

INTEGRATION AND DEMOCRATIZATION OF ZAMBIAN AGRICULTURAL
EXTENSION

by

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ABSTRACT

Lifelong education occurs in a combination of formal and non-formal settings throughout an entire lifetime. Educators such as Dewey (1916), the authors of the 1919 Report, and authors of UNESCO position papers during the 1970's emphasized the need for democratic access to educational opportunities which are integrated horizontally across a variety of settings and vertically over a range of ages.

An example of the problems caused by the lack of such democratization and integration is found in this study of Zambian agricultural extension. It assesses programs of the Ministry of Agriculture and Water Development in Zambia in terms of procedures relating to staffing, training, physical resources, financing, research and technology. It was found that there is limited integration and democratization of the procedures studied.

A much more participatory and co-ordinated approach at several levels is recommended. Well integrated efforts of different agricultural extension providers might better serve all farmers in their struggle to reverse the decline in agricultural

production which has occurred in recent years. Further research would assist this process and enhance an understanding of lifelong education.

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LIST OF ABBREVIATIONS/ACRONYMS

AA	Agricultural Assistant
AFC	Agricultural Finance Company
ARP	Adaptive Research Planning
CD	Commodity Demonstrator
CIDA	Canadian International Development Agency
CSO	Central Statistics Office
DA	Department of Agriculture
DAO	District Agricultural Officer
DDC	District Development Committee
DG	District Governor
DPB	Dairy Produce Board of Zambia
DS	District Secretary
FAO	Food and Agriculture Organization
FINNIDA	Finnish Development Agency
FIs	Farm Institutes
FTCs	Farm Training Centres
GDP	Gross Domestic Product
GNP	Gross National Product
IFAD	International Fund for Agricultural Development
ILO	International Labour Office
LINTCO	Lint Seed Cotton Company of Zambia
MAWD	Ministry of Agriculture and Water Development
MCC	Member of the Central Committee
Namboard	National Agricultural Marketing Board
NORAD	Norwegian Agency for Development
NRDC	National Resources Development College

PAO	Provincial Agricultural Officer
PDC	Provincial Development Committee
PS	Permanent Secretary
RDC	Rural Development Corporation
SAA	Senior Agricultural assistant
SMS	Subject Matter Specialist
SIDA	Swedish International Development Agency
TBZ	Tobacco Board of Zambia
TNDP	Third National Development Plan
UNESCO	United Nations Educational Scientific and Cultural Organization
UNIP	United National Independence Party
UNZA	University of Zambia
VPC	Village Productivity Committee
YWCA	Young Women Christian Association
WDC	Ward Development Committee

CHAPTER ONE

BACKGROUND TO THE PROBLEM

Agriculture in Zambia is important because it is the major source of food for an ever increasing population and provides one of the few methods for the country to acquire foreign exchange. Several factors have contributed to increases in agricultural production in most developed countries (Swanson, 1984; Maunder, 1972) but much credit for improvements in Zambia has been attributed to agricultural extension, a non-formal education system which promotes the adoption of new scientific knowledge, skills and attitudes (Kelsey & Hearne, 1955).

Research has been conducted on factors that inhibit the effectiveness of agricultural extension. Some stem from the limited quantity and quality of personnel who plan and implement procedures, others from a lack of physical resources, appropriate technology, and the limited nature of research (Coombs, 1974; Conveyers, 1982; Lele, 1975).

The Economist (1984), predicted that economic growth would occur in most developing countries between 1980 and 1990. However, a significant decline was predicted for sub-Saharan Africa of which Zambia is a

part (see Table 1). Approximately 75 percent of rural Zambians earn their income from agriculture, most of which is either subsistence or traditional farming. Most of this farming neither contributes to the G.N.P. nor earns profits for farmers. Indeed, some individual households in Zambia are unable to produce enough food to sustain their own families (Elling, 1977).

This projected decrease in agricultural productivity, coupled with the associated poverty, illiteracy, disease, and hunger makes it essential to have a framework for agricultural extension which would assist policy makers and planners to effectively design and implement programs to ensure that people acquire knowledge, skills, attitudes and practices which will enable them to improve the situation.

Agriculture in Zambia has changed a great deal since the colonial period and some growth has been witnessed. There has also been an increase in the training of personnel to improve this sector. Financial assistance from local and foreign organizations has increased and agricultural development has been given a high priority in National Development Plans. The future of the Zambian economy has, however, been affected by declining maize yields.

Table 1. Growth in Developing Countries
(1960-1990)

Country group	GDP 1960-70	GDP 1970-80	Projected GDP 1980-90		Projected GNP per capita 1980-90	
			High	Low	High	Low
All developing countries ¹	5.9	5.1	5.7	4.5	3.3	2.2
Oil importers	5.7	5.1	5.4	4.1	3.1	1.8
Low-income	4.2	3.0	4.1	3.0	1.8	0.7
Sub-Saharan Africa	4.0	2.4	3.0	1.9	0.1	-1.0
Asia	4.3	3.2	4.4	3.2	2.1	1.0
Middle-income ²	6.2	5.6	5.6	4.3	3.4	2.1
Oil exporters	6.5	5.2	6.5	5.4	4.0	2.9

Source: The Economist August 25, 1984, p. 10-11

1 Excludes China

2 Includes Spain

Although the Five-Year National Development Plans focused on development in the rural sector, there has been little since independence. Faced with a limited number of financial, human, and physical resources, and with an imbalance between the rural and urban sectors, agricultural development now depends upon the integration of effort among organizations.

Agricultural extension participants are difficult to reach and retain and this has been well documented in the Zambian context, (Mutava, 1983; Edstroem, 1966; Jansen-Dodge, 1977; Natesh, 1972; Papagiannis & Bock, 1983). Lack of participation, like other problems, is

due to many factors, some of which are beyond the scope of this study. For present purposes the key variables were deemed to be "staffing", "training," "physical resources", "research", "financing", and "technology." Collectively, these will be referred to as "procedures" pertaining to agricultural extension operations. At present they are implemented in a variety of ways - sometimes efficiently, sometimes inefficiently. In this study the extent to which they exemplify or fail to exemplify principles of lifelong education will be considered.

Statement of the Problem

Agricultural extension under the Ministry of Agriculture and Water Development (MAWD), a non-formal educational organization, was created to plan and deliver educational and social services to rural communities, especially farmers. MAWD has been the main provider of agricultural extension services to the community. Other providers have been private, voluntary and international organizations but all agricultural extension services are fragmentary. Different departments have rarely co-ordinated their activities with those of others. Potential

participants are usually not consulted or involved in decision-making and, as a result, rarely participate in extension programs.

Three concepts embedded in the notion of lifelong education appear to be very relevant to agricultural extension in Zambia. According to proponents of lifelong education, education systems ought to be vertically integrated, horizontally integrated and democratized. These concepts constitute a frame of reference within which it is possible to critically analyze agricultural extension procedures (staffing, training, etc). In some respects the notion of lifelong education is a blueprint or utopian vision concerning education as it might be in ideal circumstances. Like many developing countries, Zambia cannot expend vast resources on education. Yet within present constraints, and those expected in the future, it is necessary to examine the extent to which procedures incorporate, exemplify or have regard to, the vision embodied in the notion of lifelong education. Thus, in this study, exhortations emanating from authors developing the conceptual and operational foundations of lifelong education are the framework against which agricultural extension procedures are examined. Where the procedures, as presently

implemented, conform to the "ideals" of lifelong education, this is noted. Likewise, where present practices (as associated with the six procedures) do not conform to the exhortations of those promoting horizontal integration, vertical integration and democratization, this is also noted.

Thus, the question investigated concerned agricultural extension in Zambia and asked:

"To what extent are procedures associated with staffing, training, physical resources, financing, research and technology:

- Vertically integrated?
- Horizontally integrated?
- Democratized?"

Lifelong Education

The idea that development and learning should continue throughout life can be traced back to the 1890's (Dewey, 1916) and was repeated in the 1919 Report (Faure, 1972; UNESCO, 1976). Since the United Nations Educational Scientific and Cultural Organization (UNESCO) adopted it as a "master concept"

for educational policy and planning, lifelong education has been debated and issues raised concerning its definition, practicability, relevance, and adoption in various socio-economic, political and cultural contexts.

Despite continued debate, there seems to be general agreement concerning its utility as a master concept for the organization of education systems (Cropley, 1977, 1980; Dave, 1976; Faure, 1972; Gelpi, 1979). The need for and importance of lifelong education in societies experiencing rapid change cannot be overstated. Central to this idea is the need to horizontally and vertically integrate education systems and, at the same time, democratize them.

Proponents of lifelong education claim it is not possible to meet everyone's educational needs through education provided by "educational" institutions. Instead, all institutions, agencies and social instrumentalities ought to have an educational function. People can learn in a diverse array of formal, non-formal and informal settings and education must become the preoccupation of everyone, not just "educational" institutions. Hence Dave (1983) saw lifelong education as including:

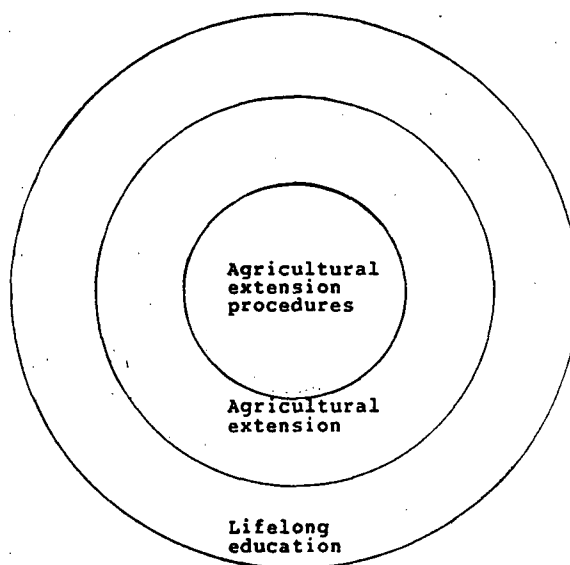
...a whole complex of goals; assumptions; formal and non-formal patterns of education in the home, school and community; educational management including planning, structures, organization, finance, etc.; and the entire technology of education including objectives, curriculum, learning strategies, means and media of learning, evaluation procedures and so on (p. 20)

Lifelong education occurs in both formal and non-formal settings, and encompasses both planned and incidental learning. From this perspective, education ought to be available to all individuals, and all institutions and social settings ought to be considered as providers of education. From an organizational perspective, this concept embraces educational activities taking place in a broad array of settings including those involved with agricultural extension. Agricultural extension "procedures" (staffing, etc), the dependent variables in this study, are thus embedded in the socio-cultural, socio-economic and socio-historical context of agricultural extension in Zambia which, for present purposes was "nested" in the notion of lifelong education. This relationship is portrayed in Fig. 1.

Lifelong education constitutes a framework which guides the roles of individuals, groups, institutions, and organizations in their effort to educate the rural community, specifically farmers. Vertical integration

refers to the fact that children, adolescents and adults need to learn continuously throughout life. At present, age-related barriers impede access to education. For example, in many societies it is difficult to pass from primary to secondary school. At each level there are barriers that "filter" or deter people from continuing their education. Sometimes these barriers have little to do with the "real" needs of the people but stem from outdated concepts, often formulated in another country.

Fig. 1. Relationship between lifelong education, agricultural extension and procedures



The Faure (1972) report suggested that education should be provided in many ways and outdated barriers between different departments and levels of education

and between formal and non-formal education should be eliminated. Instead, providers of formal and non-formal education ought to combine their "theoretical," "technological," and practical aspects. Schools, colleges, industries, homes, churches, banks and many out-of-school institutions and organizations should all provide education. In vertically integrated settings learners would drop in and out of education as their needs dictate. Education would no longer be the near exclusive preserve of children and youth.

Horizontal integration stems from the fact that education occurs in a diverse array of settings of which the school is only one. Education occurs at home, at work, on the farm, in recreation clubs, churches, industrial settings and so on. What Coombs (1985) calls "informal" learning occurs in response to the media and the ebb and flow of daily life. Tough (1971) observed that individuals engage in varied self-directed learning projects. These ought to be recognized and reinforced through education provided in formal and non-formal settings. Authorities should recognize that education can occur almost anywhere, in a variety of formal (school) and non-formal (out-of-school) settings, recognize the validity of education (wherever it occurs) and try to integrate the

offerings of various providers. Providers of formal and non-formal educational activities ought to co-operate (Gelpi, 1979).

In developed countries, the "participation problem" has been well researched and it appears that, in general, those who participate are already well educated (Cross, 1981; Boshier, 1973). Individuals who already have had access to formal education participate most in educational programs. Individuals without a basic education either cannot gain access to educational programs or fail to utilize available opportunities. Democratization, the third lifelong education concept utilized in this study, is concerned with the elimination of barriers that impede access to education and with the involvement of learners in the design and management of their educational experiences. Central to this idea is the need for equal access and participation in educational processes. The recommendations of the Faure (1972) report relating to democratization of education suggest that providers of education should give education to people and involve them in educational management.

The notion of lifelong education is profoundly relevant for Zambia but has not been extensively examined or used as a tool to appraise agricultural

extension procedures. For present purposes it was considered important to examine the extent to which staffing, training, physical resources, financing, research and technology were handled in a manner consistent with the exhortations of lifelong education theorists. At the outset, it was hoped this analysis of agricultural extension procedures would yield recommendations that might narrow the gap between lifelong education ideals and the practice of agricultural extension (as revealed through its key procedures).

Scope and Rationale of the Study

Agricultural extension in Zambia covers several aspects. This study was concerned with examining the degree to which some selected agricultural extension procedures exemplified the notion of lifelong education. These concepts, considered as significant in the development effort of agricultural extension in Zambia, have not been examined in this context. Among the procedures selected for attention were; staffing, training, physical resources, financing, technology and research.

Purpose of the Study

The purpose of this study was to assess the extent to which agricultural extension procedures (staffing, training physical resources, financing, technology and research) were "vertically integrated" "horizontally integrated" and "democratized."

The study was considered relevant in that it might help improve agricultural extension practice. It was hoped that the study would provide information on the extent to which the selected procedures exemplified lifelong education and that its findings would be of value to relevant policy makers and planners. It was believed that the study would make a modest contribution to knowledge concerning agricultural extension. Although there are perils associated with generalizing from one example to another, it was hoped that the Zambian case might pertain to similar situations elsewhere and that the findings might be the basis for future research.

Objectives of the Study

This study was designed to examine selected agricultural extension procedures in Zambia in the context of lifelong education, and had the following objectives:

- a) To review literature on lifelong education and discuss the utility of its conceptual foundations.
- b) To determine the extent to which staffing, training, physical resources, research and technology are:
 - vertically integrated.
 - horizontally integrated.
 - democratized.
- c) To reach conclusions and offer recommendations (for consideration by the parties concerned) concerning the integration and democratization of agricultural extension procedures.

Definitions of Terms Used in the Study

Non-formal education

Coombs (1968) defined non-formal education as:

...any organized activity, outside the established framework of the school and university system which aims to communicate specific ideas, knowledge, skills, attitudes and practices in response to a predetermined need (p. 15).

In this study, non-formal education was considered as functioning outside school-based settings (Grandstaff, 1978) and includes such activities as conferences, short courses, institutes, forums, independent study, workshops, seminars, and short-credit courses.

Formal education

Formal education encompasses to learning activities in schools, colleges and universities. According to Cropley (1977), formal education activities prepares individuals for future applications of knowledge and skills and does not necessarily relate to any particular age's problems or needs. It is are chronologically structured. Peterson (1980) defined formal education as organized programs or activities offering institution-based learning with an emphasis on structure, and usually for credit. It involves a defined content, systematic teaching, prescribed standards of performance, evaluation criteria (usually examinations) and leads to formal certificates, diplomas or degrees. In 1975, UNESCO stated that in

formal education:

...students are enrolled or registered regardless of the mode of teaching; i.e, it includes an educational series transmitted by radio or television if listeners are registered (p. 39).

In analysing predominant modes through which education takes place, LaBelle (1982) considered the formal educational mode to have admission requirements, hierarchical ordering, compulsory attendance and leads to attainment of certificates or other formal credentials. In this study formal education meant any structured and systematically organized effort in which either individuals, groups, organizations or communities are enrolled or registered to prepare a specific age-group of learners for future application of knowledge, skills, and attitudes which lead to the attainment of formal credentials. It was deemed to be a school-based or credit oriented system and takes place within institutions and organisations.

Lifelong education

Lifelong education encompasses formal, non-formal and informal learning activities within and outside academic systems. This includes both individual and institutional processes of learning (formal, non-formal, informal; credit, non-credit; school or

off-campus programs) (Dave, 1978). It was deemed to be a framework for conceiving, planning, implementing and co-ordinating activities to facilitate the acquisition of knowledge, skills, attitudes and practices related to individual and societal growth and development (Faure, 1972; Cropley, 1977).

Integration

Integration is a process of bringing together related parts or aspects (such as individuals, groups, institutions, problem areas or resources) into a unified order for a common cause or action. According to Coombs (1980), integration involves combining naturally related parts into a cohesive, unified order to enhance collective effort and cost effectiveness. This definition of integration was used as a synonym for co-ordination. Integration takes place at individual and community level and involves various issues and problems.

Vertical integration

The idea behind vertical integration is that learning goes on throughout life and that people are capable of learning at all age levels with each age-group having specific and special learning "needs."

