

A STUDY OF THE ROLE, PERFORMANCE AND TRAINING OF
AGRICULTURAL EXTENSION WORKERS IN ZAMBIA

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ABSTRACT

A STUDY OF THE ROLE, PERFORMANCE AND TRAINING OF AGRICULTURAL EXTENSION WORKERS IN ZAMBIA

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This study focused on the training of agricultural extension workers in Zambia and its congruence both with the role and performance expectations of the Department of Agriculture for its front-line workers as well as their actual field performance. The research approach was a multi-method participatory process. The findings indicated weak formal links and poor communication among training institutions, the Department of Agriculture and small-scale and subsistence farming households. The extension system perceived the role of the extension worker to be mainly that of a technical advisor. Extension workers enjoyed their work with rural people, aspired to pursue a career in farming, and were isolated from and poorly supported by their administration. Their two-year training was directive, sometimes irrelevant, put little emphasis on process skills, with problems in teaching techniques, student selection and staffing. The study concluded that an equitable extension system emphasizes communication and participation among its clients, that a more realistic modified role for extension workers enables their participation in innovative problem-solving, and that effective training institutions are accountable to graduates, farmers and the Department of Agriculture. Recommendations included a redefinition of

the role of Zambian extension workers, improvement in their conditions of service, and the establishment of a curriculum development board with responsibility to evaluate and advise on a wide range of training issues.

This work is dedicated to
isolated rural women
whose lives are spent
producing, processing, preparing and serving food.

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LIST OF ABBREVIATIONS

A.A. - Agricultural Assistant; a graduate of a Z.C.A. who has not completed Form V Secondary School.

A.D. - Agricultural Demonstrator.

Agricultural Camp - A rural geographical area for which an extension worker is responsible when posted as Camp Officer by the Department of Agriculture. Each District is divided into several camps.

A.R.P.T. - Adaptive Research Planning Team; part of the Department of Agriculture Research Branch responsible for farming systems research.

C.D. - Commodity Demonstrator.

C.I.D.A. - Canadian International Development Agency.

D.A.O. - District Agricultural Officer.

F.A.O. - Food and Agriculture Organization, a United Nations agency.

F.S.R. - farming systems research.

F.T.C. - Farmer Training Centre.

G.R.Z. - Government of the Republic of Zambia.

I.A.S. - Institute for African Studies, U.N.Z.A.

I.R.D.P. - Integrated Rural Development Project.

M.A.W.D. - Ministry of Agriculture and Water Development.

N.C.D.P. - National Commission for Development Planning.

N.C.U. - Northern Province Cooperative Union.

N.G.O. - non-government organization.

N.O.R.A.D. - Norwegian Development Agency.

- N.R.D.C.** - Natural Resources Development College.
- O.D.A.** - Overseas Development Administration (British).
- P.A.O.** - Provincial Agricultural Officer.
- R.D.S.B.** - Rural Development Studies Bureau, U.N.Z.A.
- S.A.A.** - Senior Agricultural Assistant: a graduate of a Z.C.A. who has completed Form V Secondary School.
- S.I.D.A.** - Swedish International Development Agency.
- S.U.A.S.** - Swedish University of Agricultural Sciences.
- T.A.A.** - Trainee Agricultural Assistant.
- T + V** - Training and Visit System of Agricultural Extension.
- U.N.I.P.** - United National Independence Party; the governing and only legalized political party in Zambia.
- U.N.Z.A.** - University of Zambia.
- V.A.P.** - Village Agricultural Project, operating in Northern Province and funded by N.O.R.A.D.
- V.S.O.** - Volunteer Services Overseas (British).
- Z.C.A.** - Zambia College of Agriculture.

CHAPTER ONE

INTRODUCTION AND METHODOLOGY

1.1 Introduction

1.1.1 Background

A system of educating rural people in improved agricultural techniques has been developed and institutionalized within the Zambian Ministry of Agriculture and Water Development (M.A.W.D.). The Department of Agriculture within the Ministry employs and posts extension workers, called Agricultural Assistants, to rural locations. These specific geographical areas are called Agricultural Camps. There the extension workers are responsible to the local farming community as well as to the government for improving the agricultural productivity of the area. Before qualifying as an Agricultural Assistant, an extension worker must successfully complete two years of training at a Zambia College of Agriculture (Z.C.A.).

This thesis presents a descriptive study of the Zambian agricultural extension system, particularly the role and training of field level extension workers relative to subsistence and small-scale farming families.

The study was suggested by the Department of Agriculture Extension Branch, with the full cooperation of both Z.C.A.'s. The work was financed mainly by a research scholarship from the Canadian International Development Agency (C.I.D.A.). The researcher was in Zambia to gather field data from October 1983 to July 1984, and to complete and distribute the final report from April to August 1985.

1.1.2 Statement of Problem and Assumptions

This study grew out of concern within the Department of Agriculture about the effectiveness of the performance of extension workers. From that concern arose questions about the quality of training which extension workers received at each of the Z.C.A.'s, one at Monze in Southern Province and the other at Mpika in Northern Province. The research focused on examining the content and quality of training provided at the Z.C.A.'s and the coincidence of that training both with the role and performance expectations which the government extension system had for its front-line officers, as well as with their actual practice in the field. The research was based on the assumption that the training programme was not adequately preparing extension workers for the tasks they were expected to perform in the field. Such a base, the training of extension workers, is very broad, with implications not only for policy and practice of Z.C.A.'s but also for the objectives and expectations of the extension branch and the relevance of all of these to subsistence and small-scale farming families. It was assumed that an extension system includes not only the institutionalized government extension service but also its clients, the majority of whom are small-scale and subsistence farmers.

1.1.3 Goals and Aims

This research focused on the congruence among expectation, behaviour and training of Zambian extension workers. The goals of the study were:

- a) to describe the extension system and its role/performance expectations for extension workers;
- b) to examine extension theory and relate it to the practices and possibilities of the Zambian extension system;
- c) to describe the actual role perceptions and performance of extension workers;
- d) to describe the methods and technical components used in the training of extension workers;
- e) to facilitate a participative process through a multi-method approach to the research; and
- f) to provide recommendations for policy and program development for agricultural colleges and extension services.

The aim of the research was to examine the formative training provided at the Z.C.A.'s and to consider its appropriateness to the role and performance of extension workers in relation to the needs of small-scale farmers, who form the large majority of Zambia's rural population. The investigation included two broad areas or domains implicated in the topic: (1) the role and performance of agricultural extension workers and (2) the training of extension workers at the two Z.C.A.'s. Specific areas of study within these domains were to be identified and included during the research process, rather than being specified a priori.

The researcher chose to approach the topic using the operating principles of process and participation. One goal of the research was to facilitate participation in the process of the study by those directly involved in extension and training. Such participation assumed involvement not only in the identification and examination of

issues and problems, but also in bringing about change and solutions. The extent of the participation was limited by conditions, time and unfamiliarity of people with such an approach. This meant that the researcher made many decisions throughout the research process which ideally would have been made by the participants through consensus.

1.1.4 Outline of Chapters

A variety of methods were used to gather information. The methodology and objectives of each data-gathering instrument are described in Section 1.2 of this chapter.

An understanding of Zambia's rural society, as well as the structure and system of the agricultural extension service, and the training of extension workers, are a necessary context from which the research process proceeds. Information for the background presented in Chapter Two was gathered from related documents and literature as well as from observations recorded by the researcher.

The third chapter investigates current development and extension theory which contribute a conceptual framework for the study. The application of extension theory to the realities of the background material discloses the particular issues and problems to be examined within the two major domains of the study.

Specific findings of the research are divided into the two domains by chapter. The results of the investigation regarding the role and performance of extension workers are reported in the fourth chapter, followed in the next by reports of the investigation into their training at the Z.C.A.'s.

The final chapter presents the implications and conclusions, both specific and general, which are derived from the study. Because the work was initiated with the intention of contributing to change in the system, and because the researcher chose an action/problem-solving participatory approach, the final chapter in this thesis outlines specific recommendations for action which emerge from this research. As well, relevant research questions remaining unresolved are posed.

1.1.5 Significance

The information gathered and presented in this descriptive study could contribute to evaluation and change within Zambia's agricultural extension system, particularly within the formative training which extension workers receive in the Z.C.A. certificate programme. Hopefully, such change would provide improved extension service to small-scale and subsistence farming families. Recommendations from this study will provide information to colleges of agriculture and extension services for policy and program development.

1.2 Methodology

1.2.1 Approach

A descriptive study of the role, performance and training of extension workers indicates the value of a broad picture rather than a detailed examination of only one specific aspect of the topic. The general objectives of the study lend themselves to a multi-method approach and a participatory investigative process. Such a procedure explores a wide range of perspectives necessary to a descriptive

report.

The participation of individuals and groups from many levels of Zambia's agricultural sector continuously influenced the research. Field workers and representatives of each administrative level of the extension branch of the Department of Agriculture, plus the training staff and students of both Z.C.A.'s, as well as small-scale and subsistence farmers and various rural development specialists, participated in the investigative process and contributed to the findings. The researcher responded to the problems and perspectives of the participants by identifying common themes, developing instruments and facilitating communication. No attempt was made, however, to document the indirect effects of this participative process.

The two major areas of study were: (1) the role and performance of extension workers and (2) their training at the Zambia Colleges of Agriculture. A variety of methods were used to guide the research. They are described below. Examples of survey questionnaires, interview schedules, forms and agendas are included in Appendix A.

1.2.2 Data Gathering Methods

(a) **Z.C.A. Graduate Survey**

The purpose of this instrument was to gather both quantitative and qualitative data about the perceptions of extension workers concerning their role, performance and training. It was also intended to stimulate thinking about these areas and provide an opportunity for participants to voice their opinions and concerns. The survey population of 683 was composed of five graduating classes from both

Z.C.A.'s during the years 1979 to 1983 inclusive. Forty-eight percent of the population was selected as the survey sample. It included all of the population who, at graduation, had been posted by the Department of Agriculture to Northern, Luapula, Central and Southern Provinces. The first two represented the more advantaged and the latter two the less advantaged areas of Zambia with regard to agricultural resources and development. They were also those provinces which were most accessible to the researcher. There was a 60 percent response rate (N = 188) to the mailed survey, with highest returns from the two less advantaged provinces (see Table 1.1). Seventy percent of the respondents were posted in camps as extension workers at the time of the survey (see Tables 1.2 and 1.3).

Table 1.1. Z.C.A. Graduate Survey Rate of Return by Province.

<u>Province</u>	Survey Questionnaires				
	Distributed		Returned		Rate of Return
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>%</u>
Northern	94	29%	78	41%	83%
Luapula	53	17	43	23	81%
Central	83	26	39	21	47%
Southern	<u>91</u>	<u>28</u>	<u>28</u>	<u>15</u>	<u>31%</u>
Totals	321	100%	188	100%	59%

Table 1.2a. Z.C.A. Graduate Survey Respondents: Province by Present Post.

<u>Province</u>	<u>Present Post</u>			
	<u>Extension Worker</u>		<u>Other</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Northern	56	42%	22	39%
Luapula	32	24	11	20
Central	29	22	10	18
Southern	<u>15</u>	<u>11</u>	<u>13</u>	<u>23</u>
Totals	132	100%	56	100%

Table 1.2b. Z.C.A. Graduate Survey Respondents: Present Post by Province.

<u>Present Post</u>	<u>Province</u>							
	<u>Northern</u>		<u>Luapula</u>		<u>Central</u>		<u>Southern</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Extension Worker	56	72%	32	74%	29	74%	15	54%
Other	<u>22</u>	<u>28</u>	<u>11</u>	<u>26</u>	<u>10</u>	<u>26</u>	<u>13</u>	<u>46</u>
Totals	78	100%	43	100%	39	100%	28	100%

Table 1.3a. Z.C.A. Graduate Survey Respondents: Z.C.A. by Present Post.

Present Post						
Z.C.A.	Extension Worker		Other		Total	
	No.	%	No.	%	No.	%
Monze	66	50%	36	64%	102	54%
Mpika	<u>66</u>	<u>50</u>	<u>20</u>	<u>36</u>	<u>86</u>	<u>46</u>
Totals	132	100%	56	100%	188	100%

Table 1.3b. Z.C.A. Graduate Survey Respondents: Present Post by Z.C.A.

