to producer prices for approval by the government before they are announced to the farming community; hopefully in time before the planting season so that farmers may know just how much land to cultivate in order to make a reasonable return. One point worth mentioning however is that the Ministry of Lands and Agriculture is responsible for producer prices only; the determination of consumer prices is the responsibility of the Office of Price Control, part of the Commerce Ministry. Attempts to merge the two departments in the past have proved to be fruitless - a clear indication that there is very

little coordination between the Price Control Office and the Department of Marketing. The consequence of such a split is quite obvious: market prices have no direct bearing on production costs and vice-versa.

Maize

The determination of maize prices has been the most controversion on the Zambian agricultural scene. Throughout its four years of existence, the A.M.C. had taken a strong stand that supply should be brought into equilibrium with demand as there were few opportunities for the profitable export of the crop. Time and again the Committee recommended that there be introduced into the pricing mechanism a process of adjustments as the situation so required. Until Independence however, a dual-price system which had been in operation had given artificially high prices for sale from line-of-rail farms. This in a way had encouraged commercial farmers to expand production that surpluses had to be exported at a loss to Zaire, and to a lesser extent, Angola and Mozambique.[29] On the other hand, prices in the remote Provinces had been manipulated in attempts to make each Province self-sufficient in maize. Thus the price of maize was higher in areas of deficit supply and lower in surplus Provinces.For example, while in 1968/69 the national price (or the line-of-rail price) for maize was K3.20 per 90 Kilogramme bag, it was only K2.40 per bag in the surplus area of Chipata in the Eastern Province; the price was K3.70 in Kasama in the Northern Province; K3.90 in Mansa in the Luapula Province and was as high as K5.05 in Mongu in the Western Province.

Table 4.4

Government Producer prices for Selected Crops: 1965-76[a]
(Kwacha)

Crop/Point of Delivery	Unit	Year											
		1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Maize													
Line of rail depots[c]	90Kg[b]	3.45	3.32	3.10	2.90	3.20	3.50	4.00	4.30	4.30	4.30	5.00	6.30
Eastern Province			2.00	2.00	2.00	2.30	2.85	3.60	3.90	4.15	4.15	5.00	6.30
Northern Province			3.29	3.29	2.83	3.02	3.02	3.31	4.80	4.30	4.30	5.00	6.30
Western Province			3.10	4.38	4.38	4.30	4.25	4.38	4.38	4.30	4.30	5.00	6.30
Groundnuts (oil-expressing)	80Kg												
Line of rail depots		9.60	10.20	9.90	10.20	10.20	10.20	10.20	10.20	12.60	17.00	17.00	25.00
Northern Province					8.36	9.00	9.00	9.60	9.60	12.60	17.00	17.00	-
Western Province					8.09	8.09	9.60	9.60	9.60	12.60	17.00	17.00	-
Virginia tobacco guaranteed floor price	1Kg							.84	.90	.90	.90	.90	1.04
Cotton	1Kg												
Lusaka ginnery:													
hand-picked		.14	.14	.15	.15	.15	.15	.17	.17	.17	.25	.30	.40
machine-picked						.13	.14	.15	.15	.15	.22	.27	.37
Chipata ginnery:													
hand-picked						.16	.17	.17	.17	.17	.25	.32	.42
Sunflower seeds	50Kg												
Line of rail depots					2.45	2.45	2.45	1.80	4.62	4.62	8.95	9.40	10.00
Wheat	90Kg												
Line-of-rail depots		5.70	5.70	6.20	6.20	7.50	7.50	-	-	7.50	7.50	12.00	16.00

Source: D.J. Dodge: Agricultural Policy and Performance in Zambia, p. 96-98. Tables 4.2 & 4.3 The data has however been reorganised for the purpose of this study.

a) Prices are for Grade A crops, unless otherwise specified

b) Prior to the 1970/71 season, prices for all crops were given in pound values these have been converted to the matrix weights in this table

c) Central, Southern, and Copperbelt Provinces.

Clearly, the price structure of maize was heavily weighted against those farmers who had, one might put it, the comparative advantage to produce. To start with, the differences in the maize price were politically unpalatable. To the maize producer in the Eastern Province (where prices were lower) he was being discriminated against those in the Northern, Luapula and Western Provinces - producers who in his eyes were just lazy and unproductive. It was no surprise at all that some politicians from the Eastern Province capitalised on this issue alone to say that the people in their Province were being disfavoured and discouraged from production. They could do no better than to demand that the situation be thoroughly investigated and the anomalies readjusted.

Economically, however, the disparity in maize prices was aimed at securing an economic price on a regional basis. But differences in price from one region to the other were very high that even this argument could not stand. The fact that maize prices in the Western Province (K5.05) were more than twice as high as those in the Eastern Province (K2.40) could not be accepted even on economic grounds. The whole maize price mechanism needed some restructuring.

Furthermore, because of the large shift to maize production by commercial farmers immediately after Independence (a factor which was encouraged because of the exodus of expatriate farmers) deliveries of Maize to the Grain Marketing Board (which in 1969 was absorbed into a bigger statutory board, the National Agricultural Marketing Board - NAMBOARD) began to be in excess of internal sales and this prompted the AMC to recommend price cuts in the three harvest

seasons following 1965. As Table 4.4 shows, the price of maize along the line of rail depots dropped from K3.45 to K2.90 between 1965 and 1968, representing a fall of approximately 43 per cent. This move was aimed at discovering commercial farmers, both on the line-of-rail and the Eastern Plateau, from growing more maize than was required to meet the country's internal demand and to enable them to diversify into other cash crop production like cotton, sunflower and Virginia tobacco.

However, because of the fears alluded to above and that maize was more of a stable cash crop, commercial farmers were not responding to price cuts and instead of production levels falling, they continued to increase until 1968, the beginning of a three year period of bad weather, which led to a drastic fall in maize harvested and to massive imports from Rhodesia. It was a time when Zambia wished she had never exported her maize to Zaire and China at below cost price. It was only after that traumatic period that prices began to rise again. At the same time, it was decided that regional price differentials be done away with and replaced by a uniform price to be effected at all depots throughout the country. Thus for the crop season of 1973/74 a new produce price of K5 per day was announced, with NAMBOARD acting as a residual buyer. To effect this change, transport costs were eliminated at all depots, so that the price received by a producer at a local depot was equivalent to that at a district centre depot. The uniform price which is subject to annual adjustments stood at K6.30 per bag for the 1976/77 crop season; a price high enough to induce those who are price sensitive to produce even more.

Clearly, the determination of maize prices in Zambia has been influenced by many factors, including those of meeting national and regional demand, costs of production, (and to some extent) costs of imports and the objectives of keeping urban maize-meal prices low and, as the crop gained increasing importance in the outlying districts of Kasama, Mansa, Mongu, Solwezi, etc., as an income earner for the rural producer. But it should at the same time be noted that the farmers who have gained from the introduction of a uniform price are those who received relatively lower prices, that is the farmers in the line-of-rail Provinces, and the Eastern Province. Losers under system uniform pricing are those who have received lower prices relative to the line-of-rail main depot price than they received prior to introduction of a uniform price, that is, maize producers in the Northern, Luapula, Western and North Western Provinces.

What one may question here, however, is the effectiveness of such a uniform price in distributing fair and equitable returns to all the farmers found in different parts of the country. In any case, what appears to be true for all that it implies is that the benefits such a uniform structure provides depends on the nearness of the maize grower to other commodity markets, processing facilities, and the quantity that he actually produces. As such, a cash income earned from crop sales would be measured by the amount of other goods it can buy. Thus there could be no uniformity in a case like Zambia where those farmers near the urban markets by having access to consumer goods benefit more than those in remote areas where consumer prices are inflated. In addition, it is

usually the large-scale farmer along the line-of-rail who is more efficient in his attempt to maximize farm returns - something which is not of immediate concern to a producer in the more remote areas. A look at other commodities may make this point more explicit.

Cotton

The price of cotton has been relatively stable over the years since Independence. Although one usually differentiates between hand-picked and machine-picked cotton, prices for both types have been, as an incentive, on a steady increase. For example, where a kilogramme of hand-picked cotton paid Ko.14 in 1965 it had moved up to K0.17 at the end of 1970. Although this increase might be seen to be small, it was supposed to encourage sufficient production to satisfy the requirements of the country's Kafue Textiles plant which had just been commissioned in 1970.

However, it was not until 1974 when there was a remarkable increase in the producer price of cotton; it shifted upward from K0.17 to K,025. This move was taken mostlyto make returns from cotton production competitive with the return from maize production. Moreover, it was supposed to prevent a shift of cotton producers to that of maize production which seemed to offer relatively higher returns. It did not take long before there was another increase in the following year which put the price at K0.30. To the country as a whole, these price increases were motivated by a desire to stimulate cotton production in the face of expensive lint imports required in 1974 by the Textiles.[30] Thus all along smaller price increases were considered adequate incentives to increase production and ensure a cheap source of raw cotton at the same time.

Tobacco

The producer prices paid for Zambian tobacco have been somewhat disappointing. In the year of Independence supply was so much in excess of demand that prices had to be brought down. However, as it was to be realised a short time later, tobacco production dropped drastically in the subsequent period. Thus the outcome of this stop-go process was that the production of Virginia flue-cured tobacco fell from 11 million tonnes in 1964 to 5 million in 1967. In 1969, despite the desire by the government to maintain production levels, the average price of tobacco was still low at K0.63 per kilogramme. But in an attempt to arrest the downward trend in tobacco production, the government introduced in 1970 a floor price of K0.802 per kilo, which meant providing a subsidy of K0.176 per kilo. Nothing much happened to the production levels so the government was yet again forced to review tobacco prices. Thus the price rose further in the subsequent years that it for a while stood at K0.90 per kilo up to the end of 1979.