According to the Faure Report (1972), vertical integration means that education systems should contain out-of-school as well as school education in close co-operation with each other. Similarly, UNESCO (1976) viewed vertical integration as education covering the span of life and rejected education confined to specific periods of life, traditionally, childhood and adolescence. Dave (1976) stated that all stages of education-- early family education, pre-school, school and adult education- require integration. A vertically integrated system is accessible to and benefits all individuals -children, adolescents, youth and adults -irrespective of age, sex, or economic status.

Horizontal integration

Education occurs in formal and non-formal settings. People also learn in informal settings but this does not constitute education. Providers of educational activities are varied and include peer groups, mass media, financial institutions, churches, colleges and schools. All institutions try to assist individuals, in one way or another, to improve their attitudes, knowledge or skills. Horizontal integration implies integration of educational activities, services and programs among providers. Various organizations,

institutions, groups and individuals that provide similar services and activities ought to integrate their activities. Cropley (1977) considered lifelong education as being related to all economic, vocational, and social aspirations of individuals.

In this study, horizontal integration was used to mean the following:

1. All institutions and agencies ought to provide education to individuals.
2. providers of formal and non-formal education ought to integrate their services and effort through co-ordination and co-operation in the design and implementation of educational programs and activities. Rather than developing and implementing similar programs separately, the essential components of programs are developed in a co-ordinated manner.

Democratization

Involvement of learners in the design and implementation of their learning experiences and the idea that education ought to be accessible to the various sectors of society has been an ongoing concern among educators. Such concerns were in evidence at the 1960 UNESCO Adult Education Conference in Montreal (Faure, 1972; Lowe, 1975) where discussion focussed on

the participation of individuals in educational programs, and the combining of child and youth education. According to Dewey (1916), democracy meant "participation", "co-operation", "involvement" and "consultation" at all levels of the planning process (program initiation, development, implementation, and evaluation). As used in the study, the term means equity (equal access, opportunity) and participation (involvement, consultation, co-operation) (Faure, 1972; Dave 1973) in education.

Agricultural extension

Agricultural extension is a non-formal educational process aimed at providing the agricultural community with knowledge, attitudes and skills. Swanson (1984) presented a similar definition of extension education. He saw it as:

...an organized, non-formal educational activity usually supported and/or operated by the government, to improve the productivity and the welfare of rural people who engage in all types of agricultural production.

The overall objective is to make individuals who engage in different agricultural activities into better decision makers and managers of their own learning experiences. Maunder (1972) defined it as a "service

or system" which helps farmers through educational procedures to:

1. Improve farming methods and techniques.
2. Increase production efficiency and income.
3. Better their standard of living.
4. Improve the social and educational standards of rural life.

Organization of the Thesis

The rest of the thesis is organized as follows. The next chapter, an examination of Zambian agricultural extension, describes the socio-economic and political context that influenced the development of agriculture in Zambia and the structure of MAWD. Procedures are also discussed. Chapter three presents the analysis of a conceptual framework. Chapter four describes non-formal education in the context of lifelong education and chapter five provides the methodology used in the study. The principal focus of the thesis is in chapter six, which analyses the degree to which the selected procedures exemplify the three elements of lifelong education. Chapter seven offers a

summary, discussion and conclusions. In the final chapter, recommendations are presented.

CHAPTER TWO

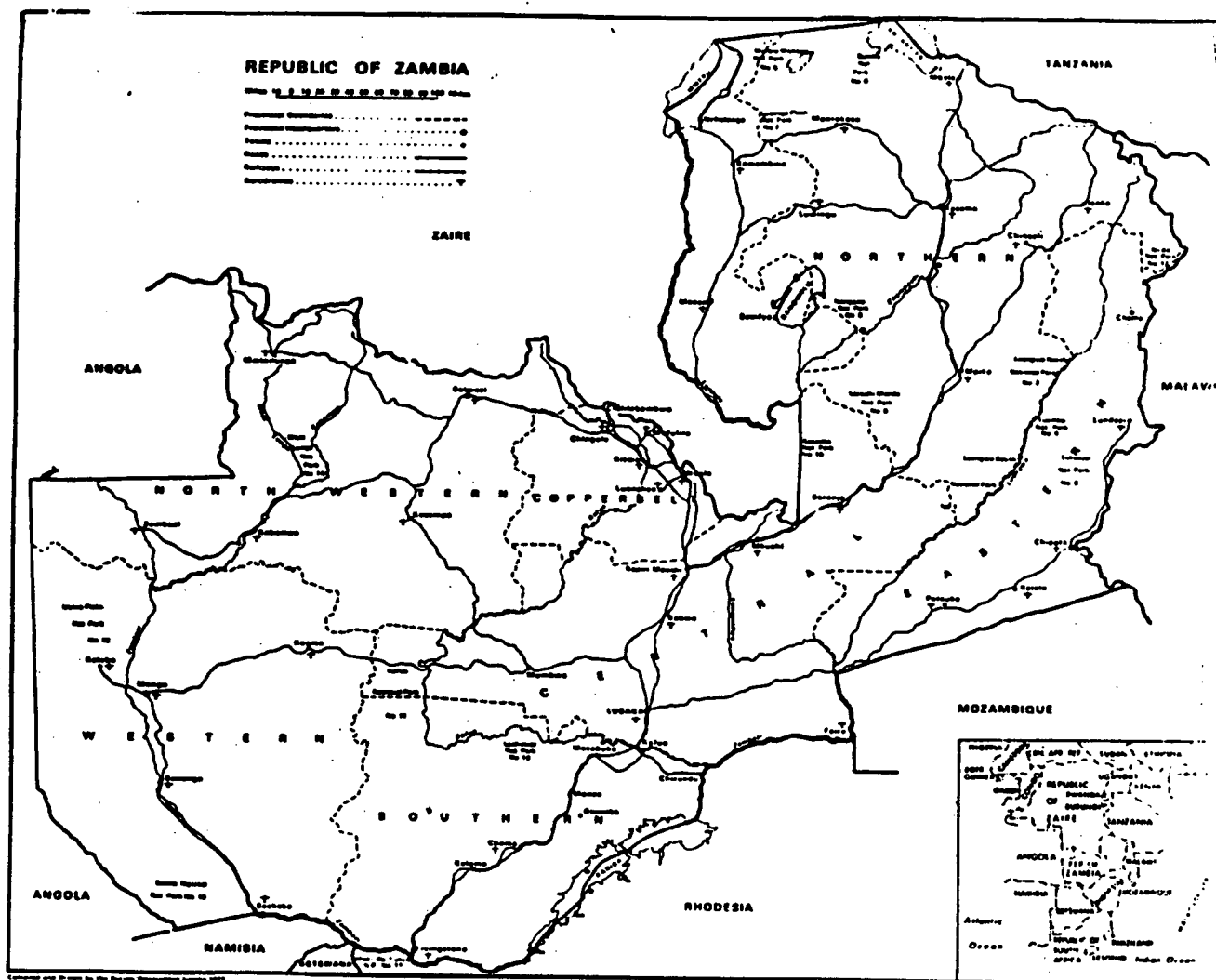
ZAMBIAN AGRICULTURAL EXTENSION

This chapter discusses agricultural extension in Zambia and highlights the colonial period, the post-colonial period, the current structure and organization of MAWD, and procedures selected for examination in the study.

Colonial Agricultural Extension

Zambia is a former British colony covering an area of about 753,000 sq kilometres. It has a population of about six million people, 60 percent of whom are under 25 years of age , and an annual growth rate of 3.2 percent. Of this population, 75 percent is rural and mostly agricultural. Fig. 2 shows the geographical position of Zambia and Table 2 the population between 1960 and 1980 (see also Table 3 for traditional farm systems in Zambia and Table 4 for categories of farmers by farm size). As shown in Table 2, the population in most of the rural provinces such as Eastern, Luapula,

Fig. 2 Map of Zambia



Source: International Labour Organization (1977).
Narrowing the Gaps: Planning for Basic Needs and
Productive Employment- Zambia. Addis Ababa:
 International Labour Office (JASPA).

Northern, Southern and Western decreased between 1960 and 1980. For the same periods, the industrial provinces had a remarkable increase in population. Lusaka province's population in 1980, for example, was more than double that for 1963. This indicates a population shift from rural to urban areas.

Table 2. Percent Population Distribution in Provinces--1963,1980

Province	1963 census	1980 census
Central	8.9	9.0
Copperbelt	15.6	22.0
Eastern	13.7	11.6
Luapula	10.2	7.3
Lusaka	5.6	12.2
Northern	16.2	11.9
North Western	6.0	5.3
Southern	13.4	12.1
Western	10.4	8.6
Total Zambia	100	100

Source: 1980 census of Population and Housing, Preliminary Report. Lusaka: Central Statistics Office.

Extension education in Zambia can be traced as far back as the colonial period. In this period (1920's to 1964), agricultural extension had a limited impact because it favoured the whites who were only a small

sector of the farming community.

Between 1890 and 1920, agricultural development in Zambia (then Northern Rhodesia) was stable and communities were reported to be basically self-sufficient (Gann, 1964; Hall, 1965; Elling, 1977; Shaw, 1976). However, with the introduction of the 1901 "Hut and Poll Tax", agricultural production started to decrease. This colonial government policy was designed to force Africans to earn money by working in the industrial sector. Most males migrated from rural to urban areas to work in low paying jobs. Africans had few opportunities to sell their agricultural output. Services that existed favoured commercial farmers, mostly whites. Markets were reserved for expatriate farmers.

Between the 1920's and 1930's, the Government set aside "Crown Land" for expatriates. This was the most fertile land in the country. Africans were excluded from ownership and settlement and instead re-settled in African Reserve Lands. At the end of 1930's, Elling (1977) reported that about 60,000 people had been moved onto Reserve Land. The reserves became overpopulated and "by the late 1930's, serious local food shortages were reported" (Elling, 1977, p. 6). Migrations from reserves to industrial areas continued, causing a

reduction in food supplies and other deleterious effects. During this time, agricultural extension services were not available to African farmers. Through the imposition of marketing, and pricing policies, the growth of agricultural produce above subsistence level was inhibited (Musambachime, 1980). It became clear there was no room for the participation of African farmers in designing agricultural extension programs. Later the African Improved Farmer Program and Peasant Farmer Schemes were formed although these reached only a small fraction of the African farming community and utilized a one-way flow of information.

Post-colonial Agricultural Extension

On 24th October 1964, Zambia attained political independence and the new government was faced with socio-economic and political hardships among the people, especially the economic imbalance between the rural and urban sector. Compared to the previous colonial administration, the new government took a much broader approach to socio-economic needs and such ministries as Community Development and Rural Development were initiated. The government had to redress the economy to respond to many needs. The

emphasis was on rural development especially agriculture.

Zambia has five systems (Table 3) and four types of farmers (Table 4). They could be categorized by farm system, using the type of technology utilized or by farm size. Which ever system is used to classify them, most of the farming community is traditional and operate on a small scale. The commercial farmers who either use semi-commercial ox and tractors for cultivation, or own more than ten hectares of land, comprise a small percentage.

Table 3. Traditional Farm Systems in Zambia

Farm System	Area	%
a) Shifting axe and hoe cultivation as the different Chitemene systems.	80,100 km ²	38
b) Semi-permanent hoe cultivation	2,160 km ²	1
c) Fishing and semi-permanent hoe cultivation	5,877 km ²	3
d) Hoe and plough cultivation	24,355 km ²	12
e) Semi-commercial ox and tractor cultivation	29,268 km ²	13

Source: Land-use map of Zambia: Schultz 1974, Lusaka.

Table 4. Types of Zambian Farmers by Farm Size

Farm Type	Approx. Number
a) Large-scale commercial farmers (farm size +40 ha):	approx. 600
b) Medium-scale commercial farmers (farm size 10-40 ha):	approx. 10,000
c) Small-scale commercial farmers (farm size 2-10 ha):	approx. 150,000
d) Traditional farmers (farm size less than 5 ha):	approx. 450,000
	Total: 610,600

Source: MAWD, 1977.

Non-formal education was utilized by educational planners and policy makers to solve problems which arose as a consequence of colonial administrative policies concerned with pricing, marketing, education and the general economy. Papagiannis (1983) pointed out that after independence, the formal educational policies in Zambia led to an increased number of dropouts in rural and urban sectors. Both government and non-government organizations were involved in the attempt to solve these problems. Agricultural extension was among the non-formal educational systems developed to provide the farming community with skills,

knowledge, attitudes, research information and technology.

Agricultural extension effort was aimed at a rural population that comprised almost 75 percent of the country's population (see Tables 2 and 3). This farming community comprises mostly unemployed youths and adults, dropouts from the formal educational sector and "uneducated" people. Those that participate in non-formal education, especially agricultural extension, look to the educational system as a provider of skills, knowledge and attitudes they could not get from formal education. According to the Zambian Ministry of Education (1976), approximately 90,000 of the school leavers per year are dropouts and have to be served by a few non-formal organizations which, as Papagiannis et. al (1983) observed, are mostly in urban areas and meet the needs of only a few youths and adults. As Mutava (1983) stated, participants in these programs want some form of certificate that would help them get a white collar job in an urban area.

In Zambia, Agricultural extension falls under the Ministry of Agriculture and Water Development. Through this ministry, agricultural extension programs have been an important part of development efforts in Zambia.

There is a continuing imbalance between the urban and rural sector, so the government tried to transform the whole economy. In 1965, the Transitional National Development Plan (TNDP) was initiated and, amongst its aims, was the development of cooperative societies to promote agricultural production. The movement faced problems and, according to Musambachime (1980), failed for a number of reasons among which were:

1. A lack of adequate assessment of the strength of personnel who were going to administer the planned programs.
2. A lack of personnel training in agriculture.
3. Internal communication difficulties due to the centralization of decision-making at the ministry headquarters and "due to bureaucratic and political snags, the department was not given funds to facilitate the needs of the Co-operative Societies" (p. 27).

By 1967, the Co-operative movement was reported to have faced administrative constraints, plus a lack of interdepartmental co-ordination in planning and implementing of programs. Policy makers and planners regrouped villages into accessible administrative units so as to effectively provide services and programs (Kaye, 1967). These village units were considered to

be economically viable and socially desirable for program planning and implementation purposes. The reliance on expatriate farmers for food continued. Access to credit facilities and extension advice from research stations favoured commercial farmers. Small-scale and traditional farmers were at a disadvantage.

Table 5. Contribution of the Agricultural sector to GNP (000 Kwacha)

	1971	1972	1973	1974	1975	1976	1977	1978	1979
Total GNP	1276	1394	1380	1473	1438	1858	1488	1496	1361
Contribution of Agriculture, Forestry and Fishing	139	145	144	150	157	167	168	169	153
%	10.9	10.4	10.4	10.2	10.9	10.7	11.3	11.3	11.2
Contribution of Commercial sector (%)	32	34	33	35	36	38	37	36	31
Contribution of subsistence sector (%)	68	66	67	65	64	62	63	64	69

Source: Elling, M., MAWD (1977). Background to Agricultural Development in Central Province. p. 10.

As shown in Table 7, Zambia could not only have been self-sufficient in food products but also started exporting maize to other countries such as Tanzania. Unfortunately, this trend was halted by climatic problems, population growth, and increased urbanization. As shown in Table 5, the contribution of the agricultural sector to the Gross National Product (GNP) remained low. The country therefore started importing food again. In the 1970's, copper prices at the London Metal Exchange were fluctuating and since copper sales were a major foreign exchange earner, this had devastating effects on agriculture as well as on other sectors of the economy.

Village Development Committees were formed as a result of the 1971 Village Act. The Act emphasized development of productivity committees in every village of 20 households or more. The Act was also a government attempt to implement "participatory democracy". Therefore at village, ward, district and provincial levels, development committees were set up to involve everyone in decision-making. But as Musambachime (1980) observed, the committees became mere debating forums with no power to act or influence decisions; power was still vested in individual ministries with their headquarters in Lusaka.

Table 6. Marketed Maize Production, Zambia, 1964-1981.

(in thousands of 90kg bags)			
Year	Production	Year	Production
1964/65	2252	1972/73	4137
1965/66	2099	1973/74	6367
1966/67	4241	1974/75	4290
1967/68	4223	1975/76	6491
1968/69	2908	1976/77	8334
1969/70	3020	1977/78	7734
1970/71	2791	1978/79	6463
1971/72	1308	1979/80	3793
		1980/81*	3629

*Provisional

Source: MAWD , Lusaka; Elling, (1977), p.65.

As noted, this scheme failed because of a lack of co-ordination and communication between various committees and departments, an inability to influence decisions and a lack of resources. By the end of 1977, extension education programs aimed at increasing rural agricultural productivity and the general life of the rural community was constrained by decreased government

Table 7. Imports and Exports of Maize,
1964-1980.

Year	Imports	Exports
	Tons	Tons
1965	47,000	
1966	35,000	
1967	20,000	
1968	64,000	
1969	18,000	
1970	31,000	
1971	252,000	9,000
1972		2,000
1973		50,000
1974		111,000
1975		17,000
1976		9,000
1977		26,000
1978		61,000
1979	56,093	
1980	305,457	

Source: MAWD, Lusaka; Elling, (1977), p.64.

investment occasioned by the fall in copper prices at the London Metal Exchange. Such constraints made it difficult for extension to effect the plans.

Figure 3 shows the relationship between government investments in agriculture and the price of copper

between 1970 and 1979. As shown, a positive correlation between the prices and investments in agriculture between 1970 and 1979 existed, suggesting a negative effect on investment in agriculture with the decrease in copper prices.