Present Post	Z.C.A.			
	Monze		Mpika	
	No.	%	No.	%
Extension Worker	66	65%	66	77%
Other	<u>36</u>	<u>35</u>	<u>20</u>	<u>23</u>
Totals	102	100%	86	100%

(b) ZCA Student Survey

The purpose of this instrument was to gather quantitative and qualitative data about the training of extension workers with regard to selection of students, perception of training and teaching methods used at the colleges. The total student population of both Z.C.A.'s, with the exception of the veterinary students at Monze College, was invited to participate in the survey, as well as observe a slide presentation of the two colleges. The total respondents (N = 325) were almost evenly divided between Monze and Mpika and between first and second year students (see Table 1.4).

(c) Z.C.A. Staff Survey

The purpose of this instrument was to obtain data about the experience and perceptions of people responsible for the training of extension workers. All resident staff of both colleges were surveyed. There was a 46 percent response rate; 13 from Mpika and eight from Monze.

(d) Interviews with Extension Workers

The purpose of these interviews was to provide information about the perceptions of extension workers of their role and performance. It also gave the researcher an opportunity to observe camp conditions and demonstration plots. Twelve representative Z.C.A. graduates posted as camp officers in three districts of Northern Province participated in in-depth, open-ended interviews. Interviewees were selected according to accessibility and included one female extension

Table 1.4a. Z.C.A. Student Survey: Z.C.A. by Student Year.

<u>Z.C.A.</u>	Student Year			
	First		Second	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Monze	91	55%	86	55%
Mpika	75	45	69	45
Totals	166	100%	155	100%

Table 1.4b. Z.C.A. Student Survey: Student Year by Z.C.A.

<u>Student Year</u>	Z.C.A.			
	Monze		Mpika	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
First	91	51%	75	52%
Second	86	49	69	48
Totals	177	100%	144	100%

worker. The number was determined by the practical constraints of time and availability. Notes were taken during the interviews which followed a planned schedule of items.

(e) Z.C.A. Student Group Discussions and Interviews

At both colleges individual students and groups met informally with the researcher to discuss issues and problems relative to the training and performance of extension workers. Those older students who had spent several years in the field were selected to be interviewed. Student leaders organized informal meetings. Some students showed particular interest in the research and initiated discussions with the researcher. These descriptive data provided insight into the opinions and experiences of students. All discussions and interviews were taped with the consent of the participants.

(f) Z.C.A. Staff Interviews

In order to gather information about the background, teaching practices and opinions of staff members, informal discussions were held with as many residence Z.C.A. staff members as were available during the weeks of participant observation at the colleges. Heads and acting-heads of departments, in particular, were interviewed.

(g) Photogathering by Extension Workers

In order to gather information in a non-directive way from extension workers about their perceptions of their role, an experimental methodology of photogathering was conducted. Nine of the twelve

Z.C.A. graduate interviewees were loaned simple pocket cameras containing a roll of black and white twelve-exposure film. Participants were asked to take five photos representing the most successful and five photos representing the least successful aspects of their work. The last two exposures could be used personally. Participants were asked to complete a simple form describing the content of and reason for taking each photograph. Seven films were returned and 62 photographs relating to the research were developed. It was intended that individual participation would be followed by group discussions concerning the content of their photos.

This experimental methodology had limited success. Constraints of time and distance prevented the intended discussion with individual participants or with groups after the photos were developed. However, the photographs and participant notations provided the researcher with descriptive data from a non-directed perspective.

(h) Z.C.A. Participant Observation

For the purpose of acquiring a better understanding of the training experience of extension workers, the researcher became a student participant-observer for two weeks at each Z.C.A. Routine academic, residence and recreational activity provided opportunity to note impressions, anecdotes, events about college living conditions, administration, learning situations and teaching methods. In an effort to parallel the format of the participant-observation in each college, the first week was allocated to first-year students and the second week to second-year students, with similar time apportioned to

classes, practicals and informal social activities. Detailed notes were taken throughout the four weeks.

(i) Department of Agriculture Meetings

The researcher participated in senior staff meetings of the Department of Agriculture in Northern and Southern Provinces, facilitating workshop sessions concerning the performance and training of extension workers. Through the nominal group technique, the perceptions of extension administrators were recorded concerning the work of front-line extension workers.

(j) Interviews

Informal discussions were held with national and provincial level personnel within branches of the Ministry of Agriculture and Water Development such as the Department of Agriculture, the training section, Adaptive Research Planning Teams and rural development specialists. These various perspectives of the subject areas contributed to the descriptive research material.

(k) Workshop

At the conclusion of the field research, a two-day workshop was held at Mpika Z.C.A. to examine preliminary findings from this study. Twenty-five people participated, representing small-scale farmers, camp officers, district and provincial Department of Agriculture personnel, and Z.C.A. training staff. The workshop adopted a number of important recommendations with regard to the extension service

which were presented to the ministry and other relevant bodies.

(1) Slide Presentation

A number of slide photographs were taken during the participant-observation at each Z.C.A. A slide presentation was prepared to inform viewers of the facilities and activities at each college. This was shown at the Department of Agriculture Provincial Meetings, at the workshop and subsequently to the staff and students of both Z.C.A.'s. After each presentation, the viewers discussed the colleges and the training of extension workers.

(m) Journal

The researcher kept a daily journal in which was recorded informal observations, anecdotes and details related to the process and issues of the research.

(n) Document and Literature Review

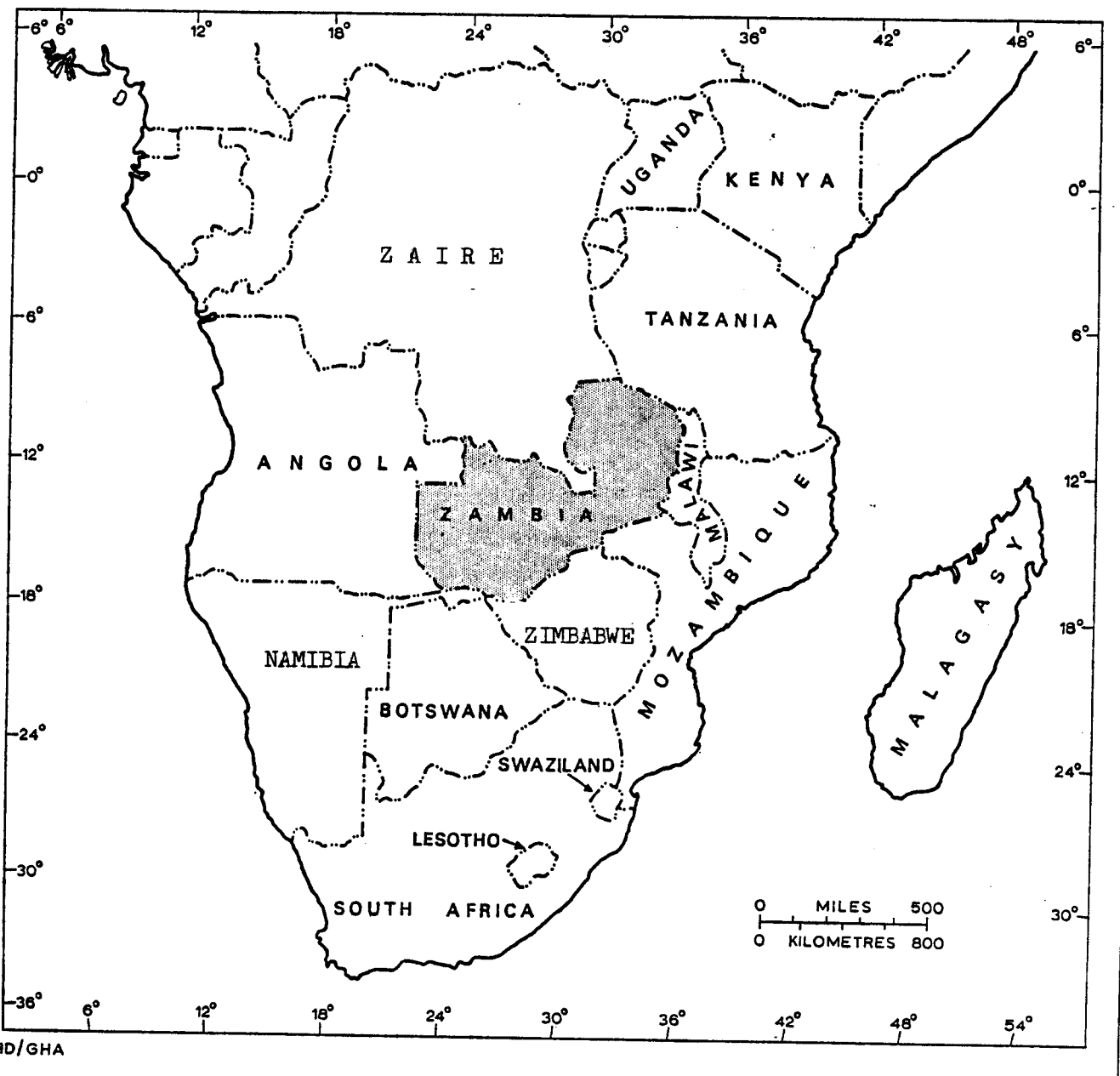
The researcher had access to various Zambia-specific reports, documents and books located in libraries of the University of Zambia, the Rural Development Studies Bureau, the Ministry of Agriculture and Water Development, the Z.C.A.'s at Mpika and Monze, and the Integrated Rural Development Project offices at Mpika and Kasama. Reports and documents were also available from the Adaptive Research Planning Team in Kabwe, from Mount Makulu Research Station, and from bilateral development agencies of Sweden (SIDA), Norway (NORAD), and Finland (FINNIDA). Relevant files were made available from the national,

provincial and district offices of the Ministry and from Z.C.A. administration. This material formed the secondary source for much of the background chapter of this study. Other documents were used for the preparation of the Graduate survey sample and distribution of questionnaires.

1.2.3 Analysis

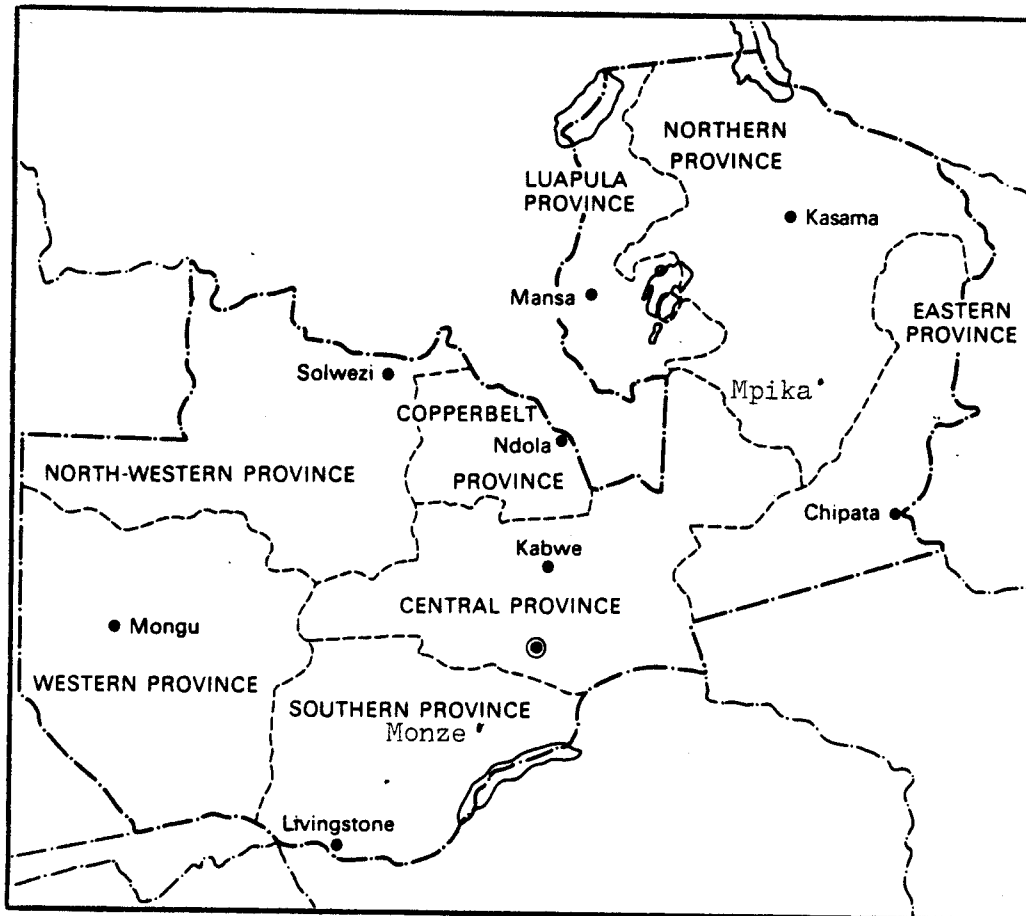
The quantitative data collected in the three surveys were collated and analyzed on a CMS computer programme into frequencies and cross-tabulations. Open-ended survey questions, interview and photo-gathering records were analyzed and grouped by the researcher. The mass of qualitative data from formal and informal sources was studied, interpreted and synthesized with the support of the quantitative findings. The resulting thesis is a descriptive study of the extension system in Zambia, which particularly examines the performance and training of agricultural extension workers in Zambia.