Although changes in the floor price were in theory to be based on the costs of tobacco production, we see that it remained the same between 1972 and 1975, this in spite of continually increasing costs. It was not until persistent representations by the Virginia Tobacco Growers Association to the government that the price was revised upwards to K1.04 per kilogramme for the 1975/76 crop season. In addition to the price incentives the government began to encourage the production of tobacco by the inauguration of a tenant farmer scheme under the supervision of the Tobacco Board of Zambia (T.B.Z.) which brings together the

growers and buyers of tobacco and arranges facilities for the handling of the crop after it has been bought. In order to do this, it administers the Lusaka auction floor, packing plant and warehouse.

The remaining crop prices controlled by the government are for sorghum, groundnuts, wheat, rice, sunflour seeds and soya beans. Sorghum as we have seen in Chapter III is basically a subsistence crop of which only a small amount of high quality is purchased for the brew of local beer. Groundnuts are also partly a subsistence crop, but there is also an export trade in high quality nuts and a demand within Zambia for groundnuts for oil expressing. Although the groundnuts market has experienced frequent price increases --from K8.40 for a 80 kg. bag in 1968 to K25 per bag in 1976 -- output has tended to increase at a relatively low pace mainly because of the heavy labour demand for both harvesting and shelling and occasional unfavourable weather conditions. The constant subsistence demand further reduces on marketed production. Wheat production in Zambia has also been limited as the conditions have not been very suitable which has meant that the crop is both risky and costly to produce. For this reason the price of wheat sky-rocket from the 1969 price of K7.50 per bag to K16.00 in the second half of 1975.

Beef and Milk

But the prices of crops like maize and tobacco have not been the only cause of concern. Beef prices were held constant from 1964 to 1967 and over this period many expatriate producers came to the conclusion that intensive grass management and full supplementary feeding were not profitable, especially that the quality bonus of the Federation period was scrapped off by the Zambian Government.

This resulted in a drastic fall in cattle which meant a simultaneous fall in the off-take of the total herd. The main change in beef prices took place in 1968 and was a response to the large increases in demand from African consumers after Independence and to the lack of response from the producers who were mostly expatriates unwilling to continue with long-term production. The overall effect of this shortfall has been that the consumer has to pay heavily for his piece of meat. This also has had some effect on milk prices.

The government's first move to improve nutrition was to subsidise milk consumption in urban areas in 1965 and this effectively replaced the subsidy to producers, removed the previous year at the same time as on beef prices. Until this consumer subsidy was introduced, Zambia had been more or less self-sufficient in milk but demand increased enormously so that production could not keep pace in spite of the price increase in 1966. The enormous increase in beef prices in 1967 led to widespread slaughter of dairy cattle, further reducing the country's potential for milk production and leading to another price increase in 1969. Buy 1970 the demand for fresh milk was sufficiently established to introduce a price differential between this and re-constituted dried milk. Hence where a litre of fresh milk was costing 13 ngwee in 1975, reconstituted milk sold at only 9 ngwee per litre. This was another attempt to stimulate production. Despite these efforts by the government to regulate prices, a great shortfall of domestic production of fresh milk continues that perhaps only much higher prices will be necessary before commercial farmers may be persuaded to switch their

resources from that of maize to beef and milk production.

On the whole it can been seen from the preceeding paragraphs that the government has constantly been under pressure from farmers to increase agricultural prices. The commercial farmer has been one who has always thought that the pricing policy has been loaded against him. With increasing field costs on one hand, and government controlled producer prices on the other, the profit margins have certainly been restricted. The farmers' argumentthat only by establishing producer prices geared to cost of production can they be made to stay in business is valid, but the timing of price announcements would also be of crucial importance. In general terms, the earlier prices are made known the better this would help those who would want to weigh field costs against possible remuneration. However, it is not only producer prices and their late announcement that act as a disincentive to production, marketing also poses special problems to the farmers. Virtually all non-perishable crops are sold to parastatal marketing organisations, as is milk, at government fixed prices. This has led to inadequacies which do not stimulate production.

4.6 Production Trends

The total marketed production and gross values presented in Tables 4.5a and 4.6 respectively, illustrate the general trends in the agricultural sector since Independence. Production started to decline immediately after Independence in tobaccos, beef and milk mainly as a result of the exodus of expatriate commercial farmers. It should be noted

Table 4.5a

Quantities of Agricultural Marketed Production 1964 - 1976

Commodities	Unit	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974*	1975*	1976*
Maize	tonne[a]	204,270	263,000	384,720	383,080	263,830	135,200	399,950	616,554	460,400	450,000	508,985	573,030	584.190
Tobacco														
Virginia	tonne	10,960	6,600	6,566	4,950	6,280	5,020	4,790	5,910	5,530	6,230	6,200	6,466	6,115
Burley	tonne	1,703	1,993	855	275	285	240	255	388	385	471	523	430	502
Oriental	tonne	297	526	213	131	114	75	8	4	-	-	-	-	-
Sugar cane	tonne	-	-	-	-	183,000	257,000	322,000	331,000	397,400	446,350	500,000	570,000	768,000
Groundnuts	tonne	3,630	6,740	11,530	14,810	5,390	7,820	3,270	5,970	6,480	2,960	5,000	6,496	9,464
Sunflower seed	tonne	-	-	-	-	-	-	-	6	163	1,050	3,500	6,450	16,100
Soya beans	tonne	-	-	-	-	-	-	-	-	-	173	400	n.a.	n.a.
Seed cotton	tonne	1,649	2,273	2,778	1,831	4,252	6,915	5,605	11,919	8,453	5,225	5,600	2,602	3,885
Sorghum	tonne	-	-	24	1,727	3,545	1,181	545	90	212	34	350	n.a.	n.a.
Fruit	tonne	2,600	2,400	2,500	2,600	2,200	3,100	4,800	5,600	5,900	5,500	6,000	n.a.	n.a.
Vegetables	tonne	13,500	13,000	14,100	15,200	15,500	17,200	21,000	24,100	27,700	20,000	25,000	n.a.	n.a.
Cattle	head	71,000	69,000	63,000	55,000	47,000	49,000	68,000	68,000	72,443	90,000	n.a.		
Pigs	head	16,000	17,000	20,000	22,000	25,000	27,000	35,000	34,000	32,000	36,000	30,305	29,474	15,629
Chickens	'000	650	905	1,410	2,100	3,200	3,800	4,000	4,425	5,500	6,100	n.a.	n.a.	n.a.
Turkey& ducks	'000	-	-	27	35	46	46	50	25	40	30	n.a.	n.a.	n.a.
Eggs	millions	17	33	27	36	54	93	99	108	115	123	n.a.	n.a.	n.a.
Milk	tonne	20,500	19,770	19,020	18,330	18,430	16,260	15,610	16,000	16,586	16,700	n.a.	n.a.	n.a.

Sources: Zambia, Min. of Planning and Finance and Planning Unit; Min. of Rural Development; Economic Report (1973); Monthly Digest of Statistics, Nov./Dec. '77; D.J. Dodge: Agricultural Policy and Performance in Zambia, p. 73.

Notes: * Provisional and subject to revision and adjustment

a) metric ton

Table 4.5b

COMPARISON OF MARKETED AGRICULTURAL PRODUCTION AT DIFFERENT TIME PERIODS

Commodity	Unit	Average Annual Production 1964 - 1965	Average Annual Production 1974 - 76 (a)	Percentage increase (%)	Average annual growth rate (%)
Maize	tonne	283,997	555,402	96	7.4
Tobacco					
Virginia	tonne	8,042	6,260	- 22	- 1.7
Burley	tonne	1,517	485	- 68	- 5.2
Groundnuts	tonne	7,300	6,987	- 4.3	- 0.3
Seed cotton	tonne	2,233	4,029	80.4	6.2
Fruit	tonne	2,500	5,800	132	11.0
Vegetables	tonne	13,533	24,233	79	7.2
Cattle	head	67,667	76,814	13.5	1.4
Pigs	head	17,667	31,926	80.7	6.2
Chickens	'000	988	5,342	440	44.0
Eggs	millions	26	115	344	34.4
Milk	tonne	19,763	16,429	- 16.9	- 1.7

Source: Compiled from figures given in Table 4.5a.

Notes:

(a) This period varies according to availability of data, except for crops, the time periods are 1972-74 for fruit and vegetables; 1971-73 for cattle, poultry and dairy products and 1973-75 for pigs.

Table 4.6

ESTIMATED GROSS VALUE OF MARKETED AGRICULTURAL PRODUCTION: 1964 - 1974

(Kwacha '000)

Commodity	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974[a]	Change in sales 1964-73
Maize	7,633	9,899	13,981	12,992	8,329	9,639	5,204	17,833	29,311	19,952	19,350	161 %
Tobacco												
Virginia	5,619	3,973	4,431	4,791	4,228	3,902	3,841	4,782	4,924	5,347	6,118	8.9%
Burley	669	639	267	75	126	122	143	218	221	224	-	-66.5
Oriental	201	296	112	55	52	32	4	2	-	-	-	
Sugar cane	-	-	-	-	1,210	1,698	2,127	2,186	2,607	2,950	3,000	
Groundnuts	332	605	1,152	1,437	532	792	348	720	780	456	425	37 %
Sunflower seeds	-	-	-	-	-	-	-	1	15	157	686	37 %
Soya beans	-	-	-	-	-	-	-	-	-	16	59	
Seed cotton	226	304	452	244	608	1,040	912	2,094	1,485	920	1,400	308 %
Sorghum	-	-	-	89	183	61	28	5	9	2	19	
Fruit	150	137	143	166	158	220	353	477	500	470	500	213 %
Vegetables	1,150	1,105	1,325	1,550	2,161	2,361	2,613	3,064	3,355	3,050	3,300	165 %
Cattle	3,200	3,800	3,970	3,780	3,950	4,170	5,510	5,710	6,261	7,780	n.a.[b]	143 %
Pigs	320	410	530	580	690	700	940	1,040	1,178	1,210	n.a.	278 %
Chickens	444	667	1,176	1,800	3,520	4,180	4,400	4,868	6,050	6,820	n.a.	1438 %
Turkey & ducks	-	-	60	76	85	98	101	47	80	60	n.a.	
Eggs	530	675	940	1,200	1,710	2,950	3,300	3,600	4,370	4,940	n.a.	832 %
Milk	1,350	1,320	1,220	1,350	1,410	1,320	1,310	1,390	1,645	1,677	n.a.	24 %
Dayold chicks	-	-	-	-	60	100	150	190	275	300	n.a.	
Total sales Value	21,825	23,830	29,759	30,145	29,012	33,385	31,284	48,227	63,066	56,331		158 %

Souce: Zambia, Min. of Planning and Finance and Planning Unit, Economic Report (1973)

Notes: (a) 1974 figures are provisional estimates

(b) n.a. not available at time of compilation

however that the production of these three commodities has began to pick up in the last few years. Production of all other commodities has increased continuously (with occassional fluctuations) ever since 1964, with the exception of sorghum and oriental tobacco which are, in any case, minor crops. It should be emphasised at the same time that the figures refer to marketed agricultural production through official channels only for which data is available and do not include estimates for either subsistence production or private sales within the traditional sector, which must be substantial since about 70 per cent of the population is estimated to fall within the subsistence sector.