In 1979-83, the third national development plan came into being. This was designed to solve various socio-economic and political problems. Those not solved during the first and second national development plans were incorporated into the new plan. The specific objectives were to increase agricultural production in order to attain and sustain self-sufficiency in food production, to provide raw materials for agricultural industries and export, and to increase the contribution of the agricultural sector to the GNP. This, according to the plan, would also promote the diversification of the economy, create new employment opportunities within the rural sector, and decrease rural-urban migration. Another objective was to decentralize decision-making to encourage local participation in the rural development process (TNDP, 1979-83, 1979).

Problems related to education in developing countries can be attributed to many factors. As Coombs (1976) and Conveyers (1982) mentioned, most developing

countries have to deal with:

1. An increasing number of school-leavers which require an integration between formal and non-formal settings in order to train and retrain the unemployed in skills and knowledge related to self-employment.
2. A decrease in food production to the point where most food has to be imported (see Table 8 for details on Zambian imports of Maize by country of origin between 1978 and 1979).
3. A lack of resources (which fosters an increased concern for sharing limited resources).
4. An increase in population which evokes a need for expanded educational facilities and services.
5. Changes in job structures requiring occupational retraining.

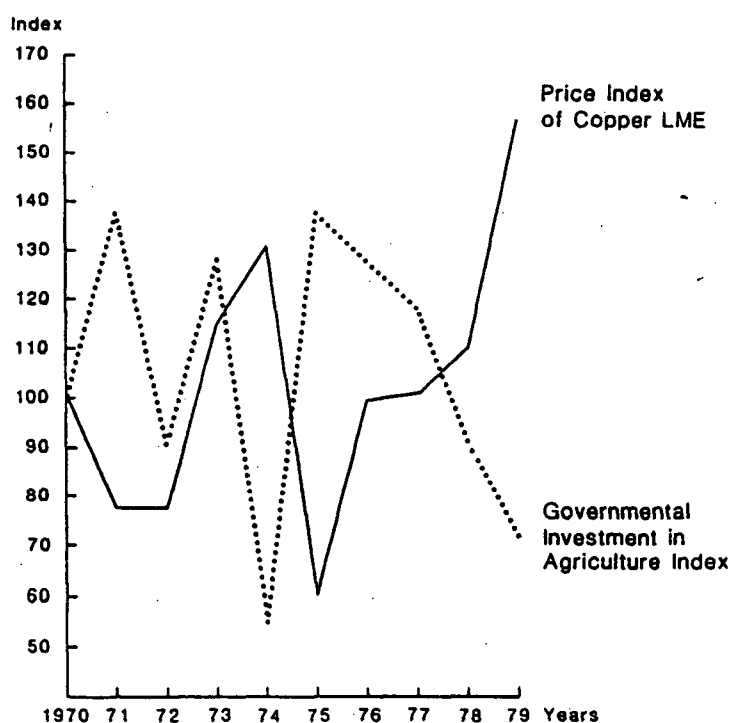
With the estimated decrease in agricultural production, and reported increase in the number of school dropouts (Papagiannis, Klees & Dall, 1983), non-formal education, especially in agriculture, becomes relevant to economic development. In examining and analysing the effectiveness of selected non-formal educational schemes in Zambia, Papagiannis et. al, concluded that:

... non-formal education, at least in Zambia, may be very imperfect and a temporary solution to the growing political crises that the state faces as a result of its problems in the social, political and economic realm (p. 100).

The following have been considered by most educators as prerequisites for an effective extension system:

1. Recognition of agricultural extension as an important agent for increasing agricultural production through educational procedures that would improve knowledge, skills and attitudes.

Figure 3. Relationship between Government Investments in Agriculture and the Price of Copper between 1970 and 1979



Source: MAWD (1977), C.S. O. and Budgets 1970-79, Elling (1977)

Table 8. Maize Imports into Zambia, 1979/80

Metric tons			
Country of origin	1978/79	1979/80	Landed cost 1979/80 K/metric ton
RSA	22,863	191,136	240
USA	11,697	58,702	315.50
Malawi	13,636	-	n.a.
Kenya	3,823	472	n.a.
Tanzania	14,073	8,108	n.a.
E.E.C.	-	34,546	n.a.
U.K.	-	12,491	n.a.
Total	56,093	305,457	

Source: MAWD, Lusaka; Elling, 1977, p. 64

2. Continued research to ensure a constant flow of information between research institutions, and practitioners.
3. Ensuring the availability of agricultural extension service to individuals in need and a two-way flow of information.
4. Basing programs on communities' felt needs and having flexible objectives.
5. Use of local, organizational and any other extension agents in delivering agricultural

extension messages (co-operation with other interested organizations).

6. Use of well trained and competent staff who are aware of their role as extension agents.
7. Involving all agencies and individuals in planning and implementing extension projects.

Educational systems are capable of transforming rural Zambia through the provision of programs, co-ordination of activities among providers, and by ensuring that programs are equally accessible to various sectors of society who should be involved in the design and implementation of their learning experiences. Non-formal education could transform rural Zambia if properly designed and implemented, especially if formal and non-formal education organizations complemented and co-ordinated their activities.

Significant Procedures

Literature on economic development focuses on factors considered crucial to economic development. The issue of concern for most developing countries

relates to the need to mobilize sufficient resources to effect change. Related to this has been a problem of how to allocate limited resources. With an increase in population in most developing countries, investment in agriculture to increase food production becomes a crucial factor.

Resources are physical, human and financial. In Zambia, public budgeting is done at the Ministry level. Ministries are allocated annual funds over a period of five years in connection with national development plan objectives. Agricultural development projects have therefore been influenced to a great extent by this policy.

The need to acquire and retain personnel to effectively implement agriculture extension procedures has been a major concern in most developing nations (Chambers, 1983; Lele, 1975). New technology and socio-economic and psycho-social patterns have to be learned in order to increase food production, income and the general standard of living.

The lack of trained personnel in most developing countries has led to difficulties. There is a low level of involvement in designing and implementing procedures, a lack of understanding of procedures that relate to agricultural development, a lack of agreement

concerning objectives and goals to be pursued, and a lack of skill in collecting and interpreting data relating to learner needs and agricultural development.

Although several socio-economic and political factors contribute to the advancement of agriculture in most developed countries, much of the credit has been attributed to research provided by agricultural extension and related organizations. But in Zambia, agricultural extension research has been fragmented by a lack of co-ordination between organizations. It is only through research that technical information relevant to various contexts can be generated.

Technology is critical to the development process. Its importance was demonstrated in the transformation of agriculture in Britain and the United States. However, there is concern in developing countries about the adoption of foreign technology. The World Bank (1979), amongst others, has discussed on the appropriateness of foreign technology to developing nations and argued that alternatives should be used as much "foreign technology" is irrelevant to local needs. Local technology, which has a critical role in economic development, has, in most cases, been ignored.

Even with research information relating to agricultural extension, resources and appropriate

technology, not much would be achieved without proper planning. Planning models vary and there seems to be a lack of consensus as to what constitutes an optimal model. Some planners have used a combination of approaches or models involving the diagnosis of needs and an 'intervention' to meet them.

Structure and Organization of Zambian Agricultural Extension

Agriculture is the responsibility of the Ministry of Agriculture and Water Development (MAWD). The Ministry channels its services to farmers through the following:

- National Agricultural Marketing Board of Zambia (NAMBOARD)
- Dairy Board of Zambia (DBZ)
- Lint Seed Company of Zambia (LINTICO) and
- Tobacco Board of Zambia (TBZ)

These parastatals provide services to the public. Rural Development Co-operation of Zambia Ltd (RDC) also provides services to the farmers but is a semi-autonomous organization.

The Ministry of Agriculture and Water Development Headquarters is made up of four main departments:

- Agriculture
- Veterinary and Tsetse Control Services
- Water Affairs
- Fisheries

Of these three, Agriculture is of particular importance since it is in charge of all agricultural research, extension and services such as veterinary and tsetse control. It also provides technology transfer and agricultural related information to the farming community.

MAWD offices are at national, provincial, and district levels. The headquarters is located in the capital (Lusaka) and has the following divisions; Administration, Central Planning Unit, Financial Division, Special Duties Division, Staff Division and Training Division. The planning unit is the central section of MAWD and in charge of project preparation and evaluation of agricultural and other related activities.

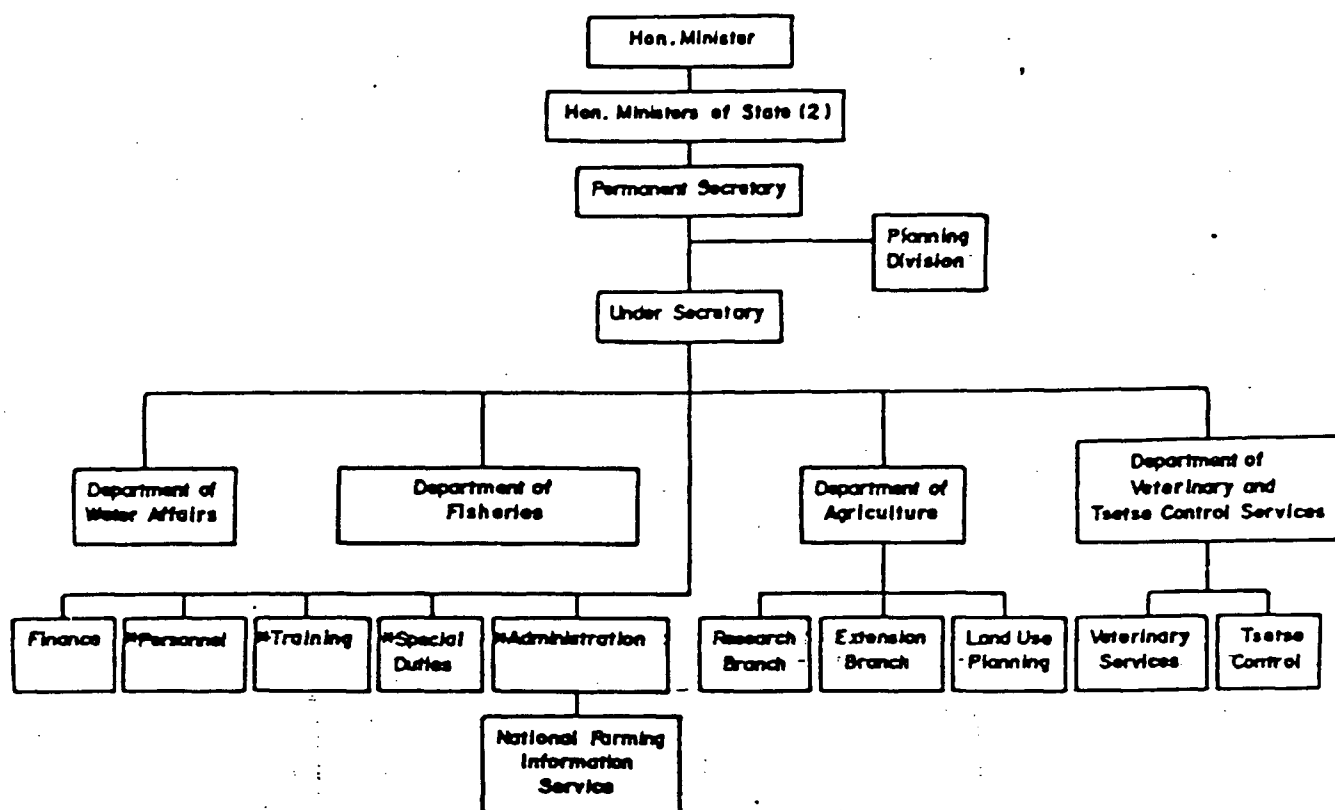
The extension branch falls under the deputy Director who is assisted by a group of subject matter specialists (SMS) for the whole country (Figure 4). These subject matter specialists have an overall responsibility at the national, provincial, and district levels. MAWD provincial activities are

directly supervised at the Headquarters. The Provincial Permanent Secretary (PS) co-ordinates the provincial activities through the Member of the Central Committee's office (MCC) which falls under the United Independence Party (UNIP). This office is an integral part of the Prime Minister's office (see Fig. 5 for structure of department of Agriculture). Various committees are established for planning purposes and the MCC chairs the Provincial Development Committee (PDC). A similar structure is repeated at the district level where the District Governor (DG), who is a political appointee, heads the district office. He chairs the District Development Committee (DDC) while the District Secretary (DS), who is senior district civil servant, acts as the secretary. Below this is a block of supervisors followed by the camp staff.

The different departments of MAWD perform different functions but all are important. In this study, the focus was not on any one department but on procedures staffing, training, allocation of physical resources, financing, research and technology- employed throughout MAWD. The purpose was to examine the extent to which these procedures are utilized in a vertically integrated, horizontally integrated and democratized manner. Before discussing the procedures in more

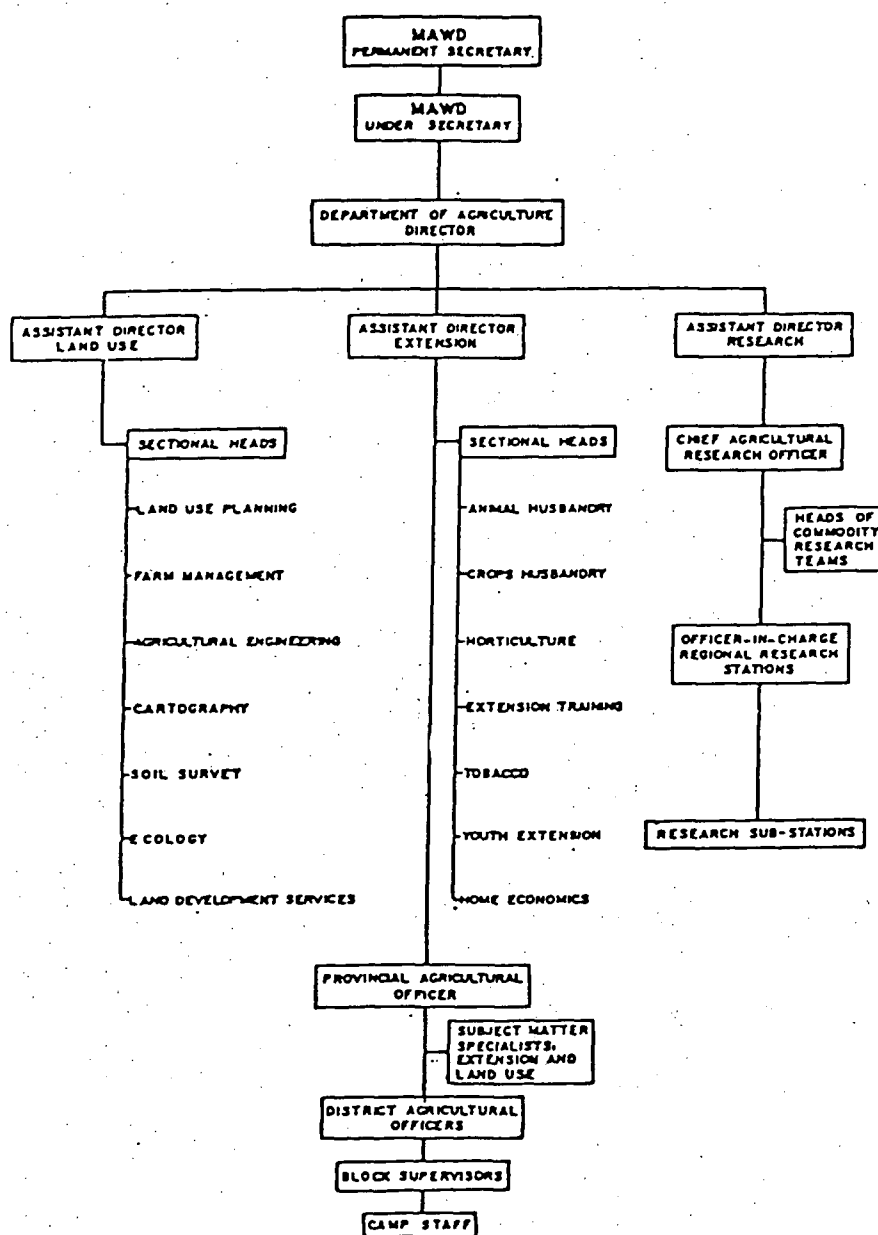
detail it is necessary to describe the theoretical origins of assertions concerning vertical and horizontal integration and democratization.

Figure 4. Structure of Ministry of Agriculture and Water Development



*Each headed by an Assistant Secretary. The Planning Director fills in the role of the Assistant Secretary in the Planning Division.

Figure 5. Structure of the Department of Agriculture



Source: MAWD, Lusaka

CHAPTER THREE

LIFELONG EDUCATION: A CONCEPTUAL ANALYSIS

Zambian agricultural extension involves a variety of learners-children, youth, adolescents and adults-and there are many providers each with their own goals, target clientele and resource constraints. Central to this study was the notion that individuals are capable of learning throughout life. Thus, children, adolescents, youth and adults are all potential participants in any educational program (Cropley, 1977; Dave, 1983) and, therefore, should have access which is unencumbered by out-dated, gender-related, artificial or culturally-determined barriers. Similarly, providers of education ought to co-ordinate their effort to meet the learners' needs. Formal and non-formal educational settings are thus complementary, and should be of equal worth as a way of achieving individuals' goals (UNESCO, 1976). These exhortations are central to lifelong education.