ZAMBIA AND HER NEIGHBOURS



(Davies, 1971)

THE PROVINCES OF ZAMBIA



from Naidoo & Mumbwe, 1969

CHAPTER TWO

BACKGROUND

2.1 The Perspective -- Zambian Rural Society

2.1.1 Indigenous Society

For centuries, the peoples of south-central Africa have gathered and processed information from the world around them. The resulting skills and knowledge have been passed on, giving life and meaning to each succeeding generation. The development of sophisticated farming systems, such as citemene (woodland slash and burn type of shifting cultivation), ensured a harvest not only for each season but protection for the delicate ecology, thus guaranteeing continual survival of the land and its people (Kakeya and Sugiyama, 1985). Such a guarantee is important; it is generally believed that after death the spirit of each person can only survive happily if the descendants continue to honour it. The historical responsibility of a kindred people to its past, present and future provides cultural continuity and survival.

Indigenous knowledge systems are in dynamic equilibrium with the environment, innovated from within the system, and by other indigenous, or national and international systems (Warren, 1984). Societies learn and develop from the vagaries of history which impinge upon them. Waves of Bantu migrations from the north-west displaced or integrated with Stone Age, then Iron Age people of south-central Africa. Wars and rivers, alliances and natural vegetation contributed to change within these learning societies.

2.1.2 Factors Affecting Rural Society

Today, in much of rural Zambia, the indigenous systems continue to give meaning and survival to people. Modern history has brought with it foreign influences and information which must be processed and integrated into the traditional systems of belief and practice. Because of the overwhelming rate of new input, the risk of system-overload threatens to destroy the existing knowledge base stored in an annual cycle through proverbs, songs, dances and skills in the memories of the largely illiterate adult population. During the last century, missionaries and mines, nationhood and commerce have reshaped the social order of the area. Even the remote regions of modern Zambia are part of a wider society having been affected by many factors, including commerce and urbanization, government policy, and the service sector.

2.1.2.1 **Commerce and Urbanization**

Urban centres in Africa's heartland emerged above rich mineral deposits. Male labourers abandoned their villages, lured by cash incomes and pressured by colonial policies, particularly hut tax. For nearly a century, the return of cash and labour to rural society in exchange for lost resources and production has been grossly imbalanced. Only in very recent years, the sharp drop in the world copper price, with resulting mine employment cutbacks, has intensified efforts to diversify and develop the economy into the agriculture sector. This has resulted in a slackening of the high rate of urban migration. Zambia is one of the continent's most urbanized nations;

over 45 percent of the population lives in cities and towns along the line of rail from Livingstone, through the capital Lusaka, to the Copperbelt. Urbanites are in the position of greater power economically and politically to maintain the bias of policy makers in their favour, resulting in the establishment of a distinct rural/urban dualism in Zambia.

2.1.2.2 Government Policy

Government policy regarding agriculture and rural development has varied, particularly from the colonial era to independence. Under British rule, the priority for agriculture was to keep the mining industry fed. Capital-intensive farming, largely controlled by white settlers along the line of rail, was propped up by tax, price and import incentives. The nation continues to rely on large-scale commercial farms for over 30 percent of its food requisites; these few farmers (less than one percent of the rural population) hold enough political clout to ensure policies in their favour.

Since 1964, the United National Independence Party (U.N.I.P.) has governed Zambia. Throughout his 20-year tenure, President Kenneth Kaunda has espoused the philosophy of Humanism as the foundation of the nation, often reiterating that "humanism is a decision in favour of the rural areas" (Wood, 1979), in favour of production by the masses rather than mass production. But the power of the mining and commercial agriculture sector has continued to increase at the expense of the majority of rural people whose standard of living has deteriorated markedly. Policies attempting to empower the village

level such as Villages Act (1971), Villages Productive Committees, Ward Development Committees, and village regrouping, were flawed in design and implementation (Bwalya, 1979; Bratton, 1979). Political rhetoric failed to invest massive capital into rural development such as the political will had done for the mining sector.

Since the late 1970's, the realization that copper prices would not increase forced government to scramble for the development of its rich agricultural potential. Production rose sharply following the marked maize price increase in 1980. However since then, input price increases have reduced the profit margin considerably. Increasing inflation and massive national debt have led to reduced government subsidies on inputs. Food prices are held down deliberately to satisfy the demands of the influential and volatile urban population. Meanwhile, the rural society continues to be deeply disrupted and weakened by the impact of these complex external factors.

2.1.2.3 Services

Services to rural Zambia are mainly public or parastatal; there is little encouragement for growth of the private sector in the highly centralized economy. Government services are divided sectorally with some attempts to integrate planning through the National Commission for Development Planning, and through provincial and district level planning councils. However, administrative difficulties with sectors consumes the concern of public servants, often to the neglect of any joint-sector planning or action. Formal education, under two ministries, Higher Education and Primary Education, is not involved

with non-formal education such as women's clubs and literacy classes which fall under the Ministry of Labour and Social Services. Although critically affected by the lack of facilities, supplies and staff, the Ministry of Health has a mandate for public health education. The pyramidal organization of U.N.I.P. exhorts local level party leaders to initiate and facilitate village level development. However, the Ministry of Agriculture and Water Development's (M.A.W.D.) extension and training service has a large number of trained personnel at the village level as well as an established infrastructure. It, therefore, "represents the major means of communication with the small-scale farming population" (Marter, 1979). Agricultural education is the only educational program with the potential to reach the majority of the nation's rural adults.

Other agricultural services are mainly provided through government and quasi-government organizations. Supply and marketing are managed by the Zambian Cooperative Union operating through each provincial cooperative. Most credit is granted through the Agricultural Finance Corporation, although some special programs for small-scale producers exist. In those areas influenced by bilateral donor agencies or non-governmental organizations which are substantially funded, managed and staffed by aid agencies or missions/churches, the quality and amount of service to rural areas are increased, despite wide variation among such programs.

By and large, it can be said that most rural Zambians have minimal influence from the service sector, apart from primary education which is mandatory for all children. However, the

expectations which the possibility of such services (e.g. health clinic, cooperative development) can bring and the cynicism aroused by the poor quality of service when in place, influence the behaviour of rural people to continue to rely on their indigenous proven systems.

The institutionalization of government services entrenches the huge coterie of civil servants and spawns the emergence of a new class of "bureaucratic bourgeoisie". Expansion of rural production, and the creation of new sets of institutions which might restructure the narrow choices of rural dwellers threaten the established export enclave and the profitability of their own operations (see Seidman, 1979). The service sector absorbs the largest part of the G.N.P., with the Ministry of Agriculture and Water Development (M.A.W.D.) receiving the largest budget allocation of all ministries (see Tordoff, 1980). However, it should be noted that those finances are centrally controlled: less than 10 percent of the total national allocation is administered by the provinces (Tordoff, 1980).

2.1.3 Rural Differentiation

Necessary to the understanding of Zambia's rural society must be an appreciation for the types of differentiation among its people. Ethnicity, socio-economy, gender and access to supplies and services demarcate significant differences in farming systems, living habits and standards.

2.1.3.1 **Ethnic Differentiation**

Ethnic background profoundly affects language, values, skills and

attitudes. The "scramble for Africa" bequeathed to Northern Rhodesia, now Zambia, a boundary which divided some tribal groupings (e.g. the Ngoni partly in Malawi and the Bemba partly in Zaire) and linked long-time adversaries (e.g. the Lozi and Bemba). U.N.I.P.'s motto, "One Zambia, one nation", is a vision that is frequently blurred. In that one nation, there are five major languages which subdivide into 73 vernaculars.

The Tonga people of the southern grassland are agrarian cattle owners following a patrilineal kinship system which has little in common with the matrilineal system of the Bemba people of the northern bush land who hunted, gathered and practised citemene and have now become the dominant group in the Copperbelt cities. The more elaborate state and economic system of the Lozi Kingdom is based upon the varied habitat of the Zambezi floodplain and can boast a history of highly developed irrigation canals to support surplus agricultural production - albeit, unfortunately, these have been destroyed and people in Western Province now know hunger and depend on food aid (Seidman, 1979). In contrast, the Ngoni warriors, linked with the slave and ivory trade of the 18th and 19th centuries, pushed from the southeast in raiding parties until they established themselves from the present Malawi border to Lusaka. This brief history of these deeply-rooted historical and structural differences among four of Zambia's major ethnic groups points out how much tribal differences impinge upon many aspects of rural life.

2.1.3.2 Socio-Economic Differentiation

It has become customary in Zambia to distinguish between three types of farmers, although there are no firm estimates of the number of persons within each group (Turok, 1979). Commercial farmers, using capital-intensive, highly technological practices, produce over 30 percent of the nation's marketed output, but form less than one percent of the rural population. Emergent farmers market more than 50 percent of their output, are also located mainly along the line of rail and/or in settlement schemes and usually have oxen and/or access to hired machinery. Small-scale farmers, dependent almost entirely on hand labour, market less than 50 percent of their output and are widely scattered across the country. Others who do not contribute to the market economy may be labelled subsistence farmers, villagers or peasants depending on the permanence and location of their dwelling and the degree to which they participate in agricultural activities. The Farm Register defines a farmer as a person or household who cultivates two or more hectares, generally interpreted to mean cultivation of a cash crop. Approximately 90 percent (see ILO/JASPA, 1981) of rural people are classified subsistence or small-scale producers. Because agricultural production is an interdependent household activity, henceforth this large category will be referred to as subsistence and small-scale farming families (S.S.F.F.). Recent studies indicate the need for recognizing the distinctions among this rural majority (see Section 2.1.4).

Socio-economic surveys done in a number of provinces tend to group small-scale agricultural producers from an upper group of those

cultivating with oxen, who receive formal services (credit, extension) and may earn up to K880 per annum (Marter, 1979), through about four categories to the lowest level of dependent subsistence households, usually female-headed and/or elderly, with little or no contact with formal services, whose cash income per year is negligible (see Tuthill, 1975; ILO/JASPA, 1977, 1981; Cowie, 1979; Honeybone and Marter, 1979; Jiggins, 1980; Maramwidze, 1981; Mwila, 1981, Stølen and Archetti, 1981; Chingambo, 1982; Vevald and Øygard, 1982; Chilivumbo and Milimo, 1983; Oppen, Shula and Alff, 1983; Shula, undated).

Stølen and Archetti (1981) examine six social and economic constraints - labour force, livestock, land use, capital, market conditions and cultural values - but they, along with most researchers, conclude that labour constraints contribute to the greatest differentiation between small-scale and subsistence producers. The labour force is contingent upon household composition, age of household head, sexual division of labour, kinship and access to additional labour. It is shown that level of household resources, particularly labour, which is the main factor, determines the range of activities carried out, the scale of operations and income generated. "Major government programs designed to assist small-scale farmers do not necessarily change the binding constraints imposed by the level of household resources" (Marter, 1979).

2.1.3.3 Gender Differentiation

Although overlapping both ethnic and socio-economic factors, the importance and problem of gender differentiation warrant recognition.

Marriage strategies (including matri and patri locality, brideprice, polygyny), treatment of widows and divorcees, access of women to resources (e.g. education, credit, land, labour), and incidence of rigid and ritualized sexual division of labour are some of the factors determining the female condition. A study by Seidman (1981) indicates that wives of wealthiest farmers become increasingly dependent on their husbands, whereas in poorer families women share decisions more equally with the men. As successful male farmers acquire higher technology, they monopolize local markets and female farmers are frequently ousted. All studies of rural households indicate the largest percentage of widowed and divorced women are found in the socio-economic poorest categories (see Section 2.1.4).

When labour resources are limited, the shift to cash cropping encroaches upon the production of subsistence crops and vegetables, both of which are largely women's responsibility. This has led to decreased nutritional intake, particularly for women and children (I.R.D.P., 1985). Any program to increase agricultural productivity must investigate these possibilities.

2.1.3.4 Access Differentiation

Close to six million people inhabit Zambia's 752,614 square kilometers (an area slightly larger than the Province of Alberta). About 3.3 million of these people live in rural areas where population density averages $4/\text{km}^2$, with wide variations. Along the line of rail (central), in the Chipata area (southeast), on the Zambezi flood-plain (west) and around the northeast lake district, there could be

from 10-50 persons/km². Widely scattered but substantial areas are inhabited by roughly 2-4 persons/km². However, 57 percent of Zambia's territory provides habitat for nine percent of the population, at a density of less than 2/km².