Taking into consideration annual variations in output which are due to such exogenous variables like climate and plant and animal diseases, we have calculated in Table 4.5b three-year averages of the quantities of crops marketed in the first three years of Independence (i.e. 1964-66) and for the last three years for which statistics could be obtained, that is, 1974-76 for maize, tobacco, groundnuts and seed cotton; 1972-74 for fruit and vegetables; 1971-73 for cattle, poultry and milk and 1973-75 for pigs. By looking at these averages, one can see that while marketed output of maize increased by 96 per cent - or an average annual growth rate of 7.4 per cent between the prescribed period, marketed Virginia tobacco decreased by 22 per cent, burley tobacco by 68 per cent, and groundnuts by 4.3. The fluctuations within individual commodities is at best illustrated by seed cotton which albeit showing an increase of 80.4 per cent between the two periods, was on the decline ever since 1971 and only started torecover in 1976.

For the period 1964-66 to 1972-74 our calculations for fruit sales show that these increased by 132 per cent, and vegetables continued to increase at an annual rate of 7.2 per cent. After a short period of uncertainty in the cattle industry, sales have increased by 13.5 per cent. On the other hand, pigs and chicken numbers which were not significant in the pre-Independence period seem to have experienced drastic increases of 80.7 per cent and 440 per cent respectively. With sales rising by 344 per cent, the production of eggs has been rising fast since Independence. Another success story has been that of sugar-cane production. Although full-scale production for this crop was embarked on as late as 1967, it can be seen from Table 4.5a that marketed production of sugar has more than quadrapled in the few years it has been on the Zambian agricultural commercial scene. But like that of tobacco, milk sales have been most disappointing, having declined by 16.9 per cent and still showing no indication of a quick recovery.

Similarly, we have calculated from the value estimates given in Table 4.6, changes in value of marketed agricultural production at current prices (for which Table 4.4 above serves as a good reference) over the period 1964-73. These statistics show that as the sales value of marketed maize increased by 161 per cent, or an average annual rate of 14 per cent, that of Virginia tobacco increased by a mere 8.9 per cent and decreased by 66.5 per cent in the case of burley tobacco. Apparently, the increase in Virginia tobacco sales was not due to increase in production, but the rise in producer prices over the same period. The value of marketed groundnuts increased by only 37 per cent and that of seed cotton, fruit, and vegetables by 308, 213

and 165 per cent respectively. Cattle sales also mainly because of price increases went up by 143 per cent and those of pigs by 278 per cent. Chickens sales were by far the highest at no less than 1438 per cent increase - or an average annual rate of 120 per cent; this followed by sales value of eggs in which a percentrage increase of 832 per cent was realised.

Thus, on average, the total gross sales value of marketed agricultural production increased by 158 per cent - or an average annual rate of 13 per cent in current prices. However, when we take into account the consumer prices index which was on the increase at the same time, we find that these increases in sales value are not as high as they seem to suggest. Hence when we deflate the values in current prices by the consumer price index for the high income group which stood at 144.3 (1969=100) in 1974, the real growth rate for marketed maize would only be 2.6 per cent, per annum and that of the total gross value of crops is even lower at an average annual rate of 2.4 per cent.

From these statistics, it should be clear that the rate at which Zambia has been expanding her agricultural output is very low indeed. Although the potential for growth appears to be there, the country's failure to produce more food to feed itself and provide raw materials for industry can only have serious consequences for the whole economy. By far, this is evidenced by the rise in imported foodstuffs at a time when Zambia should be re-orienting her economy towards more export of agricultural commodities, and become less dependent on copper.

However, the sad story is that between 1969 and 1974 the total import value index for food had risen by 44 points, that of beverages and tobacco by 51.6 points and that of oils and fats by another 200 points.[31] And more specially, available statistics confirm that in 1974 Zambia imported 100 per cent of her wheat and barley requirements, 85 per cent of vegetable oils, 80 per cent of Dairy products and 55 and 40 per cent of her beef and potatoes, respectively.[32] The observed trend for other imports also suggests that there has been no reduction in the amounts being imported. At the same time however, Zambia has found herself in balance of payments problems due to lower copper prices so that it has become increasingly difficult for her to maintain food and other imports.

As is to be expected from such a critical situation, agricultural exports account for a small part of total exports and have declined considerably over the post-Independence period that in 1975 they constituted only 1.4 per cent of the total.[33] Tobacco used to be the most dependable commodity export, but even this export has been reduced by more than half since Independence, groundnuts too, fluctuate considerably with variations in both quantity and price. Maize, which on average does well, cannot be risked to be exported especially after the embarassing experiences of 1970/71 when Zambia was forced to import maize from Rhodesia, just one and half years after she had exported her surpluses to China.

Above all, the stated objective of "the expansion of the agricultural production as a top priority" - which was hopefully to be accompanied by more agricultural jobs, more cash incomes, decreasing the dependence on food imports, and the diversifying of a narrow-based copper economy to that of a broad-based

agricultural one, has not been achieved and the overall performance of the commercial agricultural sector has not been impressive.

7. A Summary Assessment

The reasons for the failure of commercial agricultural production to have increased at a rate that would have cut on Zambia's present food (and raw materials) deficit are many and varied. As is to seen from the foregoing dicussion the major bottlenecks seem to lie with individual crops as much as the do with the whole agricultural sector. At most, the lack of adequate agricultural incentives, as well as the moral and political encouragement needed, appear to be the major forces holding back the increase in agricultural production and for the farmers to realise their full potential. At the same time, the reduction on the country's high food import bill can only be achieved by farmers having to direct their attention to those food crops which are not at present being grown in substantial amounts - wheat and potatoes, for example. In the final analysis, indications are that it will require effort by both the Government and commercial farmers before agricultural production is increased.

Footnotes to Chapter IV

1) The economic reforms announced by President Kaunda at the Sixth International Council of UNIP on June 30, 1975 made specific reference to land and all freehold title was abolished, being replaced by leases of 100 years. But the mechanism by which those who previously held leases of 999 years (i.e. freehold) were to relinguish their titles to land remained vague and left many commercial farmers in a mood of anxiety.

2) UNGZAMI Bulletin No. 2 December 1976 p. 72.

3) Schultz (1976) op.cit. p. 173 special reference to Table 21. It might be worth mentioning that this estimate was based on an analysis of a 60 per cent sample of 1971 maize deliveries to NAMBOARD. For farmers delivering up to 4,000 bags, a yield of 45 bags per ha. was assumed, and for over 4,000 bags, 60 bags per ha.

4) Ibid, p. 172.

5) C. Elliot (ed.) Constraints on the Economic Development of Zambia (Nairobi, Oxford Univ. Press, 1971) p. 278. In the period 1965-8 it has been estimated that costs rose from K32 to K42 per acre. And more recently, an agricultural cost of production index for maize computed by the Commercial Farmers Bureau, showed an increase of 49 points between 1971 and 1975.

6) J. Davies: "Agriculture: giant in chains" in African Development November 1975 pp. 215-17.

7) UNGZAMI Bulletin no. 2 p. 62.

8) Lombard & Tweedie, op.cit. p. 57.

9) Monthly Digist of Statistics Vol. XIII see supplement.

10) Davies, op.cit. p. 17.

11) G. Scott: "Why Agriculture declined" in Zambia Ten Year After, Survey prepared by African Development Magazine, London, 1974.

12) Monthly Digest of Statistics, Vol. XIII, Nov./Dec. 1977 p. 51 own calculation from the statistic.

13) The First National Development Plan (FNDP) 1966-70 listed eight main objectives:
    i) To diversify the economy so that the copper industry is not the main employer in the economy, and so that a greater proportion of domestic demand is satisfied by domestic production from a large industrial base.

ii) To increase employment by at least 100,000 jobs during the course of the Plan.

iii) To increase average monetary output per head from K122 per annum in 1964 to about K200 per annum in 1970.

iv) To maintain reasonable price stability.

v) To minimise the inherited economic imbalance between the urban and to rural sectors with a view to raising the capacity of the latter sector for transporting resources into social and economic growth.

vi) To raise rapidly the general levels of education, as well as develop a wide range of specific technical, administrative, executive, professional and management skills in the population.

vii) To provide more and better living accommodation as a requisite ingredient of a better standard of living, and to raise the general level of social welfare.

viii) To develop new communications, sources of energy, transport and other economic infrastructure for a new economic order.

14) D.J. Dodge: Agricultural Policy and Performance in Zambia (Berkeley: Institute of International Studies, 1977) p. 55.