Lifelong Education

The underlying assumption of lifelong education is that all individuals, not only youth, learn throughout life and that various institutions that exist within society - such as the home, school, work and community-ought to co-operate and co-ordinate the provision of services and programs aimed at solving the problems besetting different communities (UNESCO, 1976). Individuals should have equal access to and participate in these programs (Cropley, 1977; 1980; Faure, 1972). Lifelong education, as Faure indicated, was proposed:

... as the master concept for educational policies in the years to come for both developed and developing countries (p.182).

As an organizational framework for both developed and developing countries, lifelong education has been stimulated by international organizations such as UNESCO. Many developing countries have established national programs and tried to integrate both formal and non-formal sectors.

The Conceptual Variables

The purpose of this study was to examine agricultural extension in the context of lifelong education. The variables considered relevant for the

study were reviewed.

Vertical Integration

Vertical integration assumes that learning goes on throughout life and that individuals of any age are capable of learning. Many adults, particularly those with minimal or no formal schooling, still believe it is impossible "to teach an old dog new tricks." There is now considerable evidence to refute this assertion (see Cropley, 1977). Indeed, in many respects, adults learn better than children. It is significant that in China, which has embarked on a determined attempt to achieve "four modernizations," non-formal education for adults is one of the main instruments used. Modernization cannot await the arrival of newly educated children. In vertically integrated settings, education would no longer be the near exclusive preserve of childhood and adolescence. No stigma would be attached to engaging in adult education. On the contrary, participation in adult education would be regarded as normal or common place. People would drop into and out of different educational settings as their circumstances change. In many instances, adults and their children would be found working together in formal or non-formal (or both) settings. Artificial

barriers that currently segment adults and children would be removed. A vertically integrated educational system is therefore one accessible to all age groups in society - children, youth, adolescents and adults.

Horizontal Integration

There are many providers of education in society located in the school, home, peer group, mass media, or industrial sector to mention just a few. Whether programs are at the national, regional or local level, they perform functions aimed at benefitting various sectors of society. Coombs & Ahmed (1975) identified educational settings as formal, non-formal or informal. Education in these settings is designed to develop individuals' skills, attitudes and knowledge. LaBelle (1982) considered formal, non-formal and informal education to be complementary, acknowledged the conflicts between them but saw a provider of a specific education (such as youth education) as capable of providing pre-adult as well as adult education.

Similarly, many non-formal educational providers try to provide services to individuals who cannot take part in education occurring in formal settings. In horizontally integrated settings these institutions would co-operate with each other and other formal

educational providers (UNESCO, 1976).

Agricultural extension is a complex non-formal educational system having many providers and learners. As an organization, it is an interaction network whose activities are partly determined by the activities of those involved. If the functions of agricultural extension are to be accomplished effectively, it must be possible for the clientele involved, the government and non-government ministries, departments, regions, locations, private and voluntary organizations, to co-ordinate their activities and maintain effective communication. In Fig. 6 for example, co-ordination of formal and non-formal education is hypothetically portrayed. Different organizations with an interest in youth literacy programs can pool their resources together, co-operate in and provide other educational activities to benefit other sectors of society, thus horizontally and vertically integrating the program as shown in Fig. 7.

The need for horizontal integration flows from the immense amounts of learning that occurs in places other than formal educational settings. Traditionally, individuals with credentials or "education" from formal settings have higher status than those "educated" in non-formal or informal settings. It is not possible to

Figure 7. Vertical and Horizontal Integration of Settings within the context of Lifelong Education

Vertical integration

Adults

Non-formal Horizontal integration Formal

Children

In horizontally integrated settings, policy makers, educational planners and implementers of procedures would recognize it is the learning that matters, rather than the place where it was acquired, and would accord the same priority to non-formal and informal as given formal education. This would require them to relax their attitudes somewhat and place a higher priority on research and training in non-formal

education because, at present, it is the "poor cousin." No country, particularly Zambia, can afford to regard non-formal education as something akin to 'night school' or other frivolities.

In horizontally integrated settings providers of formal, non-formal and informal education would also try to co-ordinate their activities. In agricultural extension, providers would co-ordinate funding, the dissemination of information, goal setting, research, training, staffing, and the mobilization and utilization of resources (Coombs, 1974).

Democratization

Proponents of lifelong education also assume that education provided by organizations, institutions and groups should be available and accessible to all individuals in society and that learners should participate in decisions that relate to the design and management of their education. A democratic educational system, therefore, is one that reinforces access and active participation in the educational decision-making process (Cropley, 1977; Dave, 1976). In relation to agricultural extension, a democratic agricultural extension service distributes agricultural extension services evenly across all sectors of the

farming community and fosters participation in the educational process.

In this study, vertical integration, horizontal integration and democratization represent an "ideal" frame of reference within which agricultural extension procedures were examined. Each element- vertical integration, horizontal integration and democratization was arranged in the first dimension of a matrix where six "procedures"- staffing, training, physical resources, financing, technology and research- were in the second dimension. Table 9 has some "indicators" of vertical integration, horizontal integration, and democratization and relates them to the six procedures.

Table 9. Lifelong Education Principle Indicators

PROCEDURES	VERTICAL INTEGRATION	HORIZONTAL INTEGRATION	DEMOCRATIZATION
STAFFING	<ul style="list-style-type: none"> • youth and adults employed as adults • utilization of formal and non-formal education staff • roles assumed by both men and women 	<ul style="list-style-type: none"> • co-ordination of formal and non-formal education staff at <ul style="list-style-type: none"> a) <u>structural level</u> <ol style="list-style-type: none"> 1. Regional 2. District 3. Local 4. National b) <u>clientele level</u> <ul style="list-style-type: none"> - Government ministries - non-government organizations and departments 1. Universities 2. Agricultural Colleges. 3. Agricultural industries. 4. Financial Agents 5. Farmers c) <u>Functional level</u> <ol style="list-style-type: none"> 1. Planning 2. Research 3. Training 4. Administration 5. Finance 6. Personnel 	<ul style="list-style-type: none"> • Equal access to leadership formal and non-formal <ol style="list-style-type: none"> 1. public organizations 2. private organizations 3. voluntary organizations 4. Farmers • Participates in Drafting amending programs and policies • consulted in decision making • clientele <ol style="list-style-type: none"> 1 Universities 2. Agricultural industries 3. Financial Agents 4. Agricultural Colleges 5. Farming Community included in offering expertise in form of attitudes, skills, knowledge.
TRAINING	<ul style="list-style-type: none"> • Training/retraining available to both youth and adults • Comprehensive Content benefitting both men and women. 	<ul style="list-style-type: none"> • liason of training programmes among formal and non-formal training institutions at structural, clientele and functional levels. <ul style="list-style-type: none"> a) <u>structural level</u> <ol style="list-style-type: none"> 1. National 2. Regional 3. District 4. Local b) <u>clientele level</u> <ul style="list-style-type: none"> - Government Ministries. - gov't. and non-government organizations and departments. 	<ul style="list-style-type: none"> • Equal access to training among extension personnel • Equal access to training among non-formal and formal agricultural clientele • Equal opportunity to training among extension personnel • Equal opportunity to training among non-formal and formal agricultural personnel • Equal participation in decisions relating to training and re-training among extension personnel <ul style="list-style-type: none"> • farmers • government organizations • private organizations • voluntary organizations
PHYSICAL RESOURCES	<ul style="list-style-type: none"> • Availability of resources in agricultural extension to <ul style="list-style-type: none"> youth adults 	<ul style="list-style-type: none"> • pooling of resources from formal and non-formal <ul style="list-style-type: none"> private voluntary farmers sectors • pooling of resources at <ul style="list-style-type: none"> regional district local levels 	<ul style="list-style-type: none"> • Equal access to physical resources among target population • Equal opportunity to resources among target population • participates in generation of resources <ul style="list-style-type: none"> - farmers - private - government - non-government organizations - voluntary organizations • Equal participation in decisions concerning utilization of resources. <ul style="list-style-type: none"> - farmers - private - government - non-government - voluntary
FINANCING	<ul style="list-style-type: none"> • Funding programs for youth and adults in relation to agriculture <ul style="list-style-type: none"> youth Adults 	<ul style="list-style-type: none"> • Joint effort in mobilization and provision of funding among and between formal and non-formal organizations <ul style="list-style-type: none"> - national, regional, district and local levels. - private, voluntary, public gov't. and non-gov't. - planning, finance, research, training • Collective decision making concerning funding of agricultural programs and activities. <ul style="list-style-type: none"> - national, regional, district and local levels - private, voluntary, public government and non-government - planning, finance, research, training 	<ul style="list-style-type: none"> • Equal access to financial resources among target groups <ul style="list-style-type: none"> small scale farmers commercial farmers • participate in budgeting of available agricultural related funds <ul style="list-style-type: none"> farmers private organizations government organizations voluntary organizations • sponsors agricultural extension related programs <ul style="list-style-type: none"> - farmers - private organizations - government organizations - voluntary organizations
RESEARCH	<ul style="list-style-type: none"> • Comparative research between formal and non-formal education • Research related to all age levels <ul style="list-style-type: none"> youth Adults 	<ul style="list-style-type: none"> • Coordination of research at various levels. <ul style="list-style-type: none"> a) - national - regional - local b) - private - voluntary - public departments c) - planning - research - finance - training • Multi-disciplinary research 	<ul style="list-style-type: none"> • Equal emphasis between formal educational research • participatory research • Equal access to research information
TECHNOLOGY		<ul style="list-style-type: none"> • Joint technological effort between agricultural extension organizations and other organizations 	<ul style="list-style-type: none"> • Equal access to technological findings • participates in decisions concerning utilization of technology.

CHAPTER FOUR

NON-FORMAL IN THE CONTEXT OF LIFELONG EDUCATION

In most developing countries, it is realized that non-formal education should be given a high priority in the development process. Non-formal education is a component of lifelong education which Faure (1972) touted as a "master concept" for organizing education systems. Lowe (1970) observed that many developing countries have incorporated it in strategies for national development. This observation may not be surprising since individuals require education to cope with or initiate economic, social, political as well as technological change and it is not possible to satisfy all their needs in formal settings (Dave, 1983).

Non-formal Education

Non-formal education includes activities such as adult literacy programs, youth programs, community health, nutrition or self-directed family planning programs, those initiated by government as well as non-government institutions and voluntary organizations such as Rotary Clubs, YWCA, Red Cross and the churches.

Non-formal educational programs have a direct bearing on development.

Programs are provided for individuals who cannot enrol in or have dropped out of schools, and, as a result, their potential to produce and the capacity for self-employment are presumed to be enhanced. As Schultz (1980) argued, there seems to be a relationship between the development of human resources and productivity. Through non-formal education, individuals can acquire skills, knowledge, and attitudes that improve their self-confidence and capacity to participate in the development process. Lulat (1980) observed that:

... reforming the educational system with emphasis on rural based curricula and non-formal education then, seems to be the new solution that educational planners have discovered of late to the problem of elitism, rural urban migration, unemployment among school-leavers, stagnant economy or agricultural development (p.77).

Coombs (1968), amongst others, argued that non-formal education ought to be utilized to reach parts of the population untouched by formal education. In most developing countries, development efforts have emphasized non-formal education. At present this is a concern in developed and developing countries. But as

Rubenson (1982) argued, even non-formal education can reproduce the existing cultural and social structure. Thus formal and non-formal education should be integrated.

Integrating Formal and Non-formal Education

Papagiannis et. al (1983) argued that non-formal and formal education should not be viewed as separate but rather as systems sharing many characteristics. The only difference is that formal and non-formal education serve a different clientele, although their overall functions are closely linked. This interaction between formal and non-formal education is treated mostly as an ideological, philosophical question.

The concern of all educational institutions - formal or non-formal- should be to provide services to both young and old and foster the acquisition of knowledge, attitudes and skills that lead to an efficient use of available resources and knowledge.

The Significance of Lifelong Education

The notion of lifelong education emphasizes vital elements that could be utilized to increase and maintain agricultural production and ensure that farming techniques and research information are made available to extension as a whole.

Agricultural extension is multi-dimensional and multi-disciplinary (Maunder, 1972; Swanson, 1984). The link between formal, non-formal and informal education becomes crucial in a situation like Zambia's in which many rural people drop out of the formal educational system at an early age (about fourteen years). This situation requires educational systems that support other services and co-ordinate their activities.

Elling (1977) pointed out that Zambian extension education does not provide information appropriate for users of traditional agricultural techniques. Small farm holders who are most in need of these techniques have had a limited access to extension services and programs. The bias is towards highly motivated farmers that respond to modern farming techniques and cash crop production.

As Elling noted:

... the extension message is often too simplistic. Emphasis is on modern techniques especially for Maize, Cotton and Sunflower and other cash crops. (p. 18)

Participants

Participants in agricultural extension in Zambia are as varied as their learning needs. They range from totally "illiterate" people to university graduates. Mutava (1983) divided adult learners in Zambia into these groups:

1. Those without formal schooling or with only three years of education. These comprise a "Basic Learner Group." Mutava estimated that 61 percent of the population are "illiterate" and argued that most of these have basic elementary education. The age-range was estimated to be 15-60 years of age. This group to be conservative in that "they only find security in custom and tradition" and know little about the world outside their home.

2. The Intermediate Learner Group was estimated to comprise a third of the total population, mostly youngsters that are either un- or under-employed. These were considered to be highly motivated and participate in non-formal educational programs to get formal credentials.

3. The Certified Learner Group is the third category and comprised of adults with twelve years of formal schooling and recognized state qualifications such as 'O' Levels. According to Mutava, only a small percentage participate in adult education. Top and middle national leadership for both the public and private sectors appears to come from this group. These engage in education for professional advancement and status. This group was also perceived to be the most influential in policy formulation.

4. The Advanced Learner Group comprises adults with higher educational levels such as those that have studied at colleges, universities and other institutions of higher learning.

The productivity of these learners should be increased by providing better access to opportunities for education for youth and adults. The Zambian school

leavers, neither employed in the formal sector nor engaged in self-employment, have posed serious problems and, unless increased opportunities are made available to meet their needs, the rural population will remain dissatisfied and migrations to urban areas will continue. This will create more social problems.

Agricultural Extension Procedures

Agricultural development has been viewed as a multi-faceted process (Coombs, 1976; Chambers 1983). The challenge facing Zambian and many other agricultural extension program planners and policy makers in developed and developing countries is to plan and implement programs related to the community's felt needs, to co-ordinate related aspects of the programs in order to minimize costs, to involve target learners in the planning process, and to prepare learners to effectively plan their learning experiences. Through integration of all effort and aspects which reflect similar needs, aspirations and conditions of the clientele being served, agricultural extension practice could be greatly improved.

This process would lead to an improvement in knowledge. However, knowledge improvement for its own

sake is irrelevant but should lead to an improvement of the people's welfare. Simply making resources available does not lead to development. Nor would farmers benefit much from programs if there were no supportive networks. The philosophy underlying extension program planning process, administrative effort, technological and innovative adoptions should be favourable and reflect learners' felt needs.

Educational problems have become complex and demand systematic and multi-disciplinary approaches. Equally important is the integration of effort, knowledge and resources. It is also important to ensure that programs relate to learners' needs and facilitate participation in organizations, communities, groups and among individuals.

Agricultural extension has been compartmentalized and specialized. Research, for example, has rarely co-ordinated its activities with practitioners and each department works in isolation (Swanson, 1984). All ministries and departments in Zambia foster at development in one way or another and need to plan programs in a manner that promotes co-ordination. With limited funding, physical and other material resources, co-ordination would lead to maximum utilization of resources. Co-ordination becomes relevant in cases

where formal and non-formal providers have similar goals and target learners.