Paved roads to each of the nine provincial capitals extend outward from the capital. Access to district capitals not situated on the major arteries is often difficult due to general disrepair, poor bridges, flooding, poorly serviced ferries or pontoons. Feeder roads reaching into remote areas exist in various forms but generally have access limited to four-wheel drive vehicles and are likely impassible during the rainy season. Paths winding from village to village are fairly reliable for travel by light motorcycle, bicycle or "Zamfoot". Buses, "lifts" (hitch-hiking) and, to a lesser degree, trains, carry Zambians and their goods throughout most areas of the country. But many villagers may still need to "foot" a day or more to get home from the nearest bus stop.

Government policy such as village regrouping, settlement schemes and state farms have attempted to bring people to more accessible locations. The advantages of accessibility to roads, markets and clinics have shifted rural populations, further reducing population densities in least accessible areas. The cost effectiveness of supplying markets and services to these areas of least population density is a critical question for a nation whose economy is under severe pressure. These people tend to be severely neglected and survive on variously disrupted subsistence indigenous systems (Honeybone and Marter, 1979).

Accessibility to public information is dependent upon availability of either of the two daily national newspapers, radio or television service. Newspapers are distributed to provincial and some district capitals in limited numbers. The influence of regional shortwave radio stations depends on availability of cash for and distribution of batteries, nationally manufactured but frequently in short supply. National television is relayed into each province but cost and power limit it to very few.

Zambia's large physical size relative to its small scattered population is an important factor to consider when trying to understand and to help in the development of the rural society (Wood, 1979; Marter, 1979).

2.1.4 Related Literature

A brief review of some recent literature which documents rural differentiation will point out the variety of categorization. The ILO/JASPA Report (1981) shows characteristics of the three most accepted farmer categories: commercial, emergent and subsistence (see Table 2.1). Further dissimilarities within the emergent and subsistence groups have also been documented. From research in the Eastern Province, Cowie (1979) suggests a distinction between villagers and peasant farmers, then categorizes four groups under each heading. Stølen and Archetti's (1981) excellent work in Northern Province indicates socio-economic differentiation within village areas, but also the ethnic distinctions between a matrilineal Bemba village and a patrilineal Mambwe village showing "important impli-

Table 2.1. Broad Characteristics of Main Types of Zambian Farms.

	Subsistence	Emergent	Commercial
Main Starch Staple	Cassava, Millet, Sorghum, Maize	Maize	Maize
Main Inputs Purchased	None	Fertilizer, seed, pesticide	Fertilizer, seed, pesticide, herbicide
Main Source of Cash	Occasional food surplus sale. Fishing, beer, charcoal, etc.	Deliberate production of cash crop surplus for sale	Deliberate production of cash crop surplus for sale
Production of New Cash Crops (Cotton, Sunflower, Soyabean, Tobacco)	None	Some	Some
Power Source	Hand	Hand and oxen, a few tractor hire or ownership	Tractor ownership, possibly some oxen
Labour Source	Family and communal	Family, communal, casual and occasion- ally permanent	Permanent and casual
Size of Farm	Up to 5 ha, but usually less than 2 ha.	2 - 40 ha.	40 ha. and over
Number of Households	610,000	90,000	1,500 - 2,000
Percentage of Total Households	87	13	0.2 - 0.3

Source: From ILO(JASPA), Basic Needs in an Economy Under Pressure: Zambia, Report, 1981, p. 16.

cations in the field of social organization [which are] reflected in agriculture". Janice Jiggins' (1980) study of female-headed households in the Northern Province concludes that there is "an emerging 'rural poor' within which category women and especially widows are over-represented" -- a common theme in the literature. Many studies indicate labour resource as the dominant constraint and determinant of differentiation (see Vevald and Øygard, 1982; IRDP Mpika, 1984; Stølen and Archetti, 1981; Cowie, 1979; Marter, 1979; Jiggins, 1980). Chilivimbo and Milimo (1983) indicate some major differences in the structure and practices of rural households between Eastern and Western Provinces. The Integrated Rural Development Project Serenje District monitoring and evaluation report (1984) provides long-term, detailed documentation of the changes and adaptations occurring when more permanent commercial farming systems encroach upon the indigenous citemene way of life. Other reports from the Mpika-based I.R.D.P. study are an excellent source of data on farming systems in Serenge, Mpika and Chinsali Districts. The most extensive study on the topic was done by Marter (1979) who surveyed the resources, activities and incomes of rural households in every province. His analysis grouped those from Southern, Eastern and Central Provinces as being from more favoured areas, against those from the less favoured other provinces, pointing out the reality of differentiation resulting from accessibility. He further subdivided each group into four categories indicating the distinguishing characteristics of each including land resources, crop production, plus amount, source and distribution of income. An in-depth Marxian interpretation of emerging class

divisions in terms of relationships rather than living standards is offered by Cliffe (1979). Comprehensively examining the interplay of indigenous class structures, labour migrations and the role of the state, he concludes, that "two political points follow from the nature of labour migration economy -- a system of super-exploitation -- both of male labour power paid below its value, and of female domestic labour that makes it possible", but also that "the dynamics of the labour migration system ... [are] subject to strain as the almost inevitable breakdown of the agricultural system makes this pattern of exploitation less viable", leading to inevitable crises and mounting protest (Cliffe, 1979).

When studies of Zambian rural society are viewed as a whole, it becomes clear that simple sweeping categorization of rural people is unacceptable. Continuing work needs to be done on longitudinal studies (such as the monitoring and evaluation process of Mpika I.R.D.P.) which include a wide variety of factors and interpretations (see Seidman, 1979; Palmer and Parsons, 1977). Then, a fuller picture will undoubtedly emerge of trends and causal relationships, which can be used by policy makers and service agencies in planning for the development of Zambia's rural population.

2.2 The View -- Agricultural Extension Services

To boost and regulate agricultural productivity in the 1920's, a government extension service was established in fertile areas accessible to urban markets. Under an efficient British administration, farmers were pressed into planting what and how they were

instructed. Extension workers carried specific messages to selected producers along road and rail lines in Southern, Central and part of Eastern provinces. Since independence, steady expansion of the system throughout every province has required substantial resources. The performance, structure and effectiveness of the service have unfolded with time and circumstance.

2.2.1 Performance of the Extension Service

2.2.1.1 Target

The average number of farmers per field level extension worker is lower in Zambia than in most countries (Turok, 1979; Coombs, 1974). Nevertheless, large camp areas and the scattered nature of villages are factors influencing the distribution of field staff (see Table 2.2).

The basis of our farming industry ought to be the small to medium sized family farm. This is socially the most viable structure; it is economically feasible and it is fully in line with the principles of humanism Therefore, development officers, e.g. in credit, cooperatives, extension and training, research departments and others in this field, should in the future see it as their main task to promote the family farm.

[emphasis in original]

Address by the President K.D. Kaunda at the Opening of a Seminar on Rural Development, held in Lusaka in 23 March 1970, mimeo. [Klepper, 1979, p. 147]

Despite the message of Humanism, past policies and even the President's statement indicate that the extension service is "biased towards farmers who are already better off, ... and tends to ignore women who do much of the agricultural work in Zambia" (Klepper, 1979),

Table 2.2. Department of Agriculture Extension Service: Distribution of Field Staff (A.A.'s only).

Province	No. of Camps ^a	Area of Camps (Ave.) Sq. Miles ^a	No. of Field Staff ^b	No. of Field Staff
Central	66	263	68	1.03
Copperbelt	18	255	42	2.33
Eastern	96	250	68	0.71
Luapula	47	220	34	0.72
Northern	75	496	74	0.99
Northwestern	63	197	64	1.02
Southern	135	91	46	0.34
Western	42	313	60	1.43
	542	246	456	0.84

Province	Rural Population ^c	Population per Staff	Farm Families ^d	Farm Families per Staff
Central	388,993	5,720	72,600	1,068
Copperbelt	72,215	1,719	17,300	412
Eastern	496,215	7,297	121,300	1,784
Luapula	329,884	9,702	81,000	2,382
Northern	530,996	7,176	120,100	1,623
Northwestern	231,733	3,621	53,000	828
Southern	428,041	9,305	78,500	1,706
Western	399,387	6,656	88,800	1,480
	2,877,464	6,310	632,400	1,387

^a G.L. Godel, An Analysis of Zambia's Agricultural Camps, 1972, (Lusaka, Department of Agriculture, 1973), p. 4 and p. 7.

^b N. Mukutu, The Department of Agriculture Extension Services (Lusaka, Department of Agriculture, 1975), pp. 3-5.

^c M.E. Jackman, Recent Population Movements in Zambia: Some Aspects of the 1969 Census (University of Zambia, Institute for African Studies, Zambian Papers, No. 8, 1973), p. 12; and Monthly Digest of Statistics, Vol. X, No. 6, June 1974 (Lusaka, C.S.O.), p. 1.

^d Census of Agriculture: First Report (Lusaka, C.S.O., 1974), p. 23.

From: D. Honeybone and A. Marter, An Evaluation Study of Zambia's Farm Institutes and Farm Training Centres, Zambia World Bank Education Project 900-ZA, University of Zambia, Rural Development Studies Bureau, 1975.

a fact not uncommon to extension services worldwide. A farm register for each Agricultural Camp is to be kept by Camp Officials. In it, the extension worker records all households cultivating at least two hectares of cash crop, usually hybrid maize. These become the farmers to whom the extension worker directs his program. The target group is defined to exclude subsistence households and those who choose to market subsistence crops locally, e.g. cassava, vegetables.

2.2.1.2 Message

The predominant extension message has promoted the production of cash crops, mainly hybrid maize, but also rice, coffee, sunflower and soyabeans in suitable areas, delivered to farmers in a specific "Lima" package. Lima, meaning "to dig" in several Zambian vernaculars, has become a household word for Zambia's green revolution. "Grow the Lima Way" is inscribed on coins and emblazoned on posters. Every family in the nation is exhorted to grow a minimum of one Lima, one-quarter hectare, annually.

The Lima package was developed in the national agricultural research centre, Mount Makulu, as a simple method for measuring area (using a 25-metre lima rope) and volume (with 500 gram Lima beaker and 20 gram Lima cup) to ensure correct seed and fertilizer application for each one-quarter hectare. Small booklets have been printed for each province with specific recommendations for various crops. Each step of crop production is outlined month by month from cultivation to harvest. Extension workers are to teach the skills, such as how to plant, apply fertilizer and harvest. The program has been extending

from Lusaka to rural development project areas and beyond since the late 1970's.

Norrby (1983) notes that only 26 percent of all Department of Agriculture officers with at least a certificate in Agriculture have attended a Lima course during the last five years. He states:

Hopefully, they may have got some information on it through other channels. High pressure has been put on the Lima Programme during the last few years. A lot of money has been fed into the programme in order to disseminate the information to all officers concerned. From that point of view, it seems quite discouraging to notice that the participation of extension officers in Lima courses is so comparatively low there seems to be a considerable difference between different provinces on this issue.
[Norrby, 1983, p. 14]

Evaluation studies of the Lima programme have been done by some aid agencies who have augmented the plan to include free inputs for the first year Lima farmers (e.g. Finnida Extension Project, V.A.P., S.I.D.A., G.R.D./G.R.Z.), but these conditions are not the norm for most rural areas. Studies by Eklund (1985) (Planning Unit, M.A.W.D.) and Stollbrand (Mount Makulu) generalize their results for national policy implications.

Early evaluation is critical of the top-down prescriptive inflexibility which denies ecological and socio-economic variability within provinces and does not encourage local adaptation. Lack of production supplies as well as of Lima ropes, beakers and cups has constrained farmers to simplify the specific nature of the program into a general message to grow hybrid maize.

Extension workers provide various other services to farmers such

as measuring fields (size is required on credit application and on the Farm Register), advising on crop and animal husbandry, and reporting data to district officers to be used in supply and market forecasting. The work of camp officers prescribed by their superiors is to deliver a centrally designed message to farmers and report back to the authorities any data which they request. Rural people are not formally involved in shaping the extension message.