15) FNDP p. 12 Please note that figures have been converted from Pounds (£) into Kwacha (K) at a straight rate of 1 to 2.

16) Ibid, p. 22.

17) SNDP pp. 1-29.

18) FNDP p. 24.

19) C.S. Lombard, "Growth of Cooperatives in Zambia" p. 22.

20) Ibid, p. 19.

21) A. Seidman: "Alternative Development Strategies in Zambia" Lusaka, University of Zambia, June 1973.

22) SNDP p. 2.

23. Ibid, pp. 14-15.

24) See, for example, G. Arnold: "Agriculture's missed opportunities" and G. Scott, op.cit. in Zambia Ten Year After pp. 37-39 and 41-42, respectively.

25) Davies, op.cit. 17.

26) Kaunda "Humanism in Zambia" in de Gaary Fortman. After Mulungushi op.cit. p. 19. President Kaunda's admission here that the Government does not have the necessary know-how contradicts with his earlier statements concerning the cooperative societies when he claimed that the Government had the money and the know-how, see footnote 19 above.

27) Zambia, Ministry of Rural Development, Annual Report of the Department of Marketing for the year 1970, as quoted in Dodge, op.cit., p. 94.

28) See detailed accounts by both Dodge op.cit. p. 93 and C.L. Dixon. The Development of Agricultural Policy in Zambia 1964-77. An O'dell Memorial Monograph no. 5, 1977, p. 26.

29) R.A.J. Roberts and C. Elliot "Constraints in Agriculture" in C. Elliot (ed.) op.cit. p. 276. The two attribute the unprofitability and uncompetitiveness of Zambian agriculture with her neighbours due to high transport costs, a view which is shared by de Gaay Fortman in an article "Zambia's Markets" of the same book. For him however, he at that time saw prospects for agricultural expansion if only the transport problem was solved.

30) Dodge op.cit. 109.

31) Monthly Digest of Statistics, Nov./Dec. 1977 p. 25.

32) Dodge op.cit. 75.

33) UN Yearbook of International Trade Statistics, 1976.

CHAPTER V

CONDITIONS OF AGRICULTURAL DEVELOPMENT: SOME POLICY CONSIDERATIONS

1. Introduction

The poor organisation and performance of the agricultural sector as illustrated under both the traditional subsistence and the commercial subsystems in the previous chapters does require some further explanation and reconsideration of Government agricultural policy. As no hard and fast line can be drawn between the subsectors, however, it is only useful that we consider the interrelationship in policy and practice between the two, especially since there have been very few policies dealing specifically with each of the subsectors. What there have been are general Government quidelines and/or policies, which have acted upon the subsistence and commercial subsectors differently. It is the extent to which these policies have promoted or inhibited agricultural development that is of interest in the present chapter.

Within the context of Zambian policy-making there have been policies on crop pricing and marketing policies on credit provision, the use of improved seed, farm mechanisation as well as on research, training and extension. It is policies on all these and related issues that we consider to have been crucial to the past performance of the agricultural sector as a whole. Even more important, however, is the consideration of alternative policy tools that may be useful in meeting some of the stated objectives of agricultural development that would lead to a more prosperous rural society.

As the study has so far shown the desired objectives were of two types: the economic objectives on the one hand sought to diversify the economic base of the country, cutting on expenditure of scarce foreign exchange and achieving the desired increase in output at minimum cost. On the other hand, the social objectives took the form of improving the standard of living of the rural masses: better nutrition standards, health, education and housing, and, of course, absorbing a lot of their numbers into productive employment. To achieve these objectives changes in production methods were required. It is our intention in this Chapter to seek some understanding as to how the stated objectives influenced policy-making and how this in turn was influenced by other factors, the most important being technical, political and ideological factors. Naturally, in this kind of study the emphasis is on economic factors. Above all, it is the extent to which these policies have been important in improving subsistence farming and increasing commercial agricultural production that should be considered most.

2. Provision of Agricultural Credit.

Making credit available to farmers is regarded in most developing countries, Zambia being no exception, as a great financial incentive for those who seize the opportunity in the hope of employing more resources for a better yield. The argument usually put forward is that the ordinary agricultural producer has no financial resources of his own which he can use to expand production. From their studies on small-scale agriculture in India, Hunter and Bottrall observe".... until they (farmers) could be given, through credit, the initial cash resources to adopt the new seed-

fertiliser technology, there would be no hope of helping them to break out of the circle of low productivity, poverty and debt."[1] The message could not be clearer.

The provision of credit to both subsistence and large-scale commercial farmers in Zambia has not been without problems. Although, time and again, both government and private financial institutions have tried to channel farm credit through established channels, the very structure of these institutions and the lack of proper communication lines make it nearly impossible to achieve anything of great substance. At Independence agricultural credit was available from five cooperative credit associations (found operating in the Copperbelt, Central, Eastern, Western, North Western and Southern Provinces); as well as the Private Enterprise Loan Fund; the Land and Agricultural Bank; the Ministry of Agriculture and the Commercial Banks were largely responsible for loaning working capital to large-scale expatriate farmers. Following recommendations of the Seers Report of 1964,[2] it was decided to reorganize the credit institutions at that time by widening the scope of the parastatal land bank, making it responsible for all forms of government lending for agriculture in not just commercial agriculture. This was completed in 1965. At the same time, the Credit Organisation of Zambia (COZ) which we have already referred to in Chapter IV, was set up to provide credit mainly for the traditional subsistence farmers in the more remote Provinces; this was particularly directed into stumping and fertiliser loans. Uncertainty over credit sources, administration and the desire by the Government to have a uniform credit policy throughout the country led to the absorption of the six provincial credit associations into the C.O.Z.

Thus, by the time the F.N.D.P. was being launched in 1966, the Government had made a policy decision to the effect that agricultural credit be increased and a distinction made between loans and subsidies and, moreover, ensure the recovery of paid out loans. A stipulation was also made on engaging commercial banks in agricultural credit on an increasing scale. This restructuring of the administrative system proceeded until by 1968, the C.O.Z. was the only source of agricultural credit for individual farmers. In order to assist traditional subsistence farmers who had no security. C.O.Z. started with operating a soft loan policy, that is, loans being given to nearly all those who applied for them regardless of their ability to repay. However, partly due to a chronic shortage of trained staff and lack of control over the many villagers who obtained Government loans, the majority of debtors had come to regard credit as "fruits of Independence". This belief among the traditional farmers was further entrenched by the malpractices of the 1968 general election campaigns when agricultural credit was promised to only those who carried a U.N.I.P. membership card.[3)] Hence, although the amount of credit distributed and the proportion going to traditional farmers did increase, there was still widespread complaint above the inefficiency of the system of credit allocation. Thus, together with the great potential for improving the productivity of credit issued, prompted the Government to transfer in 1969 the C.O.Z. from the control of the Ministry of Agriculture to the Ministry of Finance - a move which led to the hardening of credit policy that fewer loans came to be issued thereafter. The large-scale farmer also found himself in an awkward position: he was being directed to use more of the facilities of the C.O.Z. and less of those of commercial banks.

Apparently, these changes were insufficient to improve the financial credibility of C.O.Z. so that shortly after its transfer to the Ministry of Finance, the Government decided to create in its place a totally new and restructured credit organisation. The Agricultural Finance Company (A.F.C.) was the final outcome. This Parastatal Company, a subsidiary of the Rural Development Corporation (R.D.C.) was created with the firm objective of operating on a purely commercial basis, to seek Government help only when the worst came to the worst. At present, A.F.C. loans can be classified under the usual headings of seasonal, medium and long term lending. Seasonal loans finance immediate crop or livestock prerequisites and should be repaid at the end of the season. Medium term loans are used for the purchase of farm machinery and equipment, also for livestock, and are granted for a period not exceeding seven years. Long term loans finance farm improvement and other development and are subject to repayment from between 7 to 30 years.[4] To administer the loans programme the A.F.C. has Headquarters in Lusaka and branch offices in each of the Provincial centres and districts.The progress of the Company is outlined in Table 5.1. This table refers to all loans and considering the present difficulties of assessing farmers' credit - worthiness, particularly of small-scale farmers: the recovery rates shown in the last columm must constitute a creditable performance.

Table 5.1

Loans : Payments and recovery by AFC since 1970/71

Year	No. of applications Received	Approved	Funds K(millions) Committed	Paid out[1]	Due for recovery[2]	Per cent recovered 31 March, 1976
1970/71	22,143	5,813	10.0	7.1	7.1	86.8
1971/72	16,196	10,165	9.8	8.2	8.2	86.6
1972/73	13,543	10,273	9.4	8.3	8.2	81.6
1973/74	13,119	10,962	8.7	7.6	7.4	86.5
1974/75	21,200	16,993	11.1	9.2	8.6	75.8
1975/76	25,600	19,903	17.5	n.a	n.a	n.a

Source: UNGZAMI Bulletin No. 2, Dec. 1976, Table 11 p. 61.

Notes:

1. Reasons why funds "committed" exceed funds "paid out" while non-use of loans or only part of a package by farmers and requisites not being available for which bank were granted.
2. Part of the medium-and long-term loans are not due for recall until subsequent reasons.

Unfortunately, however, additional data seem to suggest that little of the institution's agricultural credit has been directed towards the development of traditional subsistence farmers. Even as late as 1976, credit records of the AFC were showing that only 30 per cent of the gross loans were going to small-scale farmers, defined as those whose annual income did not exceed K2,000.[5)] But taking into account that the income of Zambia's traditional farmers does not approach this figure, the percentage spent on traditional agriculture is obviously very low indeed. This is a fact which clearly demonstrates a clash between the

economic criteria of regaining loan capital and the objectives of increasing agricultural productivity and improving rural standards of living through agricultural development. Until the creation of the AFC in 1969 the economic criteria had been almost ignored but now seem to have taken precedence over all other considerations. This is partly due to the fall in Government revenue, a factor itself attributed to the decline in copper prices on the international market. Also, the need to use public funds on other equally important economic projects is dictating that there be strict control over capital allocations.