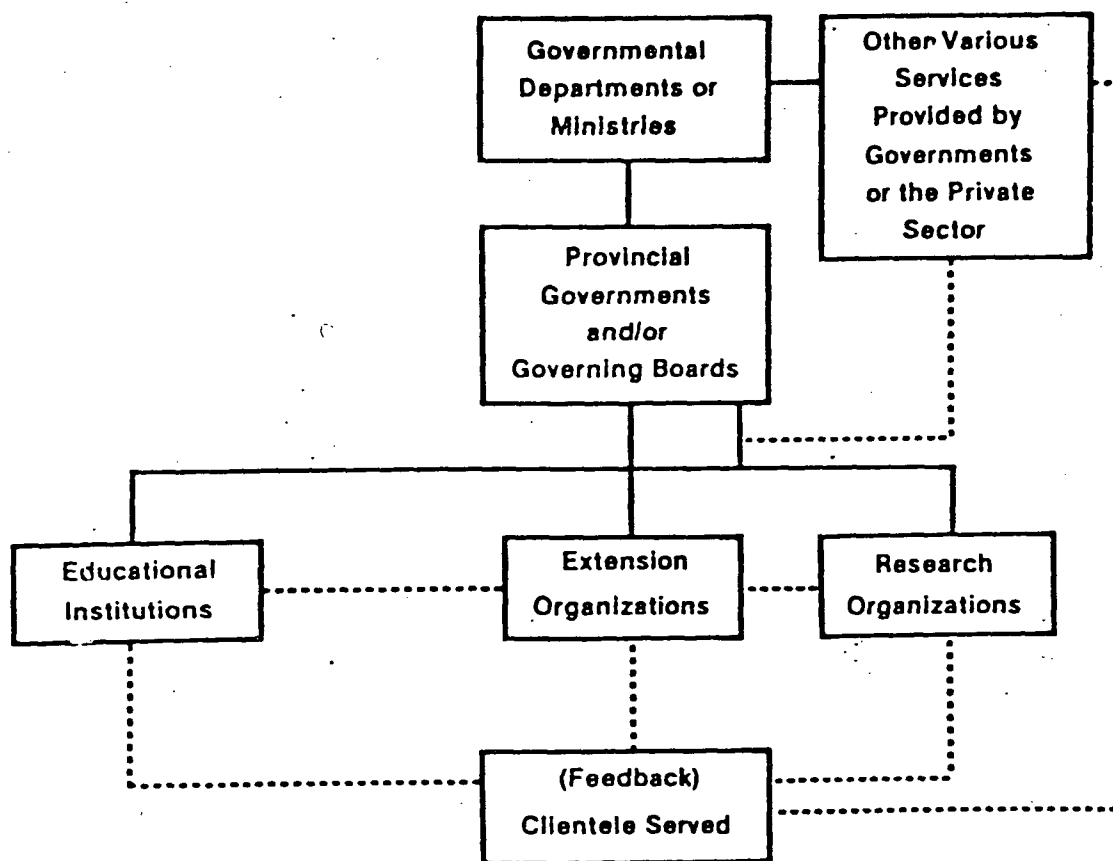
Private donors rarely give funds to organizations considered to be a public responsibility. With such an attitude, each struggles to meet their objectives, sometimes focusing on the same clientele. In discussing the significance of co-ordination between extension and other government organizations. Swanson (1984) argued that these are related organizations although each has its line of authority. Fig. 8 portrays the relationship between the extension organization and other government entities. Whereas each Government department and ministry operates as a separate entity with firm lines of authority (-), the figure shows possibilities for interaction and co-operation with other services provided by Governments or the private sector. The Figure also shows both lines of interaction, (-) and (--), as aimed at the same clientele, dictating the need for integration of educational effort between providers.

Personnel from schools, colleges, universities, voluntary associations, homes, church, and other providers all ought to contribute to developing, implementing and evaluating educational programs. Learners, for example, may have knowledge concerning

contextual factors that affect their production. Similarly "experts" may have knowledge concerning instructional techniques. All learners therefore, ought to participate in decision making processes.

This chapter provided a description of non-formal education, specifically agricultural extension within the lifelong education perspective. The significance of lifelong education to Zambian agricultural extension was also discussed. The next chapter describes the methodology used to pursue research questions enunciated earlier.

Figure 8. Relationship of Extension Organization to other Government Entities



KEY

—— lines of authority
 lines of interaction and cooperation

Source: Swanson (1984). Agricultural Extension: A Reference Manual (2nd edition). Rome: FAO, p. 164.

CHAPTER FIVE

VARIABLES AND METHODOLOGY

This study was designed to assess the extent to which six procedures associated with agricultural extension in Zambia exemplify vertical integration, horizontal integration and democratization in the context of lifelong education. No formal evaluation process was employed. This was not a piece of evaluation research as proposed by Stufflebeam (1985), or others associated with North American traditions in this area. In most evaluation studies, the program is judged against a formal criterion. against which the program is judged.

In this study there was no attempt to judge the worth of agricultural extension programs. Instead, the study was designed to examine situations where there seemed to be a large or small 'gap' between an ideal, as touted by the architects of lifelong education, and the "actual" practice of agricultural extension in Zambia. From one perspective the six procedures can be regarded as dependent and the three elements of lifelong education as independent variables. But, to make the analysis more precise it was necessary to

distinguish the "structures," "clients" and "functions" served by agricultural extension in Zambia. There are different levels within each.

Structural Level

- National
- Regional
- District
- Local

Clientele Level

- Government Ministries
- Government and non-government Organizations & Departments
- 1. Universities
- 2. Agricultural Colleges
- 3. Agricultural Related Industries
- 4. Financial Agents
- 5. Farmers (producer groups)

Functional Level

- Planning
- Personnel
- Training
- Finance

- Research
- Administration

Lifelong Education Indicators

Lifelong education has been proposed as a "master concept" but planners, policy makers and administrators quickly find they have to "operationalize" it. In other words, it is necessary to transform sometimes abstract principles into "operations" in the field of practice. In this study the term "indicators" was used to describe "evidence" that exemplifies the presence or absence of vertical integration, horizontal integration and democratization.

Vertical Integration

Vertically integrated settings would involve

1. designing and implementing procedures for all sectors of society
 - children
 - youth
 - adolescents

- adults irrespective of age, gender, economic status or other forms of distinction

Horizontal Integration

Horizontally integrated settings;

1. Recognizes that learning occurs in a broad array of settings (including those associated with home, work and recreation) and that education should occur everywhere, not just in schools, colleges or universities.
2. Providers of all types (formal, non-formal and informal) co-operate and co-ordinate their efforts to make it easy for learners to move from one setting to another as their needs and circumstances change

Democratization

In democratized settings, there is:

1. Equality which, in turn, involves
 - equal access
 - equal opportunity to educational programs and services among individuals
2. Participation by potential learners in the

process of designing and implementing procedures. This is achieved through the use of "participatory" program planning methods involving

- co-operation
- involvement
- consultation

Procedures

Procedures were defined as those decisions and alternatives designed, adopted and conducted by an individual or organization to bring about change involving acquisition of knowledge, attitudes and skills. In reviewing literature on the problems common to agricultural extension in developing countries, the following have been emphasized. There is:

1. A lack of understanding of and appreciation for extension's role in agricultural development.
2. A lack of continuity in programs resulting from political instability, and changes in procedures, personnel and priorities.

3. A lack of co-operation between agricultural extension and other government services and institutions
4. A lack of resources and a failure to effectively balance their allocation among organizations interested in agricultural development
5. A lack of knowledge (amongst providers and implementers) concerning local, regional and cultural disparities and variables that pertain to the design and implementation of procedures
6. Technical and educational incompetence on the part of agricultural extension personnel supposed to conduct research and implement policies.
7. A lack of inter- and intra-organizational communication and the misinterpretation of procedures.
8. A lack of appropriate technology and a failure to co-ordinate research with agricultural extension and the farming community.
9. A lack of continuous evaluation, reporting, and utilization of findings to improve

practice.

In discussing similar trends and concerns, Maunder (1972) and Swanson (1984) argued that such issues as these ought to be considered when designing extension programs. In this study it was not possible to examine all procedures employed by Zambian extension workers. Such an analysis would require a much larger study than this one. Instead, it was decided to focus on what appeared to be the most crucial procedures. As a result, staffing, training, physical resources, financing, research and technology were selected for study. A brief description of these is provided below.

Staffing

Agricultural extension in Zambia, as in most developing countries, involves many people (Chambers, 1983; Hellen, 1968; Lele, 1975). Staffing, a task of personnel management, involves procurement, maintenance, compensation and development. In this study, procurement and development were specifically dealt with.

1. Procurement

Procurement involves hiring or finding the right jobs for personnel. The extension staff has diffuse functions within agricultural extension and therefore ought to be competent and committed to their job. Limited personnel has been one of the major problems facing developing countries' agricultural extension. Due to its significance in the development of agriculture, it was included in this study.

2. Training (Development)

When hired, most personnel may be professionally trained but require retraining to raise morale and also upgrade their knowledge concerning concepts and methods; they may also need retraining due to changes in technological and other social factors. Schultz (1980) argued that new knowledge, skills, attitudes, and values are positive correlates of productivity. New agricultural technology, socio-economic and psycho-social patterns have to be learnt in order to increase food production, income, and the standard of living in agricultural and rural communities.

The quantity and quality of personnel were considered significant for agricultural development (and continued re-appraisal of training needs in the light of the changing situations) and were thus included in the study.

Physical Resources

It is essential that seeds, fertilizers, agricultural chemicals, machinery, spare parts and transport are available as they provide incentives for participation in agricultural extension programmes. Many problems stem from limitations on the availability of quality seeds, agricultural chemicals, machinery such as tractors and spare parts; these inhibit the development of agricultural extension programs. Amongst others, a lack of transportation has limited implementation of agricultural extension procedures in Zambia. Extension agents, situated mostly in extension centres, require transport to reach farming communities. A lack of access to banking facilities also creates hardships for farmers, especially small ones. It is the responsibility of extension to organize access to these services.

Financing

The chief instrument of financial management is budgeting - a process of allocating financial resources according to needs and priorities. In most ministries in Zambia, budget management has been centralized. People at the local level merely give estimates. Concerns from this situation limited nature of funds for agricultural extension programs influenced the choice of financing for inclusion in the study.

Research

Agricultural extension has been widely accepted as being responsible for disseminating information about technology (Swanson, 1984, Maunder, 1972) and research findings. Agricultural research centres have been established at the national, regional and local levels to generate and disseminate findings to agricultural extension practitioners. Most literature on agricultural extension research points out that research centres inside and outside agricultural extension rarely co-ordinate their activities with agricultural extension implementers as well as recipients of the new information. Swanson (1984) argued that research that did not transmit findings to extension services and farmers has made little

practical contribution to the development of agricultural extension. Research plays a significant role in agricultural extension and was included in this study.

Technology

The choice of technology as a variable was influenced by its role in agricultural development. Agricultural extension workers are supposed to demonstrate new technology to the farming community. Technology can transform and develop agriculture.

However, foreign technology is not always relevant to developing countries. Its utilization greatly depends on local needs. Most developing countries have tried to adopt foreign technologies without taking into consideration its relevance to local contexts. Besides, few developing countries have recognized the significance of local technology to the development of agriculture. Unless developing countries explore alternatives, the choice and utilization of technology available will be increasingly irrelevant to the local needs (World Bank, 1979). "Local" technology is critical to the economic development of developing countries.

Study Procedure

Data were derived from primary and secondary library material. Information relating to the development of Zambian agricultural extension and procedures were obtained mostly from official government National Development Plans, historical documents on the Colonial Northern Rhodesia Administration of Agriculture, MAWD annual reports, Monze Farm Training Centre, Magoye Regional Research Station, Zambia information Services. Data on lifelong education were obtained mostly from UNESCO documents and other authors. Other sources were United Nations Food and Agricultural Organization documents, World Bank, and dissertations, theses, journal articles, and magazines. These documents were in both published and unpublished forms.

The data sources were:

1. The Ministry of Agriculture and Water Development headquarters
2. University of Zambia Library
3. Central Statistics Office
4. National Archives of Zambia
5. United Independence Party Archives, Freedom House (Lusaka)

6. Zambia Information Services
7. Magoye Regional Research station
8. Monze District Agricultural Station
9. University Of British Columbia Library
10. Simon Fraser University Library
11. B.C. Ministry Of Agriculture and Food
documents on Extension program planning
process.
12. Minnesota Documents on Agricultural
Extension.

Analysis of Data

Information relating to procedures (the dependent variables) were assessed to determine the extent to which they manifested qualities associated with vertical integration, horizontal integration and democratization. Data pertaining to each of the six procedures were cross tabulated and summarized in Table 9.

The results section is organized as follows. First, there is discussion concerning the "ideal" situation that would be present if the system was organized in accord with the exhortations of lifelong education theorists. Next, there is discussion

concerning the present situation in Zambia. In some respects there is some congruence between the "actual" and theoretical "ideal." But, in others, there is a major discrepancy (between the actual and ideal situation). Table 9 consists of eighteen cells which contain brief summaries showing what would be the situation if each of the procedures (staffing, etc) were vertically integrated, horizontally integrated and democratized. Against each of the ideals, the procedures are examined. Table 10 consists of the results. Recommendations were couched in language and within the framework of lifelong education ideals described in chapter three. The findings are presented and discussed in in chapter six, and a summary and conclusions presented in chapter seven. In the final chapter, recommendations are made.

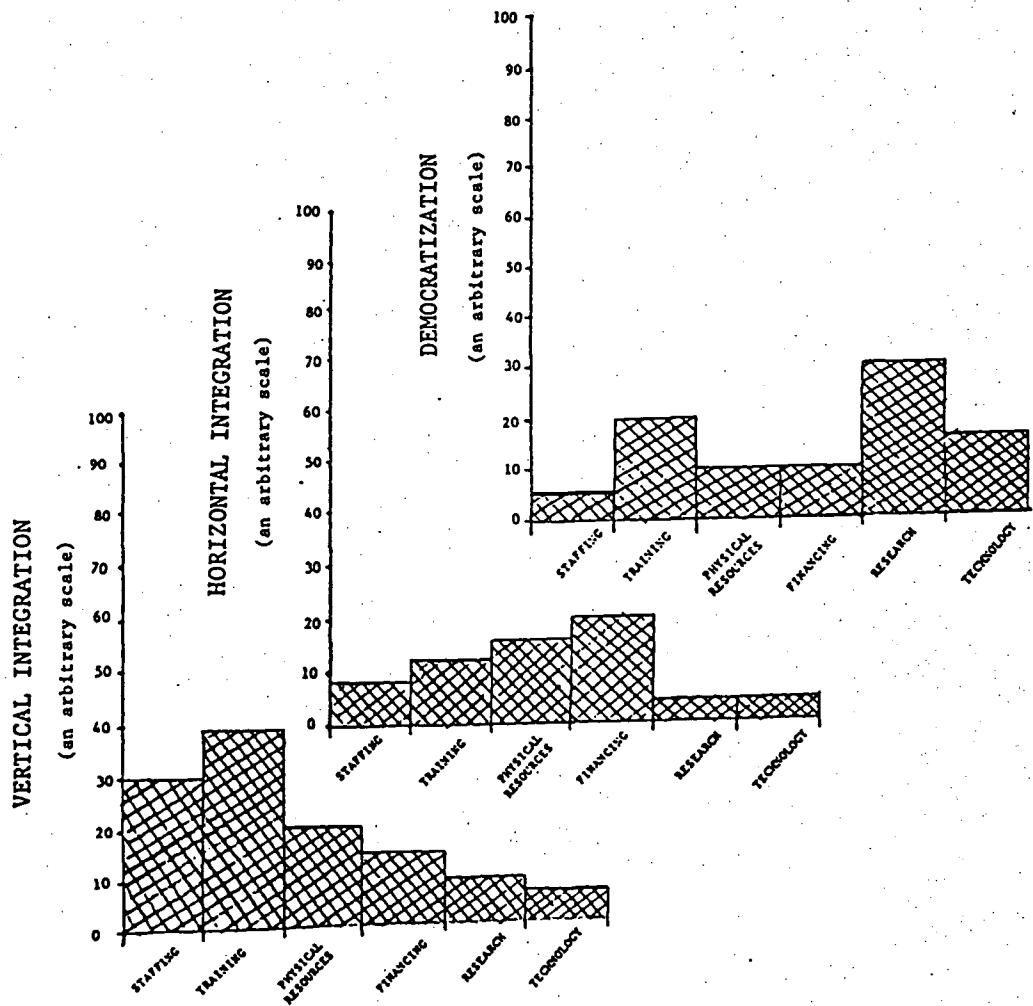
CHAPTER SIX

PRESENTATION AND DISCUSSION OF FINDINGS

The research questions investigated were concerned with the extent to which selected Zambian agricultural extension procedures are integrated and democratized. Vertical integration, horizontal integration and democratization, the major concepts of lifelong education, were used to examine staffing, training, physical resources, financing, research and technology. This chapter presents the findings of the study. Each of the procedures has been examined within the context of vertical integration, horizontal integration, and democratization.

Fig. 9 shows the author's estimates concerning the extent to which the six procedures are vertically integrated, horizontally integrated and democratized. The 100-point scale is an arbitrary measure against which the "extent" (of democratization etc) is assessed. These are only subjective estimates made by the author after examining the "ideal" (associated with integration and democratization) and "actual" state of agricultural extension in Zambia.

Figure 9. An Arbitrary Measure of Integration and Democratization pertaining to six Zambian Agricultural Extension Procedures



Thus training is deemed to be more vertically integrated than "staffing" which is, in turn, more vertically integrated than "physical resources," "financing," "research" or "technology." As will be shown below, it was concluded that agricultural extension procedures were more democratized and vertically integrated than they were horizontally integrated. These differences will now be described in detail.

Vertical Integration

There are various categories of learners in society. People can be classified according to gender (male, female) and age (children, adolescents, youth, adults). Other categories include religious affiliation (Catholic, Protestant, etc.) political affiliation (ANC, UNIP, Liberal, etc.), economic status (rich, poor, etc.) and education levels (literate, illiterate).

Educators often define learners according to some of these categories. For decades, the formal educational system has focused attention on children, adolescents, and youth and largely ignored the needs of adults. Sex, economic status, and religious affiliation have influenced the extent to which individuals have access to education. In vertically

integrated settings, all sectors of society would have access to education irrespective of gender, age, economic status or educational level. Individuals learn throughout life. Contrary to the traditional practice in which formal settings are preoccupied with adolescents and youth, settings ought to provide access to their educational programs without erecting age-related barriers. Agricultural extension, has a potential to meet needs of children, youth and adults. This part of the study concerned the extent to which agricultural extension procedures in Zambia were vertically integrated; that is the extent to which the procedures incorporated different sectors of society in the design and implementation of educational programs.

The first procedure to be discussed concerns staffing. This set of results is drawn from the upper left-hand cell in Table 9. After discussing staffing, the results will focus on vertical integration and the situation concerning training, followed by financing, and so on down each column of Table 9. After the implications of vertical integration for each procedure have been assessed, attention turns to horizontal integration and then to democratization.