2.2.1.3 Method

The increased national agricultural emphasis of the late 1970's brought the introduction of the Training and Visit system to the extension branch. From the top of the hierarchical pyramid came the message to field officers -- divide the camp into sectors, establish a regular (ideally biweekly) schedule of sector visits at which time farmer meetings are to be conducted on prearranged topics (generally adhering to the lima package), followed by individual visits to farmers who have specific problems. Farmer meetings are organized with the assistance of one contact farmer in each sector, and sometimes by the local party or village council leader. The implementation and success of the Training and Visit system have yet to be evaluated nationally, but a World Bank study of the application of the system in the Eastern Province I.R.D.P. area, where it was first introduced, is forthcoming. Problems in implementing the Training and Visit system under local conditions include mobility, monotony of message, and thwarted attempts of specialists to provide ongoing training to field staff (Booker, 1982).

Each camp and contact farmer are expected to cultivate at least one lima of maize, plus other cash crops as demonstration plots showing the consequences of various production practices. The effectiveness of demonstration plots to encourage adoption of a farming practice has not been determined. These demonstrations may also contribute to informal research and local adaptation of prescribed methods. However "demonstration plots are centrally planned in Lusaka" (Honeybone and Marter, 1975). Until the 1980's, instructions were given for commercial crops only, but more recently, sorghum and finger millet are grown in demonstration plots.

Annual Ward and District Agricultural Shows, and a limited number of mobile Farm Training Centre or Farm Institute courses, contribute to the agricultural extension program. Where the block and sector organization of the Training and Visit system is not in place, camp officers rely mainly on individual farm visits. Honeybone and Marter (1975) estimate that field staff spend an average of two hours per day contact time with farmers, based on approximately 100 days observation, the major limitation being travelling time. Norrby (1983) questions the results of his mailed survey by stating, "If all the average of 80 farmers per extension officer really are visited at least twice a month, that is an extremely good figure and higher than expected".

2.2.2 Administration

2.2.2.1 Ministry of Agriculture and Water Development

The Ministry of Agriculture and Water Development (M.A.W.D.) is

organized into the Department of Agriculture plus several other divisions coming directly under the Permanent Secretary. The Planning Unit functions as a clearinghouse and coordinator for rural development schemes, projects, and bilateral negotiations. The Training Section, with its own undersecretary, gives administrative oversight to each of the Colleges of Agriculture, plus the Natural Resources Development College (N.R.D.C.), and the dairy, veterinary and horticulture colleges. The Rural Information division's mandate includes press and media coverage of M.A.W.D.'s operation plus advertising national agricultural programs (e.g. World Food Day), as well as the production of audio-visual and printed agricultural education material. These three divisions are not part of the Department of Agriculture.

2.2.2.2 Department of Agriculture

Within the Department of Agriculture (D.O.A.), the Land Use Planning, Research and Extension/Training branches are headed by deputy directors under the director of the department, presumably institutionalizing linkages between the three branches. The pyramidal structure of the Department is composed of national, provincial, district and camp level officers, with decreasing status, education and conditions of service from centre to periphery. Specialists are clustered in national and provincial offices, while general extension workers have day-to-day contact with rural communities.

The lack of and need for formal and informal linkages among the sections and branches of M.A.W.D. has been recognized. In particular,

there has been a call for stronger links between the research and extension branches (Chibasa, 1983; Dedert, 1983). A strategy paper by a former Deputy Director for Research, Dr. Winter Chibasa, states:

Agriculture Research and Extension services are currently being reorganized to achieve a more adaptive and small-holder oriented approach MAWD has now assigned highest priority to preparation of a detailed strategic plan and investment programme for research and extension toward future coordination. [Chibasa, 1983]

Recently, the Research Branch was restructured, incorporating two distinct approaches to the development of improved agricultural technologies. Emanating from the established government research system, Commodity and Specialist Research (C.S.R.) continues a national focus on specific crops, livestock and agronomic practices. The more recent approach of farming systems research (F.S.R.) is the domain of the newly formed Adaptive Research Planning Team (A.R.P.T.). Unlike C.S.R., it has an area specific focus, conducting on-farm trials with consideration for the socio-economic conditions of small-scale producers. In the past there have been weak links between the Extension Branch and centralized research programmes. The introduction of a Research Extension Liaison Officer with each provincially based A.R.P.T. to work closely with field level extension workers and farmers adds a new dimension to extension, involving it directly in the development of technologies. It also creates some administrative fuzziness as a result of linking a new decentralized participative network with an established hierarchical system.

2.2.2.3 Provincial and District Levels

The Provincial Agricultural Officer (P.A.O.) oversees all Department of Agriculture operations in his area, supported by a Provincial Extension/Training Officer, Provincial Crop Husbandry Officer, Provincial Home Economics Officer, deputies, and specialists. Close to the provincial capital, there are generally the Provincial Research Station and a Farm Institute, the latter being, with varying regularity, the usual venue for senior staff meetings, bringing together provincial staff plus District Agricultural Officers, perhaps district-level commodity specialists and personnel from Farmer Training Centres, district research stations and agricultural schemes. New P.A.O. appointments require at least a university degree in agriculture. However some older experienced officers have only a three-year diploma from the National Resources Development College, supplemented with short courses abroad.

Severe economic pressures facing the nation have restricted provincial and district budgets so that maintenance of established programmes is jeopardized and capital for new projects is inconceivable unless supported by foreign aid. District officers are generally limited to one Land Rover in poor repair and to one barrel of petrol per month, which must be used to go to the provincial capital to collect salaries, with little remaining for moving into the remote areas.

The role of the District Agricultural Officer (D.A.O.) has become more autonomous since the establishment of District Councils under the national decentralization program begun in 1981. A mix of younger

university and N.R.D.C. graduates appointed to work alongside long-standing Department of Agriculture officials are working out the revised position of the D.A.O. in the administrative pyramid.

2.2.2.4 Agricultural Camps

Districts are divided into a number of areas with field level extension workers operating out of centres called Agricultural Camps (usually the Camp Officer's house). Some provinces (e.g. Central and Southern) post two or more staff at each camp, but most camps have only one officer.

2.2.2.4.1 Categories of Camp Officers

With the introduction of the Training and Visit System has come the appointment of Block Supervisors, generally Senior Agricultural Assistants located central to the four to six camps for which they have responsibility.

Camp staff are categorized according to their educational qualifications:

- Senior Agricultural Assistants (S.A.A.) have completed form V plus the two year Zambia College of Agriculture (Z.C.A.) certificate.
- Agricultural Assistants (A.A.) have an Z.C.A. certificate but an incomplete secondary schooling, minimum form III.
- Agricultural Assistants Training Grade (T.A.A.) have been

accepted by the Department of Agriculture to enter the three-month induction course.

- Commodity Demonstrators (C.D.) are divided into two groups.
 - (a) Those "old timers" who have not completed form III, but have been working for the Department of Agriculture prior to the upgrading of Camp Officers to Z.C.A. certificate level. This category of field staff is being phased out either by upgrading or (early) retirement.
 - (b) Young secondary school leavers who have completed the induction course and are awaiting acceptance into Z.C.A. after completing a minimum of nine months field experience.

According to Norrby (1983), a breakdown of staff categories taken from 1981-1982 reports indicates that 43 percent of Department of Agriculture staff are A.A.'s and 36 percent are C.D.'s or T.A.A.'s. However these figures are changing as C.D.'s retire and more Z.C.A. graduates hold form V certificate (see Tables 2.2 and 2.3).

2.2.2.4.2 Physical Resources for Camp Officers

The poor conditions of services for field level general extension workers is an accepted fact (see Norrby, 1983; ILO/JASPA, 1981; Chilivimbo and Milimo, 1983; Shula, 1980). Material amenities such as salary, housing, subsistence allowances, and access to clean water, clinics, schools and markets are below the level enjoyed by other educated civil servants with equivalent qualifications.

Lack of transport is the constraint most frequently mentioned in

Table 2.3. Category of Department of Agriculture Staff by Province.

Province	Staff Category				Total
	SAA	AA	AD	CD/TAA	
Central	28	71	6	66	171
Copperbelt	16	51	3	15	85
Eastern	52	97	11	109	269
Luapula	19	92	--	76	187
Lusaka	6	27	--	36	69
Northern	53	111	1	75	240
North-Western	17	65	11	88	181
Southern	62	130	10	63	265
Western	45	65	7	78	195
Total	298	709	49	606	1662

Source: Provincial Annual Reports for 1981/82 (Norrby, 1983).

the literature as deterring Camp Officers from performing their work. Norrby (1983) reports that 32 percent of AA's have no means of transport. In the ILO/JASPA Mission Report (1981), a case study by Shula provides a clearer idea of a general situation:

For agricultural extension staff, there are considerable difficulties. According to the AA at Chipundu, it would take him 24 days to cover the whole area. For the AA at Mpepo, he put it at two months With regard to transport, the staff in Mukungule and Chipundu are as badly (or worse) affected than the local people. For them, it is a must that they get to Mpika/Serenje for their salaries every month Because of transport difficulties and the long distance they have to cover, the staff at Chishala and Mukungule spend about seven days altogether on their collection of remunerations before they can settle down for duties. Those at Chipundu put it at three to four days, as did the Mpepo staff.

There is a general outcry (especially among agricultural extension staff) regarding lack of provision for loans for either bicycles or motor cycles. Though they use their own bicycles, they do not get any allowance. On spare parts for bicycles, the overall picture is that these are generally not available at the two district headquarters, although things might be improving now. The AA at Chipundu had to go to Ndola to look for a hub and a tube, and had to ask for three days leave. This was after two and a half months (February to April) waiting, thinking there would be supplies in Serenje.

[ILO/JASPA, 1981, II, 101-102]

Assistance from F.A.O. has recently provided loans for Block Supervisors enabling them to purchase Honda motor bikes.

2.2.2.4.3 Staff Development for Camp Officers

There is little provision in the extension service system for

moral support to be given to camp officers. Meagre budgets at the district level make staff visits to camps prohibitive, severely restrict the running of in-service training at the Farmer Training Centre, and even militate against the use of paper for bulletins. As a result, camp officers receive little information about current research, and are poorly supervised in their skills and programmes. The hierarchical structure of the Department of Agriculture relies heavily upon formal educational achievement as the criterion for advancement. Therefore, certificate holders, especially A.A.'s, have little hope for advancement beyond camp level or above their present salary category. These unfortunate circumstances affect the morale of camp officers and subsequently the quality of their performance (see ILO/ JASPA, 1981; Norrby, 1983; Tuthill, 1975; Honeybone and Marter, 1975).

2.2.2.5 Women in the Extension Service

In 1973, the first women received certificates in general extension to become S.A.A.'s and A.A.'s. By 1983, seven percent of the Department of Agriculture total staff were female, about half of whom were not yet married. Many were posted to the Home Economics branch of the Extension/Training section of the Department of Agriculture located in provincial or district offices, or at Farmer Training Centres where they are to organize programmes for rural women. According to the D.A.O.'s Annual Report (1982/83) for the Chinsali District:

The aims and objectives of the Home Economics Section remained the same, namely:

- (a) to organize and encourage women to increase food production through coordinated efforts by forming clubs;
- (b) teach women to adapt modern techniques in agriculture like the Lima recommendations;
- (c) by introducing and using appropriate rural and village technology into their homes such as nutrition values, simple home industry, home management, food preservation and storage, childcare, and to learn leadership through club organization.

The encouragement of local leadership and appropriate technologies in (c) above appears antagonistic to the authoritarian aims of (a) and (b), suggesting an approach to extension unique to women. However, the main programming focus is on women's clubs through which women may learn skills for improved vegetable, staple food and poultry production, handicrafts such as knitting and sewing, and basic concepts of human nutrition and diet. Women with meagre resources have difficulty finding time and energy to participate in the cooperative work projects of the clubs. Blake (1984) and Good (1985) have observed the inappropriateness of club programs in assisting rural women toward income generation or awareness/empowerment.

The transport and economic constraints as well as the male domination of the extension service limit the ability of female A.A.'s to move into the villages or to develop new approaches with women, particularly widows and divorcees clustered at the poorest end of the socio-economic scale. The unwillingness of educated women to work in remote rural areas is another factor affecting the agricultural

extension service amongst disadvantaged rural women (Good, 1985). Little research has been done on the concerns and tasks of female A.A.'s in the Department of Agriculture, or of their counterparts in the Ministry of Community and Social Services who follow a similar club approach to rural literacy classes.

2.2.3 Related Literature

A review of current relevant documents fails to show clear objectives for the Extension/Training branch of the Department of Agriculture. Dedert (1983) observes the lack of a "clear cut mission to extension defining what it is expected to do, who it is to serve, how it is to operate, how it is to be financed, and how it is to be evaluated".