Based on past experience then, a successful credit policy in Zambia would be one which goes to maximise the repayment rates while at the same time ensuring that a great number of traditional farmers have access to credit facilities. Since AFC is a government financed and subsidized institution it must therefore ensure that the loan application procedure is simple and straight forward so that even a farmer with the least formal education and very little security could be able to fill in the necessary information without much difficult to discourage him from proceeding with the application. A simpler form of credit application would also be advantageous to the AFC which would be cutting on its administrative costs. In addition there is the need for loan applications to be processed as quickly as possible, allowing for the time in which farm requisites could be purchased or collected before the crop season begins. In fact this is where AFC's district centres should be made to function to the fullest, instead of depending on the Headquarters in Lusaka to process all the applications. After all it

is the personnel in the field that is expected to know better about the farming capability of individual farmers, whom should be assessed accordingly in order to enable them to acquire loans (especially in kind) on Field Officers' recommendations, acting as guarantors.

To have some kind of fair distribution of what type of crops are grown, and to avoid the concentration on "easy" crops like maize, we feel that agricultural loans should be allocated for the purchase of particular inputs, such as ploughs and fertilizers, or the production of specific crops. Farmers may be good judges of how best to use their own funds, but after what happened to the C.O.Z. loans, when farmers went for consumer goods instead of farm inputs, the Government cannot risk giving cash loans to the same generation of traditional farmers.

The issue of credit repayment is closely related to that of administrative producers. In the last few years the procedure has been that the farmer signs a stop-order before being granted a loan which authorises the marketing organisation (usually NAMBOARD) to withhold sufficient payment, from crop sales to repay the loan; this money is then transferred to AFC. Such an administrative procedure has not been very successful, however, because a farmer can either sell his crops privately or in the name of another member of the family who do not have any dealings with AFC. Analysis of the repayment figures in Table 5.1 above indicates that small-scale farmers are by no means worse defaulters than large-scale farmers. In fact, a higher percentage of the defaulters are found to be large-scale farmers, who, possibly because of being politically powerful, feel that they can renege on their debts with impunity.

The delaying tactics employed by these large-scale farmers to repay loans sometimes puts the lending agency in a difficult position to execute its policy. As is often the case, when a credit organisation like AFC becomes strict in its lending policies to minimise on defaults, it is usually the small-scale farmer who is hit most as his credit-worthiness is low. In our opinion, thus, the viability of a farming enterprise must not be evaluated in terms of its credit-worthiness but the contribution it is likely to make to agricultural improvement and output if it were to be given a chance. In other words, the allocation of credit should be based on the strong recommendations of Field Officers, giving evidence of the farmer's agronomic skills. The objective would be to assist as many traditional farmers as possible to have access to AFC loans.

Nevertheless, it is apparent that individually oriented credit institutional credit distribution is not efficient in reaching large numbers. As in the case of the delivery of extension (reviewed below), new group approaches may be an economic necessity in organizing credit systems. Wherever social systems will permit, group responsibility and group benefit will have to be emphasized (a) to reduce cost of credit distribution, (b) to assure repayments of credit, and (c) to mobilize new savings into the credit system.

In the final analysis, however, the success of the credit policy being recommended here depends on other policy consideration as well. Sooner or later, farmers will get to learn that they cannot repay their loans unless they receive economic prices for their crop and are, at the same time, given an effective supporting system of improved farm management practices, training

and better extension services, and an efficient marketing channel. It is therefore important that we take a look at these factors as well and see to what extent they can influence the small-scale producer, whose economic behaviour is very much important to the improvement of living conditions in the rural areas.

3. Use of New and/or Improved Farm Inputs

It is often argued that, given the State of traditional agriculture, additional incomes can be generated only at a very high cost. That, emphasis on subsistence farming will be too costly as it cannot be financed out of its own resources. This, for one thing, is because the already employed factors of production have in general very low marginal productivity. In order to increase the rate of return each of these factors (the "State of the arts" we saw to be in operation in Cahpter III), must be changed once and for all. However, the direction in which this is to be done is of crucial importance. One thing which should be clear to the traditional farmer is that the proposed changes will be in his own interests. At the same time, however, it should be the task of the Government, through its Development Agencies, to ensure that the new factor inputs are being accepted and adopted by those whom they are intended for.

In land-abundant Zambia, the desired inputs for crop production by small-scale farmers are chemical fertilisers, pesticides and insecticides and improved seeds. The combined use of these inputs is thought to constitute the yield increasing formula. These inputs are at present supplied by NAMBOARD, although agricultural chemicals are also supplied by commercial firms. The use of these new inputs among rural producers is however

constrained by a number of factors. In the Report of Traditional Farmers... which was discussed at some length in chapter III, for instance, it was the general complaint of farmers that inputs were not getting to them in time, if at all. In the majority of cases, it was also that the fertilisers applied were not the types recommended by the extension staff for use in the province, or they were simply being applied ineffectively at wrong times and not infrequently so, inappropriate amounts. Losses from inappropriate fertiliser applications have had discouraging effects in some areas. Another major problem is that even in the few cases where small-scale farmers were using fertilisers in substantial and rightful amounts, the application was usually restricted to cash crops; where the application to food crops might have been equally important. Coming to the seed, the general complaint was that only large-scale quantities such as 90 kilogramme bags were being offered for sale, when farmers needed and could afford to buy only much smaller amounts. There even were those who advocated the use of a local seed which they claimed to do just as good as the hybrid one.

Clearly, if new and/or improved farm inputs are not distributed in time, or if the types and quantities are wrong, a deliberate policy of encouraging their use will definitely be difficult to implement; and has been within the Zambian context not all that much successful. There have been cases, for example, where the farmer would clear a large piece of cultivable land but inputs failedto get to him or came very late that only a small position was planted. What the farmer does in the next crop season should not be very difficult to anticipate; return to the application of traditional farm inputs, which he at least knows to get. We would therefore suggest that in areas where

multi-purpose cooperatives have been established, they should be given the responsibility of distributing farm inputs to the many rural producers who are more than willing to increase their production, given the proper incentives.

One other disturbing factor, like studies on the Green Revolution from India and Mexico have shown,[6] the supply of new farm inputs is on a more restricted scale than is generally thought to be the case. In Zambia too, in contrast to the political will of raising the farming and living standards of the poorer rural sectors, there is a tendency to concentrate the supply of new farm inputs in the hands of "emergent farmers", the other term for "progressive farmers". It is of course true that enthusiasm for innovation varies among cultivators, and may be found among traditional subsistence farmers. But in practice the emergent farmer commonly turn out to be the cultivator with access to credit as well as reasonably easy relations with the extension officers.

An alternative to such a policy would involve a spreading of investment and the application of agricultural innovations to the problems of small cultivators. This could be achieved by having the Department of Agriculture providing effective extension services in areas where there is little use of purchased inputs. For example, the use of demonstration plots on a wider scale would not only provide convincing evidence of the advantages of improved inputs, but would also provide the Ministry of Lands and Agriculture with valuable field data on optinal amounts of such inputs in various districts. In the past such information has been extremely difficult to

obtain; thus, it is no surprise that the package recommendations by the Department of Agriculture are sometimes not adhered to by the farmers. In this respect Marter and Honeybone in their study of the Zambian rural farmer have observed that "it is likely that the package offered to farmers may not be economically viable".[7] They advance reasons for the general lack of success due to varying physical and climatic conditions; this, in addition to the ineffectiveness of the extension and training services, which are examined in section 4 below.

In addition to the use of new farm inputs such as improved seed and fertilisers is the need to improve the traditional farmer's tools as well. Chapter III gave a good indication as to how, especially among the Mumbwa farmers, both tractor and ox plough were in use to a varying degree, in addition to the traditional hand hoe and axe. The presence of the tractor among the well-to-do farmers is enough evidence to suggest that there have been attempts to mechanize agriculture in Zambia. To this end tractor mechanisation of traditional farmers in all provinces was at first seen as a way of increasing agricultural production, especially since nearly half of the expatriate farmers had left the country in the two years after Independence. Thus, under the Tractor Mechanisation Scheme of 1965 the Government allocated K1.2 million for the purchase of tractors and set up tractor-hiring facilities at heavily subsidised rates. The charge laid down for tractor hire was a flat K4 per hour, but true costs, according to one study, varied between K6 per hour in the Northern and Luapula Provinces and K44 per hour in Western Province.[8] By the time the scheme was reviewed in 1967, after one full year of operation, it was found to have incurred large financial losses (due to high overheads and the large proportion of time spent in travel and repair)[9] and

also to have given few benefits to farmers (due to the lack of the additional inputs necessary to increase profits sufficiently to cover the hire fees).

The alternative that was left, and one which we feel should have been emphasized in the first instance, was the use of oxen. Since much of the necessary equipment can be produced and the oxen raised locally, this method of saving labour avoids strain on foreign exchange. For instance, the attachment of a seed drill to the existing plough or a new type of mouldboard plough itself are improvements which can greatly increase the effectiveness of farm investment in small-scale agriculture at very little cost. This lessens the need for scale and alleviates the administrative difficulties frequently associated with tractorization. There are also significantly fewer maintenance problems in the case of ox ploughs.

Thus, although we do not underestimate the difficulties that might be encountered with ox-drawn ploughs, especially in areas like Northern and Luapula Provinces where the keeping of cattle is not a tradition, any rational policy recommendation here would be one which minimizes the costs of production. Of the two approaches, tractorisation and the use of oxen, the policy that should be adopted is one which will encourage the use of ox-drawn ploughs by subsistence farmers and leave the limited number of tractors for use by commercial farmers and on State-run farms and producer cooperatives. This would not only lead to the reduction in Government expenditure on subsidies (and foreign exchange for the purchase of tractors), but would also lead to a more efficient combination of labour and farm machinery and other inputs.