Staffing

"Staffing" refers to individuals within an organization who foster learning. Within MAWD, such individuals exclude people such as secretaries and clerical officers. In the context of lifelong education, all individuals in society are agents of change. In vertically integrated situations, all individuals-young or old- participate in agricultural extension.

At present, agricultural extension is largely the responsibility of personnel with formal academic qualifications. Rather than being a responsibility of children, youth, adolescents, and the old, personnel consists of individuals with formal academic qualifications, mostly young adults and youth. These individuals working with MAWD have to meet the hiring criteria. MAWD employees are both youth and adults. They perform agricultural extension duties up to their 50's and are then retired. In vertically integrated settings, learners are involved in education throughout their life. People would be involved in educational activities as their needs dictate. This has not been the case within MAWD. Individuals have to meet a particular criterion, mostly previous educational background, and have to be of a particular age (depends

on the post advertised) to qualify as MAWD personnel. This is not unique to MAWD but true of other government and non-government organizations.

Vertically integrated settings would fully utilize the available reservoir of educators, the old and young. Grand parents would, for example, work with their grand children, reinforcing each others educational effort. Similarly, youth who have just joined agricultural extension would work with those involved for a long time and combine theory with practice.

The Ministry of Agriculture and Water Development (MAWD) is comprised of the following staff:

1. The Permanent Secretary, MAWD
2. The Director of Agriculture (Extension) who is assisted by Senior Subject Matter Specialists (Senior Professional Officers).
3. The Provincial Agricultural Officer, who is assisted by Subject Matter Specialists (Technical Officers).
4. Senior Agricultural Assistants, some of whom are Block Supervisors, Agricultural Assistants and commodity demonstrators. The Senior Agricultural Assistants can be categorized as field level staff since they deal directly with farmers.

In 1984, extension staff totaled about 2,416 individuals (excluding administrative and secretarial personnel) (MAWD, 1984). These are few considering that they are serving communities that comprise approximately 75 per cent of the total population. As shown in Table 10, there is a limited personnel to carry out extension duties.

Table 10. Professional and Technical staffing, Summary Early 1984

LOCATION	PROFESSIONAL STAFF				TECHNICAL STAFF				VACANT POS.	GRAND TOTAL
	PHD	MSC	BSC	TOTAL	DIP	CERT	OTHER	TOTL		
NATIONAL HQ	2		2	4	6	4		4		10
	0	1		1				0		1
CENTRAL	2			0				0		0
	0			0				0		0
COPPERBELT	2			5	5	29	98	28	155	160
	0	1	3	2	6		2	2		8
EASTERN	2		1	5	6	18		321	339	345
	0	1	3	5	9			0		9
LUSAKA	2			0				0		0
	0			0				0		0
LUAPULA	2			0				0		0
	0			0				0		0
NORTHERN	2		1	2	3	2		257	259	262
	0			1	1			0		1
NORTH WESTERN	2			0				0		0
	0			0				0		0
SOUTHERN	2			0				0		0
	0			0				0		0
WESTERN	2			0				0		0
	0			0				0		0
SUBTOTAL	2		4	16	20	53	98	606	757	777
"	0	3	6	8	17		2		2	19
GRAND TOTAL	3	10	24	37	0	53	100	606	759	0 0 796

Source: MAWD (1984).

The primary criterion for hiring personnel within MAWD is formal educational qualifications. This has limited the number of people employed from non-formal and informal educational settings. As indicated in the previous chapter, Zambia's rural youth (14-24 years of age), form a majority of the population. Some of these have not had any formal education. Those that dropped out of school are either involved in unpaid jobs around the family farm or periodically employed in low paying jobs.

National and local extension organizations have not given much attention to rural youth or women. What focus is given to rural youth or women is mostly on those with at least a formal basic education.

In vertically integrated settings, there would be enough staff to carry out education duties. These would be available from different settings covering a wide range of ages. In 1977, the number of staff in different provinces was small and varied considerably. For example, in Luapula province, some camps were unstaffed or staffed by commodity demonstrators instead of personnel specifically trained for the job. As a result, a limited number of farmers was reached, usually the easily accessible or highly motivated ones.

In 1983, few people had been trained in the various agricultural extension fields. For example, MAWD was comprised of 70 individuals with a degree, 330 with a diploma, 970 with agricultural certificate and 600 Commodity Demonstrators. The ratio of field extension workers to farm households was approximately 1 to 1,387 in 1983 (MAWD, 1984).

The shortage of formally trained personnel to carry out agricultural extension duties emphasizes the need to utilize staff from other organizations and those trained in non-formal and informal educational settings. At present, professionally and formally trained staff dominate leadership roles and, in most cases, act as the main source of information. There are different types of learners from whom agricultural extension leaders could obtain relevant learning experiences. These include:

1. Large scale farmers (farm size > 40 ha)
2. Medium scale commercial farmers (farm size 10 to 20 ha)
3. Small scale commercial farmers (farm size 2 to 10 ha)
4. Traditional farmers (farm size less than 3 ha)

These different learners have experiences relating to

their type of farming that would benefit other learners.

The farming community has not been recognized as a valuable resource in implementing procedures but have been perceived as target learners whose role is to receive agricultural extension messages. Individuals ought to participate in performing educational duties throughout their life.

Various sectors of society, young and old, all ought to have access to and participate in educational programs since people learn through out life. Although both youth and adults have had access to agricultural extension, mostly young adults (14-50 years of age) participate in these programs and those 5-13, and 60 years and above have had a limited role in agricultural extension. There are many factors that inhibit people from participating in education. Some stem from a lack of resources and inflexible rules and regulations erected by providers of education. Such barriers as fixed entrance requirements ought to be relaxed to foster involvement in education.

It is therefore reasonable to state that there is minimal vertical integration of staffing within MAWD. Agricultural extension service has not utilized all learners in disseminating information. Its service has

been biased towards youth. Most children and older adults have had a limited role in performing MAWD duties. Even young adults who are employed have to meet "desired" qualifications. There are many individuals, both young and old, whose expertise has remained untapped. The need to vertically integrate staffing stems from the fact individuals learn throughout life and therefore both young and older learners are a useful resource. Zambian agricultural extension has limited resources to train its personnel and therefore cannot afford to ignore older adults who have both knowledge and practice relevant to this field.

Training

It is essential to train individuals responsible for disseminating agricultural extension information. Agricultural extension in Zambia has many potential learners, who, in vertically integrated settings, would consist of young and old individuals. All sectors of society would have access to training.

Both young and old people have participated in MAWD (re)training programs. Training has been mostly dominated by youth and young adults while in-service has been accessible to adults and youth with previous

training. Training as seen from a lifelong education perspective ought to be equally extended to adults and pre-adults who wish to begin or resume their education. Individuals should therefore be allowed to enter 'higher' training without previous training or a complete formal education.

Currently, training institutions clearly define their clientele as well as subject areas to be covered in their curriculum. Farm Training Institutes offer three months residential induction courses specifically for commodity demonstrators. For those interested in specialization, the Zambia Centre for Horticultural Training is provided in the Copperbelt Province, Palabana Training School for Dairy Farmers in Lusaka Province and the Popota Tobacco Training College for Tobacco Extension staff in the Southern Province provide training.

Farmer Training Centres (FTCs) provide inservice training to staff, co-operatives staff, local leaders and other community groups. There are approximately 32 FTCs for the whole country (Refer to Table 11 for distribution of FTCs by province). Most participants in FTC programs are between 18 and 25 years of age and dropped out of the formal educational settings between grades eight and eleven. This group is comprised of

Table 11 Distribution of Farmer Training Centres by Province

Province	Total No. of FTCs	Location of FTCs	Bed capacity
Central ..	4	Chalimbana	20
		Mkushi	24
		Mukulankwa	54
		Serenje	30
Copperbelt ...	3	Mpongwe	48
		Mibenge	20
		Mutaba	20
Eastern ..	5	Chadiza	28
		Katete	28
		Lundazi	28
		Petauke	28
		Chama	20
Luapula ..	4	Mbereshi	30
		Samfya	20
		Mwense	20
		Nchelenge	20
Northern ..	4	Isoka	20
		Mpika	30
		Mporokoso	20
		Chinsali	20
North-Western	4	Chafukuma	20
		Kabompo	20
		Kasempa	20
		Mwinilunga	20
Southern ..	4	Kalomo	24
		Malima	24
		Monze	48
		Namwala	25
Western ..	4	Kaoma	40
		Nangweshi	30
		Seesheke	30
		Kalabo	30

Source: MAWD, Annual Report of the Extension Branch 1976-77, p. 25.

most of the learners with previous formal educational background and also denies potential learners above the ages of 25 years a chance to participate in the training programs.

Zambia Colleges of Agriculture (ZCA) located in Monze and Mpika offer 1-2 year certificate pre- and in-service training courses in general agriculture. The colleges provide practical and theoretical knowledge to learners, who, at graduation, are employed by the MAWD agricultural extension branch as Agricultural Assistants. The colleges have a specific clientele considered as eligible for training, mostly those with a grade ten education. Natural Resources Development College (NRDC) also provides three year diploma courses to people with previous educational background.

The school of agricultural Sciences at the University of Zambia offers both pre- and in-service training in Agriculture. Both men and women, youth and adults have access to training as long as they meet the entry requirements which mostly refer to their previous educational and agricultural background. Only those that meet these requirements have access and only a limited number of people graduate.

As pointed out, these extension training programs have a specified clientele that meets defined criteria. This is contrary to vertical integration ideals in which a training program ought to reach learners of all ages and at different phases in the life cycle. Learning takes place with different age-groups working together. Training within MAWD and other outside organizations is designed and implemented according to learners' educational levels. Training institutions have continued to perpetuate the status quo by providing education mostly to young adults who already have some formal education and ignoring the interests of older adults. commodity demonstrators, Agricultural Assistants, Subject Matter Specialists and top management are trained separately according to educational levels and subject areas. It is important that adult learners be given opportunities like younger learners. Adult learners too ought to change their perceptions of education as ending after youth. Education goes on throughout life since education that takes place during childhood and youth cannot meet all other needs that emerge after those phases. Adults require education throughout their lives and should be given the opportunity to drop in and out of educational settings (formal, non-formal and informal) as their

needs dictate. Likewise, they should not be denied the opportunity to participate in any educational program due to age. Age-related barriers should be dismantled in all educational settings. Children as well as adults should be actively involved.

Physical resources

In vertically integrated settings, physical resources would be equally accessible to various sectors of society, young and old. Educational resources for both young and old would receive similar attention. The government, through the Five Year National Development Plans attempted to evenly distribute resources among individuals. The objectives of the Third National Development Plan (1979-83) were to reduce socio-economic disparities between rural and urban areas, between regions and within regions, to distribute resources so as to involve the local level in development and to ensure that a reasonable number of people benefitted from the development process. However, this effort was hampered by limited resources. The uneven distribution of resources throughout the country as acknowledged in the Third National Development plan has continued in most areas of the economy. This unevenness exists between youth, adults

and children, and between the formal and non-formal educational sectors.

Currently, the non-formal educational system in Zambia has a bias toward young formally educated school leavers. This is because of the increasing primary and secondary school dropout rate, attributed to the limited number of schools to meet the increasing populations of school age children. There are limited facilities at primary and secondary school levels; colleges and Universities. Similarly, youth and adults in urban areas have continued to have better access to non-formal educational services and facilities and most of these have formal basic education. Adults without previous education find it difficult to participate in any education programs.

Most resources provided by agricultural extension have been beneficial to those individuals that participate in extension programs, mostly youth. Sometimes individuals, both young and old lack information concerning the available resources. It is the duty of agricultural extension agents and fellow farmers to disseminate such information. Resources like libraries would be more accessible to farmers through the use of mobile libraries.

Financing

There are many organizations that ought to provide funds for education. In the lifelong education context all institutions (home, church, etc) should set aside funds for education. A vertically integrated system would provide funding to both old and young learners. In Zambia, education is among the priorities in the National Development Plans. However, most of the funding goes towards meeting the needs of the young. Adult education has not received similar attention.

Agricultural extension learners are both children and adults. However, most participants have been youth with some previous education. Most are drop outs without formal credentials. These leave school as early as fourteen years. They do not have access to loans because they are too young and lack collateral. Yet these individuals need to participate in education. The need to vertically integrate funding and other resources stems from such concerns. There are many drop outs who need to take part in education to learn new skills for self-employment and yet lack funding and resources. Vertically integrated settings would not limit access to funding or other resources due to age. Both adults and children ought to be given equal opportunities.

Although limited in its revenue sources, the government has provided most of the funding for agricultural development. In the Third National Development Plan (1983), agricultural development has been one of the top priorities. Farmers have received funds from the Agricultural Finance Company (AFC) but the distribution of AFC service has been uneven. Although the "lending principle states" that lending is open to all categories of the farming community (MAWD, 1984), access has been limited to farmers with enough collateral to satisfy lending requirements. This policy is similar to that of private organizations such as banks. In most cases, all loans have been concentrated in the commercial category of farmers. Small medium farmers seldom meet requirements. Lending services are thus not accessible for all sectors of society.

At functional levels, there is a variation in funding. Most funds go to the headquarters to help in administrative functions. As shown in Table 12, the amount of funds distributed to other departments amounts to the Headquarters allocation in total. The departments require funds sufficient to implement procedures. The generation and utilization of funds among providers of agricultural extension shows a

limited vertical integration. A few institutions such as banks have been responsible for funding the farming community but it has been limited to established farmers. Farmers have not contributed much towards funding agricultural extension programs.

Research

In any of the educational settings, research ought to involve all learners. Vertically integrated settings would involve both children and adults in the design and implementation of research. Traditionally there has been a bias towards education for the young and most research focused on formal education. Research into educational gerontology requires more attention especially for those educational systems such as Zambian agricultural extension. Most participants in Zambian agricultural extension have either dropped out of or lack a formal education. As a learning experience, and since all individuals (young or old) are involved in learning throughout life, learners should be involved in designing and implementing research. Agricultural extension research has been dominated by formal educational "experts", other learners have not meaningfully participated in research. In most cases, both children and older

Table 12. Capital Budget Outlay for Ministry of Agriculture and water Development (1980 and 1981)

(K'000)			
	TNDP Provision	1980 Allocation	1981 Allocation
(i) <u>Department</u>			
Headquarters	60,596	9,596	16,572
Department of Agriculture	33,910	3,048	3,541
Department of Veterinary & Tse-Tse Control Service	52,360	1,945	1,460
Training Institutes	6,872	2,734	2,475
Department of Co-operatives and Marketing	8,647	1,375	3,094
Department of Water Affairs	25,178	5,067	4,395
Agricultural Research	9,045	1,890	2,010
Total:	196,608	25,150	33,547

Source: National Commission For Development Planning(1982). Economic Report 1981, Lusaka. p. 123.

adults have participated as consumers but not producers of research.

Access to research information has been limited to a few institutions and farm groups. Non farming communities and those without radio or television and whose residents are unable to read or write have had a limited access to research information. Sometimes,

individuals involved in research publish their findings in foreign journals which are not accessible to local people.

Technology

In vertically integrated settings, hard and software technology would be available to both old and young. In the Zambian agricultural context, machinery such as tractors and other farm implements would be available to both youth and adults. However this has not been the case. Mostly established farmers with resources have money to buy such machinery. When they drop out of school, most youth still depend on their parents and other relations for their livelihood. This reinforces the need for vertical integration. Resources belonging to older learners, such as extended relations, could be used by children and youth and vice versa.

Zambian agriculturalists have been slow to adopt new technology. Hardware technology has not been available, nor has it been equally accessible to all socio-economic and cultural groups. This has been caused by many factors such as cost and a lack of knowledge concerning hardware technology and its proper use. Hard and software technology have not been easily

accessible or available to the financially disadvantaged and "illiterate" groups. Technology would also be accessible to all sectors of society.

Commercial and emerging farmers in Zambia in most cases have had access and used most hard and software technology. Sometimes, small scale farmers have had limited information concerning the availability and applicability of a particular hard or software. In other cases, although provided with software, it has not been possible to purchase them due to a lack of funding. Some farmers that have had access to certain machinery pay exorbitant prices for spare parts and sometimes have had no access to them because they are not available in the country. The axe, hoe and plough cultivators comprise a significant proportion of the farming community and are prominent among groups with limited resources and little access to loan facilities. They have little or nothing to offer as collateral. There is a need to develop a technology appropriate to local conditions.

Horizontal Integration

Education occurs in formal, non-formal and informal settings. Within these settings, there are various institutions and organizations that provide education. They could be schools, families, colleges, universities, industries, churches and many others. These institutions and organizations have resources (personnel, physical, financial and technological) used to carry out educational functions such as training and research. In horizontally integrated settings, all organizations, institutions and individuals are involved in the provision of education to various sectors of society. Education is therefore not left to any one individual or organization. Instead, resources in organizations are available to people wanting to use them. Moreover, education occurring in various settings is given equal value and recognition. Educational effort towards the community such as research would be integrated. This part of the study concerned the extent to which Zambian agricultural extension procedures of staffing, training, physical resources, financing, research and technology were integrated.

Staffing

There are different personnel within organizations and institutions that provide education to farmers.

Traditionally, education is the prerogative of formal educational institutions and their personnel. In horizontally integrated settings, education would not be left to any one organization or individual. Similarly, personnel from different settings and organizations would all be valued. As in the case of implementing agricultural extension procedures, personnel from formal and non-formal settings ought to be involved.