The heterogeneity of Zambia's rural population creates a dilemma for a public service experiencing severe economic restrictions. The variety of farming systems ranging the gamut from legend-laden ancestral practices to modern scientific technologies should be continuously monitored and the needs and goals of the farmer categories assessed so that target groups can be identified. In the conclusions of their study, Honeybone and Marter (1979) suggest that "policies not based on field study [have led to] failed programs [because of] lack of technical efficiency and conflict between objectives, e.g. expanded production versus concern for distribution".

Recent studies suggest that small-scale farmers perceive extension workers as technical advisors (Sutherland, 1984; Francis and Rawlins, 1984) as do upper levels of the extension administration

(ILO/JASPA, 1981; D.A.O.'s Annual Report, Chinsali, 1982/83). If this is accepted as the objective of the service, certain questions arise: who determines the message (advice)? using what criterion? The authoritarian methods of the service have continued to propagate the "correct" message prepared under controlled conditions at research stations. Educated experts are obligated to:

... encourage the farming communities to adopt modern agriculture and discourage them from using their traditional methods Emphasis was put on persuading farmers ... selling surplus to N.C.U. [Northern Province Cooperative Union] ... growing other cash crops.

[D.A.O.'s Annual Report, Chinsali, 1982/83]

The dominant, if not the sole, criterion for the extension message has been that package of practices and inputs which will result in greatest yields.

But farmers have not been accepting the package. Studies by I.R.D.P.'s in Mpika (I.R.D.P., 1984) and Kasama (Damgaard-Larson, 1984) indicate fertilizer application ranging from none to 600 times the recommended amount. Planting and weeding are not done at the recommended times. Farmers do not understand the concept of area as a regular shape (lima or hectare), but rather in terms of plant population and intercropping that will provide food for a specific number of months -- until the end of the hungry season (Vevald and Øygaard, 1982). The simplest answer to non-adoption is farmer motivation -- an explanation accepted by some educated Ministry staff (Musakanya, 1982). However, it has become obvious from the studies on

rural differentiation, that the constraints of farmers -- natural, human, economic -- cause them to adapt both the old and the new technologies in search of the most appropriate method. If the only role of the extension worker is technical advisor, he and his administration must realize that centrally designed production packages do not change the constraints of the farmers. Alan Marter (1979) states that:

In less favoured areas, the generally poor quality of land resources makes "modern" options irrelevant The alternatives available for alleviating the problems ... are more likely to be found in traditional systems, e.g. citemene "Modern" techniques are only economically viable in the new relatively small areas where soils are above average fertility.

An indication that some flexibility is forthcoming may be reflected in a brief introduction to the new series of thirteen Handbooks for Agricultural Field Workers (1984) written by Gerald Lof, Senior Extension/Training Advisor. He says,

The best suitable crops, varieties and farming methods are not the same for everybody and in all places, but need continuous evaluation in the field. Senior staff and supervisory staff are to stimulate this alert attitude toward agriculture amongst themselves and among the field staff.

[M.A.W.D., February 1984]

Other thoughtful studies suggest the role of the extension worker is to go beyond that of technical advisor. The need for communication links, services, education and community organization has been identified.

Ann Seidman, who has contributed widely to political-economic analysis of Zambia, suggests that peasants must empower themselves through the creation of new rural institutions:

... to participate in discovering new ways of increasing productivity Appropriate backwards and forwards linkages must be forged between these rural institutions and those controlling the 'commanding heights' to ensure that they supplement, rather than contradict each others' efforts.

[Seidman, 1979]

Sachs (1981) also sees the need for linkages but keeps within the establishment, saying that the extension officer's main function is to "bridge the gap between science, farm practice and administration -- to provide a two-way flow of information between research and extension". He suggests the need for "horizontal" specialists able to integrate knowledge over broad areas of agronomy, sociology, economics and management.

Chilongo's (1982) examination of goals of extension education is ambitious and wide ranging, but likely impractical. As well as being the communication channel between research and the farmer and being the "rural vacuum filler" because of the need for extension workers to help where supplies and services are not established, the extension worker is seen by Chilongo primarily in the role of educator, as "upsetter" of the status quo, presenting alternatives through a problem-solving process, and also training farmers in decision-making. Anthony et al. (1979) also see African extension workers having to perform multiple roles: regulatory, educational and service, but insist that the service role is "overextension" reflecting the level

of underdevelopment in the economy. They note that,

... the Extension system is weakened when it performs roles other than those contributing directly to agricultural production.

The role of the extension service as an adult educational service is thoughtfully explored in the comprehensive Honeybone and Marter studies (1975, 1979). They argue that the extension coverage is the only educational service within reach of many rural adults. Like Tuthill (1975), they see the village as providing one of the best instructional units. Honeybone's basic proposition is that:

Agricultural extension workers become less technically biased and attempt to develop village organization through more general adult education groups.

This would include a complete change of attitudes emphasizing the integration of technical agricultural problems with social and economic aspects of rural development. A village level communal program of adult education - a scheme of continuous field study in which rural people with the camp officer participate fully, could turn the present authoritarian system into a people-oriented one.

Honeybone and Marter's theory of an expanded, more active role for extension workers is an optimistic and humanistic option for a country whose majority rural population is becoming increasingly disadvantaged. They suggest that communal programs in Zambia have never really been given a chance to succeed. On the contrary, the University of East Anglia's joint UN/FAO project, Agriplan, incorporated

similar concepts using the extension service to facilitate grassroots development, but for some reason the project was aborted. The non-governmental agency, Brothers-for-All-Men (B.A.M.), supported village animation in Luwingu district, but after several years when the expatriate team prepared to withdraw from the renewed, self-reliant community, no Zambian could be found to work in the remote area to carry on as animateur. In contrast, the Village Agricultural Project of NORAD works through the established extension system to organize villages to plan and implement programmes for development. To date, the evaluation of that project is most encouraging, because of increased productivity and the distribution of services across the classes of society, as well as the involvement of subsistence villagers in decision-making.

2.3 Focus: Training of Field Extension Workers

The conjunction of Zambia's rural society and the Department of Agriculture's extension service occurs through the camp level general extension officers. Considering the complexity of the society which the administration is to serve through its front line workers, it is important to examine the training which such workers receive to prepare them for their task.

2.3.1 Training Institutions

2.3.1.1 Within M.A.W.D.

In the preceding section, it was noted that certain training functions fall within the Department of Agriculture, including all

programmes offered at Farmer Training Centres and Farm Institutes. An applicant aspiring to become an A.A. in the Department of Agriculture applies to the Provincial Agricultural Officer, and if accepted is usually sent to the provincial Farm Institute to complete a three-month induction course. The curriculum, staff and financing are provided by the Department of Agriculture under each P.A.O. Unfortunately, no such courses have been held for the last few years because of lack of funds at the provincial level.

Long-term training, such as is offered in the two-year certificate programme of the Zambia College of Agriculture, is not administratively linked with the Department of Agriculture, but rather comes directly under the undersecretary for the Permanent Secretary of the MAWD. Most students in the colleges are receiving an allowance from the Department of Agriculture and will return to camp appointments upon graduation, but during the two years in the college the Department of Agriculture has no involvement in the form or substance of their programme of studies.

2.3.1.2 Zambia College of Agriculture Objectives

According to the latest Course Prospectus of Zambia College of Agriculture, Monze, published in 1980,

The College aims its training at the needs of the general extension worker.

The extension worker has a very challenging job. Apart from the technical knowledge needed, the extension worker needs to be able to understand the needs of his farmers and to plan his own work from his often isolated agricultural camp. This work

must aim to help the farmers recognise ways in which their lives and production could be improved for the benefit of their own family and the nation. This requires a great deal of initiative, imagination and farming skill.

The courses at Monze, therefore, not only teach the student how things should be done, but also help the student to understand why they are done and the general principles involved. The College tries to avoid producing students who can only offer advice on the basis of generalised text-book recommendations. Successful training of this type enables graduates to help farmers solve their farming problems in a way which is completely suitable to the conditions under which the farmer lives and the materials and resources available to him. [p. 6]

The most recent Course Syllabus (1982) for Certificate in Agriculture from Z.C.A., Monze and Mpika, states that,

The course is intended for those who wish to follow a career in agriculture as extension officers or in the ancillary trades connected with agriculture. The aims of the course are:

- (a) to give the student knowledge and understanding of the theory and practice of agriculture in Zambia;
- (b) to enable him to take correct decisions and display sound judgements in practical farming situations;
- (c) to work effectively and responsibly with other people;
- (d) to form considered opinions on agricultural matters;
- (e) to communicate.

2.3.1.3 Zambia College of Agriculture, Monze

Ensnconced among established commercial farming communities just five km off the Livingston-Lusaka rail and road ways, 190 km southwest of Lusaka, Monze Z.C.A. has been the major site of Zambian agricultural education for over 40 years. Many of M.A.W.D.'s senior

civil servants proudly refer to Monze as their alma mater. In 1965, immediately following independence, the "Training School" was renamed the Zambian College of Agriculture. Facilities were improved and expanded so that today it has a residential capacity for 230 students with dining, sports/recreational facilities and a health clinic to complement the classrooms, lecture theatre, laboratories, library, and administrative block.

The 657-hectare college farm is well established and managed, with 70 hectares under cultivation and 570 hectares of grazing land, providing eggs, milk, vegetables, fruit and meat (poultry, beef, pork, lamb, goat) for the Z.C.A. kitchen. Modern farm machinery and a fleet of vehicles increase production and transport supplies from nearby agricultural depots or Lusaka. The college farm, located on some of Zambia's most fertile soil, is hemmed in by other agricultural enterprises and has no room for expansion. The farm has examples of most aspects of Zambian commercial agriculture. Jonsson (1983) suggests that "the prime objective of the college farm is to offer possibilities for practical training in skills that the students need in their future career".

The college is funded through M.A.W.D. with maintenance and capital budgets restricted recently because of national economic constraints. However, foreign aid, particularly from the Swedish International Development Agency (S.I.D.A.) has provided some financial support. Plans are underway to allow the farm to operate a revolving fund, enabling marketed surplus to boost college income, but to date, government policy prohibits any government institution from

retaining such profits.

2.3.1.4 Zambia College of Agriculture, Mpika

In the early 1970's, Chief Chikwanda, a chief of the Bemba people, gave approximately 3,000 hectares of land, mainly bush, but including humus lowlands (dambos), uplands and streams, to M.A.W.D. for the development of an agricultural education facility. An upland section was selected as the site for a second Zambia College of Agriculture, 18 km. from Mpika, three km. along the dirt off the Great North Road, about 600 km. north-east of Lusaka. S.I.D.A. funded the construction of a sprawling modern complex of building, farm and service facilities. By 1976, the first students were admitted to Monze's sister college. Both Z.C.A.'s are to follow similar curricula and produce graduates of the same standard.

Bush was cleared for the development of a permanent commercial farm, the first of its kind in an area where indigenous and subsistence farming systems are practiced. Major difficulties have plagued the farm, primarily because of low fertility of the highly leached acidic soil, and the geographic position which necessitates increased price of inputs due to high transport costs. Nearly all supplies are trucked from either Lusaka or the Copperbelt, placing great demands on the small fleet of college vehicles. Although pasture and cropland are cleared, and a full range of livestock enterprises are in place, farm production is low and does not even meet the demand of the college kitchens.

Z.C.A. Mpika is funded similarly to Monze Z.C.A., but is more

dependent upon Swedish aid for maintenance of facilities and programs.

2.3.2 Z.C.A. Personnel

2.3.2.1 Staff

A hierarchical system of college staff appointments include academic, practical, administrative and general workers. All are housed with their families in one of three classes of government housing, upper, middle or low cost, according to job status. At each Z.C.A., the entire college community with dependents includes approximately 2,000 people.

The teaching staff is divided between the more senior Training Officers and the junior Practical Instructors, although staff shortages require theory teachers to be actively involved in practical lessons. Teaching staff have at least a diploma from the National Resources Development College (N.R.D.C.), and are frequently being sent out of Zambia for specialized university education.

Monze Z.C.A. staff is completely Zambianized except for two British, the principal, and one volunteer (British V.S.O.) filling in a position vacated through an untimely death of a Zambian teacher. Since 1976, Mpika Z.C.A. Zambian staff has been supplemented by up to 10 Swedish agricultural experts and a British V.S.O. These posts are being Zambianized, albeit not as quickly as anticipated (SUAS, 1983). A Zambian took up his responsibilities as principal of Mpika Z.C.A. in January 1984.

2.3.2.2 Students

The entry requirements for Z.C.A.'s include an academic and practical component. The Course Prospectus (1980) states,

At present these minimum requirements are a Form III certificate with passes in English, Mathematics and General Science or Agricultural Science. Such students join the College after at least one year's field experience as Commodity Demonstrators. Normally, students are sponsored by Government or parastatal organisations.