4. Adoption of New and Improved Farm Practices

The differnece in yields based on the UNZALPI Villager-farmer classification (an approximation of our use of the terms "traditional subsistence" and "commercial") presented in section 5 of our chapter III is an explanation enough that it is not only the additional input, or the change in the quality of the existing one, which would assist in increasing farm output and factor productivity, but that farm yields are also susceptible to improved farm practices. These practices form those essential complementary elements without which the farmer cannot utilise economically his factor inputs. They, in fact, increase the transformation rates of each individual input to output. A few crucial farm practices that may draw attention in traditional agriculture may be noted here:

(a) seed-bed preparation: except under chitemene where ash is prepared in readiness for planting, this requires deeper ploughing, better levelling and dressing of each unit of land to be cultivated.

(b) Planting time; The Extension Service Branch of the Department of Agriculture should prepare crop calenders so as to allow more appropriate use of rainfall, the susceptibility of a crop disease, the sowing and harvest of other crops, utilise school holidays, etc.

(c) Row Planting: Instead of the simple broadcasting method of sowing, row planting permits proper spacing, hence optimum growth. It also helps to save labour from unnecessary and often difficult weeding and other cultural practices.

(d) Double cropping and appropriate rotations: where a single crop is as yet the rule (as in case of groundnuts), in many cases double cropping (e.g. groundnuts

and cow peas could be introduced. A good combination of different crops is often complementary, though in other cases the two crops sown together may prove to be competitive both for soil nutrients and other responsible inputs like capital and labour. Double cropping also lessens the risks and uncertainties inherent in the cultivation of one crop. Furthermore, a rotation of two to four crops, depending upon soil and climatic conditions, helps to retain soil fertility and increase the crop yield per hectare.

While the adoption of new farm practices cannot be achieved without the minimum participation by the farmers themselves, the fact remains that some form of expert advise is needed before they (farmers) can realize opportunities for increased farm produce and factor productivity.

Managerial innovations include, among other things, the substitution of lower-value farm enterprises by high-value ones. For instance, in cases where the farmers depend solely upon the cultivation of subsistence crops, it is better if they add cash crops, or combine the food crops with livestock enterprises. A good example here is the Northern Province where a number of traditional farmers have added maize to their subsistence crops of cassava and finger millet. Although maize is a staple in most parts of Zambia, it is at the same time a ready cash earner with high urban demand. By introducing maize production on a wider scale therefore, it can be expected that, in the long run, the market-oriented behaviour of small-scale farmers will induce them to adopt new and improved farm inputs and practices.

This is something which would hold good for the subsistence farmer.

While the foregoing factors are essential, they are not in themselves a sufficient condition for increasing farm output of the small-scale producer. In Zambia, as elsewhere in Africa, it is hard to see how rural supply may be increased without the existence of additional institutional arrangements which provide incentives for individual farmers to adjust their production patterns for higher agricultural productivity. A look at the other two remaining institutional factors, that is, training and extension and marketing, is here required.

5. Training and Extension Services

In a major study of Zambia's Farm Institutes and Farmer Training Centres in 1975, Honeybone and Marter arrived at this conclusion:

> "The impact of training.....is not on the whole very impressive, but it is clear that those households which start with greater resources benefit more".10)

Their data further showed that only a small proportion of those households with severely limited resources (i.e. the typical subsistence farming household) benefited, if anything at all. Doubt remained as to whether the extension personnel concentrated their efforts on the well-to-do emergent farmers or simply that the packages that were being offered were not sufficiently profitable at the farm level to have provided incentives for the traditional farmers to have adopted recommended farm practices.

An assessment of the effectiveness of training and extension services is by no means easy. It raises a host of problems, some of which, arise from the interaction of the extension service with other services such as credit and marketing, while others arise from the very considerable variability between farms in resource endowment and in climatic factors.[11] Such variability may often be more important in explaining yield differences than is the effectiveness of any particular intervention, including training and extension. But under conditions which are fairly constant over a wider area, factors such as training and extension come to play an important function in the determination of agricultural production.

Thus, with the objectives of providing advice, instruction and supervision in agricultural husbandry and management to the small-scale farmers, the Zambian Government has since Independence tried to have an effective Training and Extension Branch. By the end of 1976 the extension service had a staff of 1770, spread throughout the country's 52 districts. In addition to extension service the Government organises some basic training courses for farmers at the eight Farm Institutes (one in each Province before the creation of Lusaka Province) and thirty Farmer Training Centres.[12] Other forms of training include crop demonstrations, field days, agricultural shows and radio broadcasts, including a Farm Forum series designed as the basis for group discussion within villages.

However, as is a well known fact of Chapter III, past demonstrations have mostly been based on maize production as this is both a staple and a cash crop and, responds well to relatively small simple improvements in techniques. For these reasons, maize has all along been considered as an ideal crop for introducing traditional

farmers to improved techniques and eventually to commercial farming. Extension work has also been directed to the production of pineapples and burley tobacco. On the other hand, informal extension advice has been the main way of improving subsistence crops such as millet and sorghum. This is because most of the extension staff, which is cultured in modern production methods, are not well versed in traditional farming methods and are therefore of little use to the requirements of traditional agriculture. That there have been reports of extension officers learning from farmers is something that cannot be denied.

For more specialized crops like cotton, coffee, groundnuts and Virginia tobacco, it has been found desirable that price incentives (see Chapter IV section 5) and production schemes be used in addition to extension advice. Moreover, following President Kaunda's emphasis on improving nutrition through family production, the extension service has extended its instruction to fruits and vegetables, in particular to bananas, oranges and pineapples. This has been backed by the establishment of Provincial nurseries to provide suitable stock and by extra finance for the necessary demonstrations and for subsidies, but much more emphasis on these is needed.

Traditional beef producers have also been assisted by demonstrations of improved management techniques for calf and cow herds. Much more extension work, however, is necessary in this area as the traditional beef herd has increased considerably since Independence but slaughter rates have not; this is largely due to the multiple roles cattle play in the traditional sector: as sources of prestige, capital, fertiliser and motive power.[13] Other problems include the multiple ownership of single animals and the prevalence of trypanosomiasis; whole communal ownership of grazing of land, poor breeding stock

and widespread parasite infestation make work of the extension staff difficult.

To a great extent, extension services have been hindered by a number of problems; these include limited financial resources, limited transport facilities, lack of coordination with credit and marketing services, lack of supporting staff and services and shortages of suitable field staff. Not only is there an increasing number of desired agricultural camps, but where camps are manned, the personnel is very poorly trained. To make things worse, low pay, lack of proper supervision, difficult living conditions and the long distances (sometimes as many as 150 kilometres) that have to be covered by biycle have discouraged many would-be extension assistants from seeking employment in the agricultural sector.

In addition, more difficulties have been caused by the factors acting directly on the farmers. Diversification into cash crops other than maize, for instance, has been difficult to achieve by traditional farmers who have no means of hiring adequate labour at peak periods. As most cash crops (tea, coffee, cotton, groundnuts, etc.) are labour intensive and most small-scale farmers or traditional farmers lack motive power, production of these crops is seen as threatening the staple crops still necessary to this category of farmers.

We do realise that the training and extension problems enumerated above are many and varied in nature. However, these are the same problems which should be tackled if the small-scale farmer is to benefit from extension services which should, nonetheless, be aimed at increasing agricultural productivity at all levels.

If anything of substance is to be achieved on this front thus, we feel that the Government should make the conditions of service more attractive. This it can do by developing an incentive system to encourage the extension service to perform its tasks more effectively. Once this has been achieved, it can then aim at increasing the number of extension staff per agricultural camp so as to increase the staff/farmer ratio. Additionally, emphasis should also be placed on those crops like sorhun, millets, cassava and maize with which farmers - i.e. the traditional farmers are familiar with. An important step towards achieving this would be to increase money and effort for adaptive research. For example, research could be done on the cultivation of cassava and millets on an improved basis - something which would require enlisting the active support and participation of the farmers themselves so that problems of acceptance do not arise later, and high performance ensured. If necessary, extension services for the traditional farmers should be made distinct from those in the progressive ranks. It should carry the knowledge and understanding of improved inputs and techniques to the doorstep of the farmer and help to develop human resources and create attitudes favourable to rural progress. The essential role of an agricultural extension field service should remain that of a linking mechanism.

6. Market Outlets

Last in the series of the policy instruments that we have to consider for achieving improved agricultural performance is the issue of having an effective marketing system that will cope with handling that part of the agricultural produce which is not directly consumed by its rural producers. On this issue, we do not hesitate to contend that the existence of well-established marketing channels gives an impetus to agricultural growth and development. In order to be able to induce traditional farmers to grow beyond their subsistence requirements, a good and secure market should be provided for: an assurance or guarantee that the excess crop will be sold. Hodder put it succingtly, thus:

> ".....a tropical farmer is unlikely to increase his production unless an increased demand is there, is seen to be there, and is easily accessible. Improved seed, fertilizers and (farm practices): a tropical cultivator is unlikely to use these to increase his total production unless the market for his increased production is first seen to exist and is accessible". 14)

With Independence and the Zambian Government's commitment to a broad development policy of improving production and marketing conditions in all economic sectors, agricultural marketing is one area which has attracted a great deal of attention. But whether or not the stand that has been taken has gone to meet the requirements of the rural, small commodity producer is a matter of analysis. Even then, the extent to which this has acted as an incentive for increased agricultural production can only be deduced from the data at our disposal. Perhaps, what should be remembered is that marketing, whatever form it takes, involves a complex and, often, an indistinct interaction of traditional and

modern institutions with wide ranging economic policy issues, such as the determination of crop producer prices in and between sectors.[15] The lack of a strong base of traditional rural markets leads to a situation where a Government has to set up elaborate formal marketing structures. Such an approach to marketing is not only demanding of the limited administrative capacity but also means that much of the country's financial resources will have to be committed for the purpose. Inasfaras all these considerations are concerned, Zambia is a classic example.