Staff has an important role to play in a labour intensive system such as agricultural extension in Zambia. However, for the target population that comprise 75 per cent of the the total population, the current has not reached many farming individuals. Within MAWD, staff hiring is a responsibility of the national, provincial and district levels. The structure at each level is not independent from other structures.

However, staff are organized into disciplines and departments. It is rare to use staff from other organizations to carry out agricultural extension functions. For example, secondary school teachers have not been integrated into MAWD activities. MAWD personnel have been preoccupied with agricultural extension duties. Organizations other than MAWD are

involved in agricultural extension work on a part time basis or provide funding to MAWD to design and implement procedures. In this case only MAWD staff would be involved.

Staff from international organizations as SIDA, CIDA, NORAD, World Bank and others have worked with MAWD staff. However these staff have, in most cases, come from agricultural related organizations and rarely from non-formal education organizations such as YWCA, the church, or private businesses.

Formal and non-formal agricultural providers have not worked together to mobilize and utilize staff. Worse still, different disciplines such as Economics, Literature, Languages, Sociology and Geography as well as churches and banks do not see agricultural extension as something that concerns them. There has been little co-ordination of staff between the various disciplines even when the goals or clientele are the same.

Training

In a horizontally integrated system, training would be a responsibility of varied institutions, not only those in formal settings. Rather than focusing on specialization, training would be multi-disciplinary and achieve many purposes. Many institutions are

responsible for training personnel. Traditionally, these have been operated according to disciplines such as technology, arts, and sciences and most of them have been formal.

In a horizontally integrated system, different institutions such as the home, media, church, colleges and universities would all participate in the effort to improve individuals' competencies, attitudes and skills. Training is an integral part of other educational activities. Industries, for example, would put aside some time and resources for training staff rather than leaving total responsibility to formal education institutions. Similarly, resources from other settings would contribute towards training.

In Zambia, agricultural extension services are found in all settings (formal, informal and non-formal). Both within and outside MAWD, various institutions offer training. Within MAWD, Farm Institutes (FIs), Farm Training Centres (FTCs) and Colleges provide pre and in-service training. The University of Zambia, though not falling directly under MAWD, provides training to individuals with an interest in agriculture. Most of these secure employment with MAWD upon graduation.

Training institutions mostly provide training that leads to formal certificates. Other institutions such as the home, church, industries, banks have not involved themselves in training agricultural extension personnel. On the job training provided by different organizations or immediate supervisors or peers has, for instance, received limited attention. There has been a limited combination of work and education, which, in the context of lifelong education, is highly valued.

The overload institutions from formal settings have been facing is partly attributed to the unequal importance given to formal educational settings. Emphasis has been on credentials obtained in formal settings. Other forms of training are rarely regarded as important. This lack of recognition for non-formal education has been touted as one of the difficulties individuals face in securing jobs. As Mutava (1983) noted, individuals who participate in non-formal education expect to get certificates that would assist them in securing jobs. Most training within MAWD has led to state recognized credentials. Too much emphasis is placed on the learner's school credits and certificates as entrance criteria and too little on motivation and needs. This makes training accessible

to a limited range of already "educated" people.

MAWD personnel have also been trained by international organizations such as the Finnish Development Agency (FINNIDA). An example is a project in Luapula province covering about five districts. Different provinces have extension programs organized by international organizations. Besides training programs within Zambia, personnel from MAWD have been trained in countries within and outside Africa. For example, in 1976/77, staff were sent to Egypt, Britain, Canada, Cameroon, Nigeria, USA and Swaziland for both short and long term courses.

Most personnel involved in implementing agricultural extension procedures within MAWD are specifically trained in their subject related areas. This training, especially that provided to commodity demonstrators is insufficient and yet must put procedures into practice. Most of the well trained personnel are administrative or planning officers at national, provincial or district headquarters.

Training institutions ought to train individuals for specific jobs and equip learners to adapt to a variety of occupations. Trainees should understand the socio-psychological and histo-cultural contexts occupied by learners. Since these change, constant

training and retraining is required to update knowledge concerning methods and other knowledge related to extension. Efforts to retrain MAWD graduates, diploma and certificate holders to meet changing and complex needs has been less than successful.

There has been a lack of qualified staff and up-to-date knowledge (by subject matter specialists) and a lack of systematic contact between extension workers and the farming community (MAWD, 1984). Unless non-formal and informal educational settings are given equal importance and they assist formal educational institutions in the training of personnel, it is unlikely that colleges, schools and universities will relax or reform their entrance criteria. Formal providers are overloaded and cannot meet all educational needs of society. Personnel responsible for training in non-formal and formal settings should co-ordinate their efforts to ensure efficiency and to minimize duplication. There are many providers of agricultural extension in Zambia but each designs its own programs without reference to others. Programs are designed to train personnel and other subject related individuals that meet entrance requirements. There are different agricultural training centres and colleges but these do not meet all individual needs and are

independently operated. There is little co-ordination between Farmer Training Centres, Farm Institutes, Zambia Colleges, NRDC and the University.

Physical Resources

Even when facing limited resources, it is possible to share and bring together what is available in horizontally integrated settings. This creates a support network.

Different providers of education have various resources such as space, transportation, seeds, fertilizers, machinery and teaching aids (such as radios, televisions and video tapes). In a horizontally integrated system, there are flexible arrangements concerning the use of such resources. Classroom space belonging to primary education for children would be available to programs for youth and adults. Similarly, resources such as extension library material, radios and televisions would be used by various sectors of society. It is not possible to construct a new school or buy new television sets each time demand increases. Instead, providers of education should be able to share resources.

There is an unequal distribution of resources such as transportation, teaching aids, libraries and even

accommodation for members of staff, making it difficult for extension personnel to do their work. The lack of adequate transportation is an acute problem. Some farming communities cannot be reached. Formal and non-formal providers should share their vehicles. The government has been the main provider of resources. Sharing of resources such as transportation has been limited to related subjects and departments. Within MAWD, resources such as teaching aids and transportation have been restricted to the department to which they were allocated. Private organizations have rarely co-operated with MAWD since agricultural extension has been considered to be a public responsibility. Resources are limited, fragmentary in nature and used only by defined departments and organizations. People involved in agricultural extension programs either have limited resources to contribute to the running of agricultural extension programs or rarely consider it necessary to contribute resources for the common good. Unless individuals and organizations change their attitude and generate resources, MAWD will be the main and sometimes the only provider. Organizations should relax their rules and allow individuals access to resources.

Funding

In a horizontally integrated system educational projects would be funded by many organizations and institutions. Agricultural extension has many potential sponsors. However not all institutions have funded or provided credit facilities to farming communities in Zambia. Government revenue through MAWD has been the main source of funding.

The major agricultural lending institution in Zambia has been the Agricultural Finance Company (AFC), a parastatal organization falling under MAWD. This company provides credit facilities to small and medium scale farmers but there are inadequate funds to meet the needs of the farming community, and the loan recovery rate has been poor.

The Cattle Finance Company of Zambia has also provided financial assistance to livestock farmers. Other institutions that provide agricultural related financial assistance include Zambia National Commercial Bank, Barclays Bank of Zambia Ltd., Standard Bank of Zambia Ltd. and Development Bank of Zambia. These services have been at national, provincial and district levels.

Many international organizations such as Swedish International Development Agency (SIDA), Canadian

International Development Agency (CIDA), Norwegian Agency for Development (NORAD), British Overseas Development Administration, World Bank, International Fund for Agricultural Development (IFAD) and the European Development Fund, provide funding, credit facilities, research, extension services, and supplies for agricultural projects. Sometimes international organizations such as SIDA provide funding through AFC to farmers.

Despite these various sources of funding, not all providers of education have funded agricultural extension projects. A few have put aside resources for extension work while others have considered it a "public" responsibility. MAWD has therefore remained the main source of funding. Most organizations that provide funds detach themselves from the design and implementation of projects. Other providers utilize their funds according to their defined objectives and this leads to a duplication of physical resources and salaries for staff with similar qualifications and functions. Organizations have occasionally funded similar programs but not through deliberately designed effort to bring together related funding.

Research

Research is a responsibility of all organizations and individuals and requires co-ordination. In a horizontally integrated system, "research" would not be the prerogative or preoccupation of any one individual or organization. Formal and non-formal organizations would all participate in the design and conduct of research.

Research within agricultural extension in Zambia has been carried out by staff specialized in different subject matter areas. Different research organizations at national, regional, and local levels have been involved in research.

Mount Makulu has been the Central Research Station for MAWD. Regional Research Stations exist in different parts of the country. Each Regional Research Station concentrates on issues related to its region. This has been emphasized so that problems relating to specific regions are dealt with. At Regional and Central Research stations, teams have been formed on subject basis and carry out research accordingly. The Research Branch within MAWD has the overall responsibility to research through its Adaptive Research Planning (ARP) unit and this has been responsible for conducting surveys and making

recommendations.

Churches, YWCA, banks and families all need to be involved in research. Television Zambia could for example conduct research on the significance of the delivery mode for various segments of the farming community. Most organizations and groups have simply been recipients of agricultural information. More organizations and individuals should be involved otherwise research stations alone will be overloaded.

The Research/Extension Liason officer based at Mt. Makulu (Central Research Station) fosters exchanges of information between Adaptive Research Planning (ARP), research stations and extension staff. He also disseminates research information to agricultural staff at provincial and district levels as well as FTCs and FTIs trainers. Research information is accessible to other ministries and agencies and public upon request.

Although a liaison officer facilitates the flow of information between various research stations, agricultural extension and other organizations, there is little co-ordination between non-formal, non-agricultural institutions and organizations, and research institutions in MAWD, or between research stations and farmers. It is too much for one person to co-ordinate research between various research centres,

government ministries, and the general public. Besides, there is little co-ordination of research activities between non-formal and formal settings; government and non-government and private and voluntary associations. Any co-ordination has been linked to agricultural related organizations. They do not synthesize or reconcile research questions and concerns between formal and non-formal educational organizations. There has been no attempt to synthesize or reconcile research conducted in formal settings. The significance of research to agricultural practice has remained elusive. Since research results are supposed to be used to enhance practice, researchers should secure feedback from practitioners.

Technology

Technology could be categorized into hardware and software. Hardware relates to machinery such as farm implements. Software is knowledge or expertise related to the utilization of hardware and could be obtained through training and research. In a horizontally integrated system, hardware and software are accessible and available to various sectors of society. Traditional and foreign technologies have co-existed but the latter have received more emphasis than the

former. A horizontally integrated system would put an equal emphasis on all technologies.

A significant percent of farmers in Zambia utilize shifting axe and hoe cultivation. Others have used a combination of hoe and plough. About a third of the total farming community use semi-commercial ox and tractor cultivation (Refer to Table 3 and 4 in chapter one). Agricultural extension organizations have perhaps focused too much attention on the mechanization of agriculture through the utilization of "western" technologies which, in most cases, have been "inappropriate" and expensive.

Organizations and individuals have hard and software for different purposes. Farmers require technology that is useful for their farming. In a horizontally integrated system, different organizations and individuals involve themselves in technological innovations. The purpose is to arrive at technology that costs less and is efficient. The study question concerned the extent to which technology within agricultural extension in Zambia was horizontally integrated.

In a horizontally integrated system, hard and software within different settings would be accessible to all sectors of society. Radio and television have

both been used by MAWD to deliver extension messages. Like most developing countries, Zambia does not possess the technology to transform agriculture to improve growth. Mechanization of agriculture has been one of the major objectives of economic development in the National Development Plans. Among other factors, mechanization of agriculture has been limited due to a limited access to soft and hardware.

In the context of lifelong education, technological innovations ought to take into consideration historical, cultural and resource endowment aspects of a setting. With emphasis on the adoption of mostly western technology in agricultural extension, this factor has been ignored in Zambia.

Democratization

Educational programs and activities provided by different organizations have many potential participants. In a democratized system, all individuals ought to have equal access to and participate in education. Questions concerning the extent to which agricultural extension procedures were equally accessible and available to various sectors of society were studied. The participation of individuals

in these procedures was also examined.

Staffing

All individuals have the potential to influence change either through spontaneous activities or deliberately designed effort. Education has been considered to be a way to induce change and, through it, individuals acquire knowledge, attitudes, and skills to improve their practice. In democratized settings, all individuals in society would have equal access to and participation in education. Individuals would participate in a broad array of formal, non-formal and informal educational settings. Volunteers and professionally trained individuals would all be 'teachers' and 'learners.'

MAWD staff are required to have formal qualifications and an agriculture background. MAWD trains and retrain most staff in specific subject areas. A person without formal credentials cannot usually become a MAWD employee.

Personnel outside MAWD had little access to services such as travel allowances. However, there is no equal distribution of trained personnel within MAWD structure. There has been a concentration of qualified staff at national and provincial levels and individuals

with limited training have been involved in implementing procedures. In democratized settings, all individuals with experience, formal or non-formal should be given equal opportunities to work as MAWD personnel. Requirements such as the need for formal education to be hired as MAWD staff should be relaxed to ensure involvement.

Training

In democratized settings, all socio-economic and cultural groups would have equal access to and participate in education. Concerning training, all learners would have access to and participate in decisions concerning their needs, instructional techniques, and evaluating their learning experiences.

Training of personnel at various Farm Institutes, Farmer Training Centres, Colleges and the University, depends on each institution's code of conduct. Under MAWD, most institutions have operated semi-autonomously with a defined clientele. Unless these criteria have been met, access to these training and retraining institutions has been limited to a specific group of learners - mostly youth with previous educational background. Adults, especially those with previous education, have had access to these facilities. Not

all personnel have specialized in their areas of interest because, those with certificates have to be exemplary in their agricultural extension work to be eligible for further training.

Students have rarely participated in defining program content. A curriculum is developed by the trainers in close co-operation with MAWD. Some colleges have trained and retrained personnel in specific subject matter areas. Examples are Zambia Centre for Horticultural Training, Palabana Training School for Dairy Farmers and the Popota Tobacco Training College for tobacco extension staff. Access to and participation in these agricultural extension training programs has been limited to a clientele with a previous educational background. Most people participate in education largely as learners while subject matter specialists as "experts." Participants select courses from predetermined programs. These courses are not available to members of all status, income and educational groups. Nor have learners been actively involved in decisions concerning the nature of the content, methodology and times to schedule training programs.

Physical Resources

Individuals ought to have access to an array of physical resources. They should mobilize their own resources. Democratized resources would be accessible and available to various socio-economic and cultural groups. A lack of reading materials, housing and rewards has affected the operation of agricultural extension in Zambia. A lack of machinery and teaching materials has led to an unequal distribution of resources among individuals and organizations. A lack of funds has a direct bearing on programs designed and implemented at training centres and on the nature of teaching aids purchased. A lack of adequate transport between departments has frustrated attempts to serve areas most in need. Resources ought to be equally accessible to different individuals in society. Organizations and individuals should contribute to and mobilize resources.

The government has been the main source of transportation, fertilizers, credit facilities and seeds. Limited transportation has been a major constraint

Funding

In Zambia, different organizations and aid donors have frequently provided funding for farmers with approximately ten hectares and ignored small scale farmers. The policy has favoured developed farmers (mostly large-scale) and ignored the small-scale farmers who comprise most of the farming community. As Honeybone and Marter (1975) observed, this channelling of scarce resources to the small group of better-off farmers has inhibited the spread of 'trickle-down' effect of development spending.

Each organization funds its own programs without coordinating its activities with others. As stated earlier on, financial resources have played a significant part in the functioning of the development programs. Extension programs depend on the availability of government funding which is limited. This leads to too small numbers of farmers reached. Most funding from the government goes to staff and farmer training, technical advice, transportation and stationery. Many participating farmers are dependent on external funds and few have been involved in educational programs at their own expense.

Most farmers in Zambia are "illiterate" adults. Of these, women form approximately one third of the

farming households. Most farms are small and people living there are not registered as farmers; this puts restrictions on their access to credit facilities. They are poor and have little or nothing to offer credit organizations as collateral.

At the structural level, the District Agricultural officer (DAO) prepares estimates related to their needs for recurrent expenses. These have normally been for the coming fiscal (Calendar) year. Each district in the province prepares an estimate submitted to the provincial Agricultural officer (PAO). These estimates are submitted to the national headquarters. The headquarters prepares a budget for the Ministry of Finance. When the budget is approved, allocations among provinces and the headquarters are made and similarly, the provincial headquarters allocates funds between the provincial headquarters and the districts. Each province is allocated funding according to the estimates made.

Research

In democratized settings, all individuals and organizations with an interest in research ought to take part in it's design and implementation. Research information is available to all sectors of society.

Within agricultural extension, there is a lack of involvement among the farmers, commodity demonstrators, trainers and camp staff in the research process from delineation of research needs to the conduct of research. According to Freire (1970) and UNESCO (1976), all individuals and organizations involved in the educational process ought to participate fully in research.

Staff with professional qualifications in various subject matter areas have been involved in research. The Adaptive Research Planning (ARP) team conducts research "exploratory surveys," "in depth surveys," "station-based research" and "on-farm testing." Mount Makulu has been the central research station. Other research centres exist within provinces. These research centres are responsible for generation, collection and dissemination of research findings to extension personnel and farmers through literature, radio, television and other media.