Students who have no field experience do attend the College. However, these students have a Form V certificate, and are those doing the one year foundation course before going on to the Zambia Institute of Animal Health at Mazabuka. Other students are trained for the Rural Development Corporation, Ministry of Defence, the Prison Service, Policy and Zambia National Council for the Blind and Handicapped. The majority are from the Department of Agriculture. [G.R.Z., 1980]

Since 1971 and 1982, small numbers of female students have been admitted to Monze and Mpika Z.C.A., respectively.

2.3.3 Z.C.A. Program

The training for a Z.C.A. certificate requires full participation in a two-year residential program commencing in September of each year, with graduation in July of the second year, with an eight-week break between years. The agricultural training requires passes in both theoretical knowledge and practical skills. Character development is incorporated in the expected standards of discipline. Dismissal can be recommended because of continuous failure in academic performance, or from a decision by the discipline committee over a

breach of moral conduct. For example, regulations state that unmarried female students who become pregnant are expelled from the College. Such dismissals require Ministry approval.

Informal activities, organized by student committees, include a wide variety of clubs and organized sports. Movies, discos and various religious gatherings are regular occurrences on both campuses.

Weekday timetables are divided between half-day theory and half-day practical classes, with weighted time being allocated to the seven departments:

- a) Agricultural Science
- b) Animal Husbandry
- c) Crop Husbandry
- d) Extension Methods
- e) Farm Engineering
- f) Farm Management
- g) Home Economics/Home Science

There are no elective courses. All students take the same program with two exceptions. Veterinary students study at Monze Z.C.A. for one year, taking an augmented first year programme before entering the Zambia Institute of Animal Health to complete their training. Female students at Monze Z.C.A. do not take farm engineering in their second year, but instead study home economics, which is not studied by second year male students. At Mpika Z.C.A., male and female students follow identical programmes in home science and engineering.

2.3.4 Related Literature

The most comprehensive work to date on the Zambia College of Agriculture is a 1973 University of Reading dissertation by Barry Challens, "The Development of a Training Programme for Extension Workers in Zambia". Although written prior to the opening of Mpika College, many of the issues and problems have not changed, as more recent studies indicate. The strength of Challens' study is his incorporation of agricultural training as a vital component of a total system. Through models developed from his systems analysis, he suggests ways of establishing the necessary linkages among farmers, extension workers and administration. The system is based upon farmer needs. The success depends upon its ability to determine those needs, and to have efficient "communication arrangements between its components and between the system and its farmer clients" (Challens, 1973). The objectives (role) of extension workers, Z.C.A.'s, and the extension branch are determined by a system of feedback from the field. The "new" approach is the problem-solving method for a constantly changing environment - concentration on the learning process rather than only on content. Challens criticizes the rote and instruction imitation methods commonly found in formal education and Z.C.A. teaching -- the emphasis on passing examinations rather than problem-solving. He observes that Z.C.A. staff teach what they can rather than what the system requires. As a result, curriculum evolves with no direction rather than being strategically planned. In contrast, he proposes that teaching should grow out of a permanent system of evaluation and adaptability based on case studies of rural

development to understand technical and social problems of the farmer. Today, although this approach is no longer new in extension theory, either in Zambia or elsewhere, it remains a difficult concept to implement.

Recognizing the need for an extension system linking client farmers with the training of extension workers, Garvey's dissertation (1982) documented the relationship between Mpika Z.C.A. and the neighbouring villages. She noted that "the College was of no help with respect to agricultural education or production", despite specific "requests by villages for more Z.C.A. involvement in villages". She identified factors impeding the delivery of agricultural education, which suggest the need for farmer participation in extension policy and program development.

Her findings indicate that traditional farmers would like more agricultural education than they receive. Receipt of education was impeded by lack of clear, realistic guidelines for work with farmers; lack of extension staff and transport; severe underutilization of Farm Institutes and F.T.C.'s due to funding difficulties; lack of supporting and background materials such as slides, films and handouts; and lack of common criteria for defining farmers or the educational package they should receive. [Abstract, Garvey, 1982]

The structural schisms within M.A.W.D. and the Department of Agriculture are generally recognized by writers commenting on Zambian agriculture education, but are explored quite thoroughly by Knuttson (1977). He recommends:

In regards to organization and coordination of training institutions and training programmes:

- devise and implement an effective organizational structure at ministry-department level and for training institutions under their command. The organizational set-up will include the necessary personnel requirements.
- devise and implement measures to coordinate agricultural and cooperative training and extension activities at all levels.
- draw up clearly defined roles and responsibilities for supervisory bodies as well as for training institutions and others, organizing or devising training programmes.

In order to design training programs, he recommends a needs assessment based on farmer surveys and feedback from former students. This recommendation for feedback for evaluating the impact of the Z.C.A.'s and for continuous curriculum development is followed by the S.I.D.A. 1983 evaluation report (SUAS, 1983).

Two such feedback reports are available based on survey data from Z.C.A. graduates. Donald Musakanya, now head of the Extension Department, Z.C.A. Mpika, completed an M.Sc. thesis in 1982 at the University of Reading, "Relating the Training of Certificate Level Extension Workers to the Objectives and Conditions in the Field, with Special Reference to Zambia". Based on 32 returns from 85 Mpika graduates, he assessed extension workers by their major duties, the category of farmer they most frequently serve, and the problems they face. Unfortunately, in examining extension problems, he neglects to account for national political will or socio-economic conditions, but rather follows a person-blame theory (e.g., farmer resistance to adopt innovations, failure of low calibre field staff to persuade, failure of "young politicians" in village productivity committees) an approach which deters policy-makers and practitioners from pursuing structural

change.

The other Z.C.A. graduate survey was carried out in 1983 by Gunnar Norrby, a S.I.D.A. specialist posted as Senior Manpower Development Planner with M.A.W.D. Through a mail-out questionnaire, his large survey included 812 Z.C.A. graduates. However the reliability and validity of his data are weak and raise questions about his recommendations based solely on the survey results with no reference to other supportive qualitative or theoretical material. Unfortunately, the strength of his position and backing have given authority to his Manpower Study. If additional supportive evidence is obtained, his specific findings may be useful in providing better understanding of the many issues he covered.

Another Swedish survey by Jonsson (1983) providing recommendations for revolving funds for college farms is based on information gathered in one month from N.R.D.C. and two Z.C.A.'s. The 1983 S.I.D.A. (SUAS) evaluation report admits that "the proposed plans for establishing big commercial farms at the colleges were turned down as being too ambitious and beyond the capabilities of the colleges" (Swedish University of Agricultural Sciences, SUAS, 1983).

An examination of the utilization and aims of the Z.C.A.'s raises questions about the necessity for the two colleges to perform the same function. Suggestions to use the facilities for in-service and specialized courses, and to decrease the annual number of "extension" graduates are raised by SUAS, Norrby and Bookers Agricultural International Limited.

CHAPTER THREE

THEORY, PRACTICE AND POSSIBILITY

3.1 Theories, Concepts and Models

Extension theory is eclectic. It has been open to influence from various fields of study and practice, such as adult education, communication, development, management, planning, and rural sociology. As an applied science, it must be able to adapt to both changing theoretical awarenesses and field conditions. Throughout its relatively short history as an academic field, it is possible to identify its theoretical development in various directions.

3.1.1 Uni-directional - Diffusion Theory

Pervasive and dominant in agricultural extension practice is the diffusion of innovations paradigm. The similarly hierarchically structured "trickle down" economic development theory was well coupled with it, propagating massive adoption of hybrid maize and other food crops during the Green Revolution. An efficient extension service using the diffusion strategy plus a packaged program of economic inducements (Kearl, 1976; Lele, 1975) appeared to offer the answer to the world's food crisis.

But after the mid-1970's, rural sociologists and extensionists were conducting only a few diffusion studies in developing countries (Rogers, 1983). The experience of the Green Revolution yielded data which led to criticisms of the model (Ascroft et al., 1973; Coombs, 1974). The individualist basis for approach and blame failed to

incorporate socio-political conditions and effects. Such theory is now perceived as a contributor to rural class formation and to widening the gap between the advantaged and disadvantaged classes.

In his latest edition of the classic volume Diffusion of Innovations, Everett Rogers (1983) accepts many of the criticisms of the diffusion model and attempts to adjust it accordingly. However, he does not change its basic principles. The adopter categories continue to reflect the superiority of scientific and elitist thought. His defence of them is a semantic rationalization:

Diffusion scholars who use adoption categories in their research do not mean any particular disrespect by the term 'laggard'. Indeed if they used any other term instead of laggards, it would soon have a similar negative connotation. But it is a mistake to imply that laggards are somehow at fault for being relatively late to adopt; this is an illustration of individual-blame where system-blame may more accurately describe much of the reality of the laggard's situation. [Rogers, 1983]

If he is prepared to blame the system rather than the individual, why does he continue to use the emotionally laden derogatory label 'laggard'? And why does he persist in describing such a person as less intelligent, less rational, and less able to deal with abstractions - despite a number of convincing studies on the sophistication of indigenous knowledge systems, and the intelligent rationale of those deciding to adopt such practices (Galjart, 1971; Amaratunga, 1977; Johnson, 1981; Johnny, 1981; Baerg, 1985)?

Diffusion is best understood as a natural societal phenomenon occurring within homogeneous groups. In this way, the use of "local"

maize was adopted throughout Africa from North America and potatoes were taken to Europe. It may legitimately be suggested that "laggards" occur within each homogeneous group. But care must be taken to identify target groups correctly if diffusion is used as a strategy. Otherwise, whole sectors of society will be damned as "less ..." (Galjart, 1971; Roling, 1982). Until reliable methods of categorizing groups are found, and until the societal effects of targeting such groups (Roy, 1982) are evaluated, the term "laggard" should be used with great caution. Perhaps the diffusion system has been emphasized prematurely, before adequate technological development for specific clients is institutionalized (Eklund, 1983).

In diffusion strategy, the differentiation of tasks from centre to periphery isolates each group of functionaries from the other. Within the Zambian structure, gaps occur between research and extension, between extension training and service, between administrative levels of the extension branch, between administration and front-line workers, and between the farmer and each of the preceding.

One can follow the development of the diffusion theory through Rogers' three editions. He has had the courage to accept and adapt to scientific criticism until he admits that in rural development theory, one now sees "the passing of a dominant paradigm". However, entrenched extension service or training institutions tenaciously perpetuate the diffusion model as it well serves centralized authoritative structures. However, Rogers suggests that in the 1970's, the diffusion paradigm has passed from its dominant position and has been replaced by the concept of "interpersonal networks".

3.1.2 Multi-directional - Concept of Linkages

Specialization, institutionalization and class formation permeate societies enveloped by development plans and projects. By the mid-1970's, awareness of Limits to Growth, unequal distribution and inappropriate intensive technology as well as concern for quality of life and global interdependence led to increased calls for informal and formal links providing interpersonal networks of communication (Rogers, 1983). Three broad areas can be identified amongst the schisms: (1) between knowledge systems, (2) between education and development, and (3) between functions.

3.1.2.1 Linkages Between Knowledge Systems

The professional planner, John Friedman (1973) voiced concern for the crisis in knowing occurring between experiential, personal knowledge and scientific processed knowledge. This concept has been expressed within several disciplines over many years, e.g. by the educator Freire (1967) and by the communicator Fugelsang (1982). Friedman suggested that the two aspects of knowledge must be linked by mutual respect within learning societies.

Within the agricultural sector, there has been a slow but steady move toward linking indigenous with scientific knowledge systems. With an optimism that seems to lack political criticism, D.M. Warren (1984) notes several trends that facilitate this linkage within developing countries:

- (a) tendency at independence to emphasize indigenous cultures;

- (b) former personnel of national volunteer organizations have now joined staffs of donor agencies infusing them with new attitudes toward and interest in rural populations;
- (c) new political pressures come from rural constituencies;
- (d) depletion of non-renewable resources (e.g. Zambian copper) allowed the small-scale farmer to be viewed as an under-utilized national resource;
- (e) food and foreign exchange shortages led to the emergence of some subsistence crops as import substitutes for national staples as well as for domestic and export cash crops (e.g. sorghum and cassava for maize). [Warren, 1984]

There is evidence of shifts in attitudes toward respect for indigenous knowledge. In the field of anthropology, new field methodologies (cognitive anthropology and ethnoscience) allow for the "formalization of knowledge systems to better understand how a population structures its universe through language" (Warren, 1984). International development agencies have tended to pronounce philosophical shifts toward more people-oriented development. The concept of farming systems research, although not mandated to small-scale farming, has been linked to those rural communities using practical action and knowledge of which have not yet been scientifically processed. A new breed of researcher seems interested in a generalist rather than specialist approach in the pursuit of knowledge (Chambers, 1983).