Following the recommendations of the U.N.Survey team of 1964,[16] the most important way of marketing agricultural produce in Zambia has been through Statutory Marketing Boards. There are at present four such boards: the National Agricultural Marketing Board (NAMBOARD), the Tobacco Board of Zambia (TBZ), the Dairy Produce Board (DPB), and the Cold Storage Board of Zambia (CSB). As their names indicate these boards trade in specific commodities and usually have a monopoly, at least in the three line-of-rail provinces (i.e. Copperbelt, Central and Southern), and competition with a marketing board can be and often is illegal.[17] There are, however, other channels like to marketing cooperatives of the Northern, Eastern and Southern Provinces; the Rural Development Corporation; private enterprises and sometimes directly through Government schemes organised by the Department of Marketing and Economics. This second category of marketing channels is expected to operate in those areas where the four marketing boards have not yet penetrated, or, for reasons of economic efficiency and/or political considerations, better limit their functions.

It has been Government practice in the past to use the marketing Boards as an important means to manipulate production and consumption through price fixing and subsidies. What often happens is that if, for example, there is a shortfall in supply to demand the Government recommends a price increase for a given crop to induce farmers to grow more. However, it sometimes happens that farmers do not respond to price increases and, accordingly, supply does not change. Although it is not our intention to open a full discussion on the functions of these marketing boards, their past performance seem to suggest that some readjustment to marketing policy is urgently needed if the farmer has to benefit anything of substance from their marketing services.

One does not have to search far to discover that, NAMBOARD, which handles most of the agricultural output (especially that of maize) has, time and again, faltered in its attempt to cater for the interests of every farmer. From both small-scale and large-scale farmers general complaints against NAMBOARD include the unavailability, late delivery and poor quality of agricultural inputs (particularly fertiliser and hybrid maize seed). NAMBOARD has not only failed to deliver inputs in time, it has also on many occasions failed to collect produce from many of the rural depots scattered throughout the country. Cases occur whereby people are encouraged to grow fruits and vegetables, but when they produce surpluses, which in rural areas are unlikely to be marketed, it is the producers who suffer.

NAMBOARD has also its other disadvantages. Mostly due to the poor transport situation in Zambia (and the areas needing most services are remote with poor road systems and obviously the highest transport costs),

and the inadequacy of storage facilities, Namboard's handling and marketing costs for agricultural inputs and crops are far in excess of revenue. In 1975, for example, these costs were at nearly K2.00 per 90 Kg. bag of maize, or almost 40 per cent of the producer price; they were at over K40 per tonne imported fertilizer, or nearly 30 per cent of the landed cost.[18)]

Moreover, because the prices set by the Government seem not to be sufficient for NAMBOARD to cover its costs, it has become increasingly dependent on Government subsidies. Due to NAMBOARD's poor cost accounting (there is a reported shortage of qualified staff), it is difficult to assess whether these subsidies have been necessitated by NAMBOARD's inefficiency or because the Government sets uneconomic buying and selling prices in order to keep urban food prices low and at the same time encourage farmers in rural districts to grow more crops. However, without going into much detail about the short-comings of NAMBOARD it is clear from what we have said so far that the whole marketing arrangement is in need of some institutional shake-up.

The present system of having a Marketing Board to ensure that prices are fixed at a certain guaranteed minimum is good and should be continued. It does not only reduce the risk of getting a very low price, but also ensures that the farmer will get a steady flow of income from cash crop production. However, as our brief analysis of NAMBOARD has shown marketing services could be a major bottleneck. We have seen that NAMBOARD cannot cope with providing services for all crops listed in this study. It would be reasonable, therefore, for the Government to adopt a more flexible policy which would allow that private traders are also given a chance to assist the farmers. In other words,

should not be given a monopoly on crop purchases: it should be made to compete with private traders. If private traders are able to pay farmers a price equal to, or better than NAMBOARD price, then the farmer gains. As studies from West Africa and elsewhere have shown,[19] the activity of private traders adds flexibility to the producer prices based on world price equivalents, allowing them to be responsive to local supply and demand conditions. This would appear to be in accordance with the Government's objective of increasing rural incomes. Furthermore, by not discouraging private traders, individuals in the rural areas who may stand a better chance in trading rather than in farming would have a potential source of income. Moreover, to the extent that private traders function well, they will be helping NAMBOARD out of its difficulties.

Similarly, both in the Northern and Eastern Provinces where it is the cooperative marketing unions which, to a large extent provide crop marketing services to the farmers, they too should be made to compete, not only with NAMBOARD, but with other private traders as well. Farmers could thus benefit from an increase in efficiency which might result from such competition.

Promotion of private marketing channels in this way would generate greater growth linkages within the rural economy, since the demand of a wide range of goods and services from farm tools to small transistor radios is substantial in many rural areas once incomes increase. It is only desirable, therefore, that the Government Channels through the provision of infrastructure, training programmes, and small-trader loans can stimulate investment in service activities and consequently induce farmers to produce more.

The encouragement of private marketing channels should not here be interpreted to mean the replacement of officially recognised marketing boards. Rather, we are for a case where individual traders would come together to form cooperative marketing unions, not so much on the model of those in the Eastern and Northern Provinces, but ones which would bring the producers and traders together, to programme their activities together or in consultation with one another, as to minimize on marketing costs. These could be, as Makings has suggested, Government sponsored marketing board operating as residual buyers and not as monopolies.[20] These boards which would guarantee a minimum price can in this way help to stabilize agricultural prices, and be profitable to both cultivator and trader. The achievement of this objective, however, like all the policy recommendations we have enumerated in sections 2 to 6 above, lies in the manner in which they are to be implemented in co-ordination with one another. As a matter of fact, once measures are being taken to reshape the market institutions, there should be some form of corresponding improvement in credit, training, extension and research facilities; not one factor should be regarded as being more important than others. Rather, their improvement should strongly be linked to each other. It must be realised that its the whole agricultural machinery which is in need of improvement

Footnotes to Chapter V

1) G. Hunter and A.F. Bottrall, Serving the Small Farmer; Policy Choices in Indian Agriculture (London: Croom Helm Ltd., 1974) p. 223.

2) In 1963 the Government had requested United Nations assistance in establishing a broad framework and policy for an integrated social and economic development plan, and in response to this request, a UN/ECA/FAO survey team headed by Dr. Dudley Seers presented a report of its findings in 1964.

3) R.H. Bates: Rural Responses to Industrialization: A Study of Village Zambia (New Haven London: Yale University Press, 1976) see especially his Chapter eleven.

4) UNGZAMI Bulletin no.2 op.cit. p. 62. The significance of the different types of loans to the farmer can be seen in the following table for 1974/75 season:

seasonal loans	74.30 %
medium-term loans	24.84 %
long-term loans	0.84 %

Rates of interest charged were 8 per cent for seasonal loans and 7 per cent for medium- and long-term loans. It must be realised that security is required, or insisted upon for medium - and long-term loans and since the small farmer has very little or no security the two types of loans are restricted for use by commercial farmers who can repay.

5) Idem.

6) See, for example, K. Griffin: "The Green Revolution; an economic analysis" and A. Pearse: "Technology and Peasant Production: Reflections on a Global Study" in Development and Change Vol. 8 No. 2, April 1977.

7) A. Marter and Honeybone, op.cit. p. 77.

8) Lombard and Tweedie, op.cit., p. 81.

9) Cleave estimates that tractors may require 1,200 revenue earning hours per year to break even. Tractors are frequently used only half as many hours. See Cleave African Farmers: Labour Use in Development of Smallholder Agriculture. p. 201.

10) D. Honeybone and A. Marter: An Evaluation Study of Zambia's Farm Institutes and Farmer Training Centres (Lusaka, UNZA 1975) p. 61.

11) U. Lele: The Design of Rural Development: Lessons from Africa (Washington D.C. IBRD, 1975) p. 63.

12) Apart from these Government Institutions there are a number of other training institutions assisted by religious organisations: Chipembi Farm College in Central Province is supported by the United Church of Zambia and trains farmers in dry-land farming; Kalulushi Farm College, Copperbelt Province is sponsored by the World Council of Churches; Zambia Training Farm, Southern Province, Under the Bishops of Monze and Milan giving training mainly in irrigated farming. See UNGZAMI Bulletin No. 2 p. 59-60.

13) R.J. Fielder; "The Role of Cattle in the Ila Economy" African Social Research No. 15, June 1973; also R. Evans, "Africans as Livestock farmers" in New Common wealth 1960.

14) Quoted after Gaay Fortman "Zambia's Markets" op.cit. p. 193.

15) Lele op.cit. p. 100.

16) Popularly known as the Seers' Report (see our Chapter IV fn. 17.).

17) NAMBOARD, for example, has a monopoly on the line-of-rail in the following crops: maize, cotton, groundnuts and sorghum.

18) Dodge, op.cit. p. 84.

19) See D.M. Dunham's Group Interests and Spatial Structures, study of regional development in Southern Ghana, Unpublished Ph.D. Dissertation, Amsterdam, 1977.

20) S.M. Makings: Agricultural Problems of Developing Countries in Africa (Lusaka, Nairobi: Oxford University Press, 1967) pp. 113-131.

CHAPTER VI

SUMMARY AND CONCLUSION

The course this study has taken may be compared to a routine medical practice: it required that we spot the symptoms in Zambia agriculture, make the necessary diagnosis and finally prescribe a remedy. The first task may not be so difficult to a keen observer; the second may demand some fore knowledge in the field and the third is left open to interpretation, depending on its likely effect towards curing or arresting the ailment. The basic assumption has been throughout that no two doctors' results can be exactly the same.