Research has been dominated by subject matter specialists. There is little "participatory research" involving individuals and organizations with an interest in the development of agriculture such as government ministries, departments, and voluntary and private organizations. The National Council for

Scientific Research, like other organizations, operates as an autonomous organization. Similarly, Rural Reconstruction Centres under the Ministry of Defence have operated their own extension services.

Information from research centres is disseminated to the public through printed literature, radio, television, and training officers. There has been a one-way flow of information from research centres to target groups. Most delivery modes have not been accessible to all members of the farming community. Although radio is supposed to be "cheap", it has not properly penetrated the farming community and has proved to be expensive for rural populations with a meagre income. Broadcasting times are often inconvenient for busy farmers.

Other modes that could reinforce radio programs such as telephones are not available. Printed material has been limited to literate members of the community. Research information should be available to more people.

Technology

Both traditional and foreign technology have co-existed for a long time. However, limited attention has been paid to traditional technological innovations.

Inappropriateness, cost and a lack of technological know-how have been among the major factors inhibiting the utilization of technology by all sectors of the farming community. Tractors are expensive and there are few spare parts. In democratized settings, both soft and hardware would be available to all individuals who participate. People also participate in the decision making process concerning what soft and hardware to use.

The findings are presented in Table 13 below. The symbol (+) represents the presence of integration and democratization, (-) represents a limited exemplification and (X) represents no exemplification. The symbol (*) indicates no data on the procedure.

This chapter provided an analysis of the extent to which agricultural extension procedures of staffing, training, physical resources, financing, research and technology were integrated and democratized. It was found that there is a limited integration and democratization of these procedures. To find out factors inhibiting integration and democratization requires more research. In the next chapter, a summary and conclusions of the study are provided.

Table 13. Summary of the Findings

PROCEDURES		VERTICAL INTEGRATION		HORIZONTAL INTEGRATION		DEMOCRATIZATION
STAFFING	+	• youth and adults employed as adults		• co-ordination of formal and non-formal education staff at		• Equal access to leadership formal and non-formal
	-	• utilization of formal and non-formal education staff		a) <u>structural level</u>	X	1. public organizations
				1. Regional	X	2. private organizations
	+	• roles assumed by both men and women		2. District	X	3. voluntary organizations
				3. Local	X	4. Farmers
				4. National	-	• Participates in Drafting amending programs and policies
				b) <u>clientele level</u>		• consulted in decision making
				- Government ministries	-	• clientele 1 Universities
			X	- non-government organizations and departments	+	2. Agricultural industries
				1. Universities	-	3. Financial Agents
				2. Agricultural Colleges.	+	4. Agricultural Colleges
				3. Agricultural industries.	-	5. Farming Community
				4. Financial Agents		included in offering expertise in form of attitudes, skills, knowledge.
				5. Farmers		
				c) <u>Functional level</u>		
				1. Planning		
				2. Research		
				3. Training		
				4. Administration		
				5. Finance		
				6. Personnel		
TRAINING	+	• Training/retraining available to both youth and adults	X	• liason of training programmes among formal and non-formal training institutions at structural, clientele and functional levels.	X	• Equal access to training among extension personnel
	-	• Comprehensive Content benefitting both men and women.		a) <u>structural level</u>	X	• Equal access to training among non-formal and formal agricultural clientele
			X	1. National	+	• Equal opportunity to training among extension personnel
			X	2. Regional	-	• Equal opportunity to training among non-formal and formal agricultural personnel
			X	3. District		• Equal participation in decisions relating to training and re-training among extension personnel
			X	4. Local		• farmers
				b) <u>clientele level</u>	X	• government organizations
			X	- Government Ministries.	X	• private organizations
			X	- gov't. and non-government organizations and departments.	X	• voluntary organizations
PHYSICAL RESOURCES		• Availability of resources in agricultural extension to		• pooling of resources from formal and non-formal	X	• Equal access to physical resources among target population
	-	youth	X	private	X	• Equal opportunity to resources among target population
	-	adults	X	voluntary		• participates in generation of resources
			X	farmers sectors		- farmers
				• pooling of resources at regional	X	- private
				district	+	- government
				local levels	-	- non-government organizations
					-	- voluntary organizations
						• Equal participation in decisions concerning utilization of resources.
					-	- farmers
					+	- private
					-	- government
					-	- non-government
					-	- voluntary
FINANCING		• Funding programs for youth and adults in relation to agriculture		• Joint effort in mobilization and provision of funding among and between formal and non-formal organizations		• Equal access to financial resources among target groups
	+	youth	X	- national, regional, district and local levels.	-	small scale farmers
	+	Adults		- private, voluntary, public gov't. and non-gov't.	-	commercial farmers
				- planning, finance, research, training	X	• participate in budgeting of available agricultural related funds
			X	• Collective decision making concerning funding of agricultural programs and activities.	-	farmers
				- national, regional, district and local levels	+	private organizations
				- private, voluntary, public government and non-government	-	government organizations
				- planning, finance, research, training	-	voluntary organizations
					X	• sponsors agricultural extension related programs
					-	- farmers
					+	- private organizations
					-	- government organizations
					-	- voluntary organizations
RESEARCH	X	• Comparative research between formal and non-formal education		• Coordination of research at various levels.	X	• Equal emphasis between formal educational research
		• Research related to all age levels		a) - national	-	• participatory research
	-	youth		- regional	X	• Equal access to research information
	-	Adults		- local		
			X	b) - private		
			X	- voluntary		
				- public departments		
			X	c) - planning		
			X	- research		
			X	- finance		
			X	- training		
				• Multi-disciplinary research		
TECHNOLOGY			*	• Joint technological effort between agricultural extension organizations and other organizations	X	• Equal access to technological findings
					-	• participates in decisions concerning utilization of technology.

KEY

+ Exemplification of integration and democratization.

- Limited integration and democratization.

x Lack of integration and democratization.

* No data

CHAPTER SEVEN

SUMMARY

The study examined the extent to which selected Zambian agricultural extension procedures are integrated and democratized. The study focused on staffing, training, physical resources, financing, research and technology. Vertical integration, horizontal integration and democratization, lifelong education concepts, constituted a standard against which these procedures were examined.

Vertical Integration

The research question relating to vertical integration was concerned with the extent to which selected Zambian agricultural extension procedures were vertically integrated. Each of the procedures: staffing, training, physical resources, financing, research and technology were examined.

After studying staffing in this context, it was found that agricultural extension is generally accessible to youth and adults. However, this educational system focuses more attention on individuals with previous educational background and

those with enough resources to participate than on those without. Few individuals have had access to resources. Training programs have been accessible to a few people. Research has been dominated by MAWD and subject matter specialists. Personnel from other organizations have had a limited involvement in agricultural research. It is apparent that extension is not well integrated vertically. In addition, a lack of motivation and transportation affect the involvement of participants, agricultural extension, especially small scale farmers. It would be of interest to find out the major factors inhibiting vertical integration within agricultural extension and how they can be minimized.

Horizontal Integration

Horizontal integration from the fact there are many potential providers of education in society and their activities ought to be co-ordinated.

Results relating to horizontal integration have shown that few agencies do extension work. There has been little co-ordination among providers. Staff is utilized according to departments, functions and subjects. There has been little integration of staff

in different departments within MAWD or between other organizations.

Those involved in agricultural extension provided resources but not participated in "design" and "implementation" procedures. MAWD has conducted most of the programs and activities.

Democratization

There has been a minimal democratization of agricultural extension procedures. Those employed by MAWD largely have formal education qualifications. Farmers have participated mostly as learners and have not really occupied leadership roles. Resources have been limited to few people. Research has been dominated by "experts." Technology has not been accessible to small farmers or has local technology been regarded as important as foreign technology.

Implications

- There has been limited staff within agricultural extension in Zambia to carry out agricultural extension work. This has been caused by a lack of funds. This has had consequences such as a few training centres and

trained personnel and limited incentives for extension staff leaving staff unmotivated and reaching a few households.

- There has been a concentration of staff at the national and provincial levels. As a result those left to implement procedures have lower levels of education.
- Most staff training in MAWD is the responsibility of MAWD. There has been a limited integration of staff functions between agricultural related departments within MAWD, between ministries, non-government organizations and voluntary organizations.
- According to the Third National Development Plan objectives, use of the public extension service was to be free to all farmers. However, this has not been the case. Agricultural extension services have focused on the advantaged members of the community - the commercial farmers.
- Agricultural extension programs have been accessible to both men and women, youth and adults but biased towards motivated, more progressive and economically better-off members of the farming community. Consequently, agricultural extension, whose major objective has been to reach most disadvantaged members of the community, mostly small-scale farmers, has had a limited impact. Quite frequently, this bias has been

related to the nature of innovations offered by extension, the cost, the associated risk on the side of the learners, the emphasis on cash as opposed to traditional food crops, and the insistence on formal educational qualifications as the criterion for entrance to training programs.

- There has been a lack of flexibility in the use of resources within organizations and a lack of co-ordination of educational programs and activities, funding, resources and staff.
- The main objective of agricultural extension in Zambia has been to develop agricultural extension agents who would effectively impart agricultural knowledge, attitudes and skills. There is a limited quantity and quality of trained personnel - a factor limiting the general improvement of agricultural extension.
- There has been a limited two-way communication between research and extension staff, and between extension staff and the farming community. Research has been carried out by MAWD personnel and other organizations have carried out research related to their disciplines. Although the Liason Officer at Mt. Makulu co-ordinates research information, it is not possible for one individual to co-ordinate information

from all agricultural research centers in the country let alone other non-government or non-agricultural extension research organizations.

- There has been a limited involvement of trainers, farmers, and other non-extension organizations in delineating, designing and conducting of research. Subject Matter Specialists have designed and conducted agricultural research.

- Comprehensive research, training financing, staffing programs involving formal and non-formal organizations is lacking. Neither funding nor physical resources are integrated. Each organization operates either as completely autonomous or semi-autonomous as in the case of MAWD Departments.

- The extent to which local and western technology have been integrated to suit the local conditions is not clear. However, it has been quite evident that there has been emphasis on mechanization of agriculture using western technology. It has also been clear that little has been done to improve local innovations in relation to agricultural development.

Limitations of the Study

This study examined selected Zambian agricultural extension policies and procedures to find out the extent to which they exemplify lifelong education. The procedures could not be completely isolated from other factors not covered in the study such as the role of political power in defining, designing and implementing policies. The examination and analysis of the selected policies and procedures lacks generalizability to all agricultural extension settings except those similar to the Zambian situation. Even then, caution is needed since agricultural extension systems vary from context to context and too often, are specific to socio-economic, political and cultural situations.

Since documents were used as basis of the study, certain factors that would have been useful in the study such as clientele perception of the policies and procedures is missing in the study. Interpretation of the data from documents was most difficult especially in cases of secondary material since individual author interpretation is influenced to a greater extent by their philosophy.

CHAPTER EIGHT

POLICY IMPLICATIONS AND CONCLUSION

The findings of the study have implications for the provision, design and implementation of agricultural extension in Zambia. Recommendations related to staffing, training, physical resources, financing, research and technology are presented and are congruent with the notions of vertical integration, horizontal integration and democratization.

A vertically integrated system is available to all age levels; children, youth and adults while horizontally integrated settings would have all institutions providing education. Related programs and activities would be integrated. Principles relating to democratization focus on access, availability, participation and the involvement of individuals in decisions concerning and the management of their educational experiences.

It is quite clear that agricultural extension procedures in Zambia have manifested only a limited form of integration and democratization. In relation to vertical integration, both men and women, youth and adults have access to extension education although the focus has been on individuals with a formal education. The discrepancy between the lifelong education ideals

and the procedures is quite wide, giving MAWD and other providers a challenge to narrow it. Lifelong education ideals were not considered as an end but as means to an end. The following recommendations are for consideration by those involved in Zambian agricultural extension.

1. The basic assumption underlying lifelong education is that any individuals are capable of being learners and educators. This means that subject matter specialists, personnel not principally concerned with agricultural extension such as engineers, social workers, doctors, technicians, bank personnel, and trade union personnel ought to be considered as learners and teachers. Subject matter specialists have been perceived as having a monopoly on practical experience. Farmers have not been considered capable of making significant contributions to the development of farming. Too often, farmers have been perceived as recipients but not creators of knowledge. Through such activities as participatory research and peer tutoring, farmers would be a useful resource in agricultural extension. Various personnel within the formal and non-formal education institutions

should provide the educational skills required by the farming community. Through the co-operation of formal and non-formal educational agents, practitioners can make an important contribution to the development of the target population's welfare.

2. To ensure motivation among farmers and the staff, there should be more involvement of the clientele in the design and management of agricultural extension programs. This is fundamental to democratization. Participation could be in the form of providing expertise, in research, in identifying training needs, and many other ways.
3. There is need for more personnel to be trained and to use staff from providers in a flexible way when carrying out extension functions. There are many potential providers of extension education in Zambia such as professional associations, trade unions, cooperatives, libraries, and voluntary associations such as the YWCA. Staff from these organizations ought to have educational functions.
4. Certain clientele such as the farmers have had no access to extension facilities due to such barriers

as prior education as basic entry criteria. These ought to be minimized to ensure access to these facilities by the small-scale farmers and other disadvantaged groups.

5. There is a need to combine training with practice such as craftwork. Most training programs seem to focus on written expression, ignoring the important part, practice.
6. Extension agents, especially commodity demonstrators that keep in touch with farmers seem to be inadequately trained to fulfill the effective extension function. Since the success of agricultural extension depends to a large extent on the quality and skills of its staff and the extent to which this is effectively carried over to farmers and agricultural extension agent training should be improved. Well trained staff would have technical knowledge, broad understanding of the role of agriculture in the general economic development, and would comprehend the conditions and problems facing farming communities like content to be covered in programs and the socio-economic constraints on the target

population. With such training, agents would transmit adequate knowledge to learners and learn from them in a reciprocal way.

7. The camp staff, block staff, and subject matter specialists, as well as other graduates from colleges and the University require inservice training due to changes in needs of farmers, methodologies and technology. The agents thus require an update in these areas. This could be done by combining general extension education with vocational education. Individuals could, for example, alternate work and training or peer tutoring could be utilized during on-the-job-training.
8. Most specialists have been employed at the national and provincial headquarters doing administrative work. At the local level, more qualified staff with expertise ought to be employed since these are responsible for implementing procedures. Commodity demonstrators have direct contact with farmers. Rather than the aptitude test they receive and a three month induction course, they require multi-disciplinary training related to agricultural

extension.

9. To overcome compartmentalization, extension activities ought to be co-ordinated through liaison groups. Through the design and implementation of comprehensive programs, many individuals would benefit. Co-ordination could be in form of pooling resources such as funding, or co-operating in initiating, designing and implementing similar programs, such as training. This would minimise the duplication of resources and create a support network. Extension organizations may all be located in different ministries or non-government institutions, they all aim at rural communities. The integration of public and private educational funds would bring together scattered funding.
10. Farmers could form farm groups that increase their bargaining power and make them more eligible for credit. Educators need to improve mechanisms that would make learners participate in extension such as credit facilities by providing better means of linking learners to resources. Cross (1983) emphasized the idea of connecting adult learners to resources. Implicit in this is access to

educational projects and services, especially among learners with a limited access to resources or have a limited educational background and income.

11. To solve the problem of insufficient materials such as reading materials, trainers and other extension staff could engage in production of local teaching aids. Agricultural extension is a practical subject requiring a lot of resources. As observed from the study, various organizations have their own resources such as libraries. These fragmented resources, if brought together would be useful to a number of people. Since farmers sometimes lack information concerning available resources, it is the role of extension agents to link these to farmers. Such methods as mobile extension library and training would increase the number of personnel having access to resources.

12. The formation of regional research teams that would collaborate with national committees would facilitate the flow of information among users. Such groups would support the planning and implementation of formal and non-formal educational research. Considering that organizations in

various educational settings have their own weaknesses, none of the two systems should replace the other. Instead, the two should be interactive, complementing and supplementing each other.

13. The dissemination and exchange of research information between and among farmers, research institutions and organizations interested in agricultural extension ought to be improved through the involvement of all interested organizations and individuals in research. Organizations could involve themselves in multi-disciplinary and comparative research. In formulating programs such as research and training, clientele involvement is not only an important but also indispensable element. Participatory research would allow organizations, individuals and groups to appreciate the problems researched. Involvement would also leave room for the practitioner (mostly farmers) to consider the adoption of a particular finding. As a learning process, it would also lead to commitment by target learners, participating organizations to activities such as funding and raw material.

14. Comprehensive research programs should be set up. These, it is hoped, would lead to attention of major dimensions of research problems and perhaps stimulate more inquiry. According to Freire (1972) participatory research would enhance dialogue between researchers and learners. Through participation, observation and discussion, learners would be informed of programs and research findings, would formulate views, identify problems and researchers would get comments about further research needs.
15. The nature of research services, their rationale and relevance to the context is an important aspect of the concept of lifelong education. Extension agents should research more into context related aspects. Research should therefore be more sensitive to local problems such as traditional crop production and the general farming systems.
16. Access to research information has been limited to a few individuals. Among other factors this has been caused by a limited nature of the delivery modes. These delivery modes could be improved or supplemented through formation of liason research

teams at national, provincial, regional and local levels.

17. Extension personnel ought to make optimal selection of technologies relevant to local peoples' needs. Through provision of sufficient information to the farmers, they would be able to adopt the technology that would suit their farming conditions. As agents of change, extension agents could encourage farmers to accept appropriate technological changes. Local initiatives to deal with farmers' agricultural problems such as technology should be encouraged.

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