The problem with the backward nature of the rural areas in Zambia has been identified and closely linked with the low levels of agricultural production prevalent in the traditional sector. This is a fact which has been re-inforced by the existence, on the other hand, of a small but prosperous commercial agricultural sector dominated by a white settler community. Considering that it is under the traditional subsector, and not under the relatively small commercial subsector, where the majority of the Zambian people live; it has been the objective of the Independent Zambian Government, through the pronouncements of President Kaunda, to redress the imbalance, not only between the urban and rural areas, but also within the agricultural sector. Regarding the agricultural development of the rural areas, therefore, the stated objectives have been to: One, secure self-sufficiency in food crops; two, generate some cash income for the rural people and, three, to engage as many people on the land as possible. On the other, the Government has been following a conscientious policy of encouraging the commercial subsector of producing more and more of the agricultural produce, notably maize, to cater for the

bursting urban market. The dilemma then for the Kaunda Administration has been one of having to choose where to concentrate effort. Thus, whereas it has generally been agreed that under the circumstances that prevail in Zambia, agricultural production should be improved and expanded before any meaningful rural development could be achieved, controversy on how this should be done lingers on.

This study has shown that a policy for agricultural development, and indeed one for rural development must take into account a number of related, and sometimes unrelated factors. We have seen that (or at least we have argued), to gear agricultural production towards the development of the rural areas does not simply mean the adoption of new and improved farm inputs and practices. Rather, it is the improvement of social and economic facilities in the rural areas and a better participation of the rural people in social, political and economic matters which must be seen as desirable objectives, in every respect of the word. Thus, in the search of a tenable and long-lasting solution to agricultural development, one has to consider the institutional arrangements and policy strategies at the time.

Our study, which concentrated on both the traditional farmers under chitemene and the large-scale farmers under modern commercial production has impressed on us an amazingly similarity on how institutional factors can be crucial in determining the levels of agricultural production. Knowing that natural or exogenous variables like climate and soils are on the whole favourable to the crops that can be and have been grown in Zambia, the major constraints remain as to how one gets farm inputs in time and in appropriate

amounts. And in the case of a traditional farmer, the concern is not only with how and when he gets the required inputs, but also that he has to, first of all, acquire the necessary skills in order to be able to improve on his level and quality of farm output.

We have also come to learn that to achieve the changes implied by the use of fertiliser, other "modern" inputs, and improved management calls for fundamental changes, inside as well as outside the farm. The latter, those in the structure necessary to assure reliable supplies of inputs at reasonable prices, will call for a level of political dexterity and national commitment which may well exceed that required to mobilise natural resources themselves. Yet these elements must be found if the opportunities are to be exploited and the traditional farmer brought into the main stream of the national economy.

Meanwhile, increases and improvement of quality in agricultural production in the traditional farming subsector are considered the most direct way of contributing to the problems of employment and income distribution although it is carefully recognized that the transformation of traditional farming into market-oriented farming is a long run process. That is why in this study we seem to favour the kind of agricultural innovations which take place within the farm itself for the immediate benefit of the traditional household. The message is: if you are to raise the living standards of the majority of the people in the rural areas, first make them to produce most efficiently staple crops with which they are familiar before grafting on them cash crops, which because of the risks involved, attract only a minority of traditiona farmers. The whole subsector does not

start moving and traditional subsistence agriculture remains as undeveloped as ever.

It has been shown that the Commercial Agricultural subsector undoubtedly provides up to the present time the largest share of marketed production. Since the traditional subsector cannot produce significant surpluses, it is upon the commercial subsector where the urban industrial workers and their dependants rely. Country-wide shortages of maize, an example of the past, were nothing more than a failure in the crop of this crucial subsector. However, there are indications that surplus production is increasingly coming from those of the semi-commercial ranks, or emergent farmers as they are euphemistically referred to in Zambia. The main disadvantage to the growth of this category of farmers is that they tend to attract the most attention from agricultural extension officers to the detriment of the majority of traditional subsistence farmers. Our stand is clear: their development should be directly linked with the development of the rural areas and not just with the export of a few of their surpluses to the urban areas where the little cash income that they may earn end up being absorbed in limited consumer goods. The development of the agricultural sector in the Zambian context will only be realised once the majority of the rural people are sufficiently able to feed themselves and generate adequate income necessary for leading a decent life.

On a final note, what emerges out of the whole discussion above is not so much that we could have provided one, and only one way of looking at Zambian agriculture, but that, in the light of both the historical and contextual circumstances, we feel that

the achievement of the government's stated objectives can only be possible if there is some concerted effort to see to it that the suggested policy changes come to bear fruit. The key word remains that without agricultural development, rural development is impossible.

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Abbreviations

ASR - African Social Research

CSO - Central Statistical Office

ISS - Institute of Social Studies

UNGZAMI - University of Nottingham's Farm Management Investigation for Zambia

U.N.I.R.S.D.- UN Research Institute for Social Development

UNZA - University of Zambia

UNZALPI - University of Nottingham and Zambia Agricultural Labour Productivity Investigation

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APPENDIX A

Mean annual food intake[1] Kgs. per capita, by farming regions

Ref. No.	Farming region	Maize		F/Millet		Sorghum		G/Nuts		Cassava		Sw/Potatoes		Pulses		Vegetables		Fruit		Fish[2]		Total weight per year/head
		Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	Prod.	Purch.	
1.	Large circle chitemene	17.1	0.0	38.0	0.0	0.2	0.0	3.8	0.0	121.1	0.1	4.0	0.1	4.5	0.3	26.4	0.5	1.8	0.0	4.3	2.0	222.3
2.	Small circle chitemene	87.8	0.0	17.2	0.0	25.0	0.0	0.8	0.1	20.6	0.0	2.3	0.5	1.3	0.3	31.3	3.0	8.1	0.0	1.3	1.8	201.9
3.	Block chitemene	74.0	10.2	3.1	0.0	48.5	0.3	1.4	0.0	8.4	0.0	8.3	0.0	1.5	0.1	37.3	1.6	3.9	0.0	1.4	3.5	203.5
5.	Isoka	29.5	0.3	69.1	0.0	0.0	0.0	1.5	0.1	59.7	0.0	2.3	0.0	9.0	0.3	25.8	1.7	0.9	0.1	2.2	1.7	204.2
6.	Luangwa	92.0	1.6	9.1	0.0	16.1	0.0	3.1	0.2	5.4	0.0	0.1	0.0	0.5	0.5	18.7	2.4	43.4	7.6	4.6	0.8	206.3
8a.	Nongwenlu	2.0	1.9	1.6	0.1	0.9	0.0	1.1	0.0	207.8	0.8	2.0	0.1	0.9	0.0	21.7	0.1	3.2	0.0	28.6	3.3	276.1
8d.	Mweru Wantipa	9.8	0.0	0.1	0.0	0.0	0.0	1.6	0.2	159.6	0.0	1.6	0.0	0.8	0.1	16.3	0.0	8.8	1.2	10.2	8.8	218.2
8e.	Lake Tanganyika	0.2	0.3	5.4	0.0	0.0	0.0	1.8	0.0	93.4	0.0	0.0	0.0	0.9	0.3	6.2	1.1	8.0	0.6	4.1	0.9	173.2
10.	Luvale	9.8	30.7	1.5	0.0	13.8	0.0	1.5	0.3	216.4	2.2	5.9	0.7	1.6	0.3	28.7	1.2	1.5	0.2	11.9	1.7	328.9
11.	Kaoma	58.4	4.0	0.0	0.0	6.1	0.0	5.3	0.0	173.7	1.2	3.8	1.1	1.6	0.0	29.1	1.2	11.9	0.2	9.1	3.8	310.5
12.	Barotse	57.4	51.9	0.0	0.0	35.0	0.0	0.1	0.0	58.9	1.9	4.6	0.4	0.1	0.0	18.4	0.6	13.2	0.4	13.6	7.7	264.2
14.	Gwembe	121.4	12.4	0.0	0.0	21.3	0.0	5.5	0.1	0.0	0.0	1.2	0.0	1.2	0.5	53.2	3.3	1.6	0.0	2.2	1.2	225.1
15.	Mambwe	43.0	0.6	55.2	0.1	0.0	0.0	1.3	0.0	22.7	0.8	0.0	0.4	13.6	0.5	21.4	0.3	0.4	0.1	0.1	0.0	160.5
17.	Nyika	85.4	0.4	32.2	0.0	0.0	0.0	0.7	0.0	17.2	0.0	2.4	0.0	12.8	0.2	32.7	1.6	0.8	0.0	0.2	0.1	186.7
19a.	Southern Plateau	128.2	0.3	0.0	0.0	25.1	0.0	15.0	0.2	0.0	0.0	1.3	0.0	0.7	0.0	65.8	1.5	8.2	0.0	0.7	0.1	247.1
19b.	Central Plateau	158.5	0.9	1.1	0.0	9.9	0.0	1.2	0.0	0.2	0.0	1.5	0.1	0.7	0.4	16.2	3.9	3.0	0.0	3.3	6.5	205.4
19c.	Eastern Plateau	123.5	0.0	0.1	0.0	0.0	0.0	5.7	0.1	0.2	0.0	0.0	0.0	0.6	0.3	18.2	3.4	34.1	0.0	0.7	0.3	187.2
20.	Namwala	113.1	28.5	0.0	0.0	0.0	0.0	3.4	0.0	11.7	0.0	0.0	0.0	0.0	0.0	23.8	0.0	10.9	0.0	9.7	1.5	202.6
	Mean	72.0		10.0		14.0		4.0		60.0		3.0		2.0		28.0		12.0		6.0		211.0

[1] Excl. livestock products

[2] Excl. kapenta

Source: FAO, Zambian National Food Consumption Survey; J. Schultz: Land Use in Zambia; Table 17 p. 164.