3.1.2.2 Linkages Between Education and Development

The idea of linking education to development has now become commonplace -- its application has proved to be more difficult. [UNESCO, 1980]

Non-formal, adult education in rural situations has been linked frequently with the concepts of liberation and empowerment, threatening the stability required for growing national economies and running counter to the established formal education structure. The schism between community development and technical advice services (e.g. agricultural extension) has usually led to the strengthening of the latter because of its more advantaged and powerful position (Chambers, 1984).

In The Rural World -- Education and Development (1976), Louis Malassis presents a strong thesis for the co-ordination of all rural education systems, traditional and modern, formal and non-formal. Information and skills oriented training programs (often criticized as dehumanizing) should be linked with discovery oriented programs of "higher" learning (often criticized as elitist). Malassis elaborates the concept of "technological humanism" as a comprehensive approach to rural development and rural education - an intellectual investment in human resources. The much broader ideal of a learning society (Faure, 1972; Friedman, 1973) is similar.

Linkages between education and development can occur at many interfaces. Shute (1984) discusses the role development agencies and universities can play in creatively seeking ways to link these two major factors of social change. More specifically, extension scholars

are suggesting that the role of the field level extension worker be expanded beyond that of a strictly technical advisor, but also to perform more of the functions of the adult educator or conscientizer (Freire, 1973; Roling, 1982; see further discussion of this point in Sections 3.1.2.4 and 3.2.2).

3.1.2.3 Linkages Between Functions

The previous paragraphs have alluded to the trend toward linkages between various societal functions.

Multidisciplinary teams of specialists are now the rule rather than the exception in planning units, development projects, international agricultural institutions, and farming systems research teams. Along with the trend toward a more generalist approach to development, the doors which have limited the view of disciplinary domains appear to be opening to broader perspectives. Social and technical scientists are joining with greater understanding and respect for each other. However, educators often find themselves outside this network, and certainly the role of the humanities scholar (e.g. philosopher, musician, writer, historian) is seldom seriously considered in networking efforts.

The need for linkages between institutions is readily recognized but difficult to implement. The Zambian institutions involved in agricultural education include the formal programs of primary and secondary schools, colleges and universities (public and private); non-formal programs of the Ministry of Community and Social Services, Ministry of Agriculture and Water Development, as well as a host of

non-government organizations. Even within the M.A.W.D., there are no institutional links between the training and extension divisions and weak links between extension and research.

Furthermore, within each institution the breakdown in communication between various levels has resulted in functions with dubious meaning relative to the whole. The gap between the majority of the rural population and M.A.W.D. is reflected in capital intensive recommendations, urban biased policies, and culturally "modern" perspectives. Multi-tiered workshops from national level administrators through to representative small-scale farmers provide opportunities for people to listen to each other. Farm visits give urban bureaucrats opportunity to set foot in the other world (Shute, 1985).

3.1.2.4 Application and Awareness

Networking may be institutionalized formally or may occur spontaneously or ad hoc. Media productions, including newsletters and bulletins, workshops and seminars, can be energizing forums for linkages. But where the supply of basic goods and services for networks is unreliable, where paper, duplication, transport and telephones are luxuries, networking methods need to be rethought and simplified.

In spite of the foregoing, a warning is sounded concerning linkages:

... failure of analysis occurs in the ritual call
for integration and coordination Both ... have

high costs Both involve choices by default -- choice not to use funds, administrative capacity, and staff time, in other ways. Both can blunt action and demoralize. [Chambers, 1983, p. 154]

Nevertheless, awareness of pitfalls should refine rather than impede implementation of networks.

3.1.3 Cyclical - Process System Models

If linkages are institutionalized to provide feedback and evaluation, a system is formed with potential for change/learning. In the planning field, both Schon (1971) and Friedman (1973) present models of learning societies. Schon's learning system model explains how adjustments occur within the dynamic conservatism of established institutions through systems analysis and pragmatism. He stresses the need for various individual roles to counter the entrenchment of powerful classes and biases. Friedman, also a reformist, opts for a strong networking system based on the mutual learning of transactive planning.

A systems approach applied especially to rural society can be found in Malassis' (1976) creation to dissemination model for rural education, in which all have opportunity to participate in the creation and application of knowledge and skills. From the communicator's perspective, Bryant Kearn (1976) recognizes a need to go beyond the Ruttan-Hayan induced innovation model for technical and institutional change. He selects five essential elements to make a model increasingly decentralized and user-oriented:

1. User need most important and only value-stance for change agent;
2. Diagnosis of need integral part of the process;
3. Outside change agent is non-directive;
4. Internal resources should be fully realized;
5. Self-initiated and self-applied innovation will have strongest commitment, therefore the best chance of long-term survival. [Kearl, 1976]

Development is beginning to be seen as a process of successive problem-solving. This approach is now more frequently advocated in the fields of rural education, research and extension. Challens (1973), in applying systems analysis to the training programme for extension workers in Zambia, concludes that a new approach is needed at the colleges of agriculture based on a model for problem resolution developed by Razik, starting with analysis of typical field problems.

From the outset of planning the curriculum, a permanent system of evaluation and adaptability must be maintained. [Challens, 1973]

The surge of support within research, academic and development organizations for farming-systems research (F.S.R.) indicates a major shift from established uni-directional commodity research toward a more integrated problem-solving system. The possibility of effecting such a system on a small scale is simply and practically presented through World Neighbours by Bunch (1982). In contrast, Eklund (1983) argues the need for nationally institutionalizing the innovation process within research organizations using on-farm and farming systems methodologies. Inherent in F.S.R. is the research extension

link. Eklund (1983) states that:

Participation of extension in technology development is rare. Excessive preoccupation in the design of extension organizations simply with diffusion or the extension agent function has led to neglect of the central integration function.

[Eklund, 1983]

Models for systems linkages between extension and F.S.R. are well developed (see Roling, 1984; Bolivia Potato Research, Bunch, 1982). Roling has coupled the concepts of decision-oriented research with the utilizer extension system and argues that:

If the small farmer approach is to be effective, service agencies must respond to the claim -- making capacity of the rural poor. [Roling, 1984]

Change is constant. Process planning which is able to deal with a lack of content planning should replace the rigidity of blueprinted programmes. Therefore, responsiveness and flexibility are key elements of an adaptive/learning system. If the contribution of every link in the system is recognized, then participation of both field level extension workers and of small-scale producers is the necessary sequel to this discussion.

3.1.4 Cellular/Organic - Participation Theory

The model of a learning society as a cellular structure composed of task-oriented working groups was developed by Friedman (1973). The principle of transactive planning lies in small, self-guided responsible groups of individuals engaging in interpersonal-verbal dialogue. Networks of communication link the groups into cellular structures

which remain in a state of flux and permeability. Friedman holds the major premise that "the process of societal guidance is too important to be left entirely to experts" -- there is "need for a sense of competence at the level of the group". Transactive planning is rooted in person-centred relationships, radical openness required by dialogue and people as active subjects rather than objects (targets).

Much of what Friedman propounds sounds similar to the liberation theories associated with Freirean thought. "Conscientizacao" occurs through the dialogics of "collective psychoanalysis". The learning society develops as it integrates its belief in education as the practice of freedom (Freire, 1973). However, there is an essential difference between Friedman and Freire in that the former plans for reform without major structural changes whereas the latter is concerned about the political economy affecting oppressed classes.

Participation of peasants in the practice of freedom is revolutionary. Participation theory is rooted in liberation theory.

Participation is an act of free will. It is a vote not only against exploitation but against determinism of all types, a gesture of confidence that we can change our present and influence our future. Therefore it is eminently a private act that can be used effectively only in conditions of liberty and compromise. Consequently, in all discussions of participatory democracy, first priority must be given to the maintenance and improvement of such conditions in political life, economic system, laws, education and culture.

Whereas for community development, participation is a means toward an end (i.e. development), to those beholden to the belief that democracy must be direct, personal and egalitarian, participation becomes an end in itself.

[F.J. Bregha, in foreward to Chekki, 1979]

Participation theory is applied to agricultural extension by James DeVries' (1978) dialogical extension model. He argues that:

If agricultural extension or adult education is to be the force for the self-liberation of the peasants, as implied by the dialogical model, peasant control over these systems seems to be crucial The system almost regardless of its structure will serve the interests of those who control it. For farmers to assume control,

- (a) it requires an educated or conscientized peasantry;
- (b) it requires a system or structure which allows meaningful participation;
- (c) it requires self-reliance of participants.

[DeVries, 1978]

Within Zambia, an FAO/UNDP funded project was initiated in Central Province. Commencing simultaneously with Zambia's decentralization policy in 1981, the project, Agriplan, was to provide assistance for national in-service training for agricultural and rural development. Extension workers were among those to be trained in "the work of the rural planner ... to intervene in the political process in order to help the rural poor obtain the resources they need" (FAO, 1981). For reasons not publicly disclosed, the project was aborted not long after its inception. A thoughtful analysis of "Zambia's Captured Peasantry" by Cowie and Momba (1984) shows how,

... the existing situation of the Zambian rural producers has led to their collective, if not individual, passivity at a time of political turmoil.

Examples from Southern and Eastern Provinces indicate that:

UNIP's success at keeping potential rural and urban opponents politically, economically and ideologically separated has been instrumental to its primary objective of maintaining power.

[Cowie and Momba, 1984]

Chambers argues that appraisal of rural programmes does not, as a rule, include political feasibility; that there are no formal procedures for assessing the power and interests of groups, how they converge or conflict and how they will support or impede the achievements of a project's objectives; and that "this needs correcting -- political economy is too important to be left to the social scientists" (Chambers, 1983). In both their studies, Honeybone and Marter (1975, 1979) make a case for the extension service to be concerned with equitable rural distribution. This can be done, they suggest, if the camp officer assumes the role of communal organizer as well as technical advisor. They claim that in Zambia rural institutional development and communal programs at the village level have never really been given a chance to succeed. Cowie and Momba would disagree from a historic perspective, and Agriplan could be indicative of an unsuccessful sequel to the Honeybone and Marter recommendations.

It thus becomes necessary to consider the dichotomies amongst participatory structures - between the co-determinist models referring to mutual co-operation between trained expert and citizen non-expert, and the self-determinant model referring to the complete autonomy of the citizens in decision-making, at least in some specified spheres of activity (Chekki, 1979). In his review of extension strategies and

methods, Garforth (1982) says that:

Participation cannot occur in an institutional vacuum. Organizations are required at village and sub-village level through which continuous liaison with outside agencies can be maintained, and which provide a structure within which action can be agreed and undertaken. [Garforth, 1982]

The case for increased participation of small-scale and subsistence farming families in their agricultural extension service is a strong one considering rural differentiation, inappropriate messages and the current emphasis on farming systems research. Roling indicates five essential elements in the "utilizer model" of extension:

1. organization of farmers;
2. mobilization of farmers;
3. training of farmers;
4. technical input;
5. intermediate organization (usually an NGO).

He suggests that the fifth element is necessary to manage the tension between the first two empowerment elements and the latter technical elements (Roling, 1985, personal communication). If the front-line extension workers are at the interface of these tensions, they also must be active participants within the system, thus empowered to act effectively for themselves as well as for other rural people. The Village Agriculture Project (V.A.P., N.O.R.A.D.) in Northern Province is an example of an intermediate organization which enables small-scale producers and extension workers to participate in their rural development.

3.2 Issues and Problems

A broad range of issues and problems is disclosed if the theories, concepts and models discussed in the previous section are applied to the Zambian situation presented in the first chapter. The disjunction between the various internal institutions of M.A.W.D., and between them and the differentiated rural society, specifically small-scale and subsistence farming families, exemplifies apparent minimal application of linkages, process systems or participation. Without major structural and policy changes, a shift within the more autonomous colleges of agriculture would offer some opportunity for creating an extension service which is more relevant to subsistence and small-scale farming families. This assumption restricts the following discussion of issues and problems to three areas: the non-process system, the role, and the training of extension workers.

3.2.1 Disjunctions Within a Non-Process System

Issues and problems are highlighted in Figure 1 and subsequent notations.

Notations:

- (a) The extension system functions relatively efficiently when communicating through the hierarchy from national to local levels.
- (b) Information flowing from periphery to centre is limited to that which is requested for bureaucratic forms and reports. Such predictive data feed the needs of planners and policy-makers. They may not include messages which rural producers are most concerned

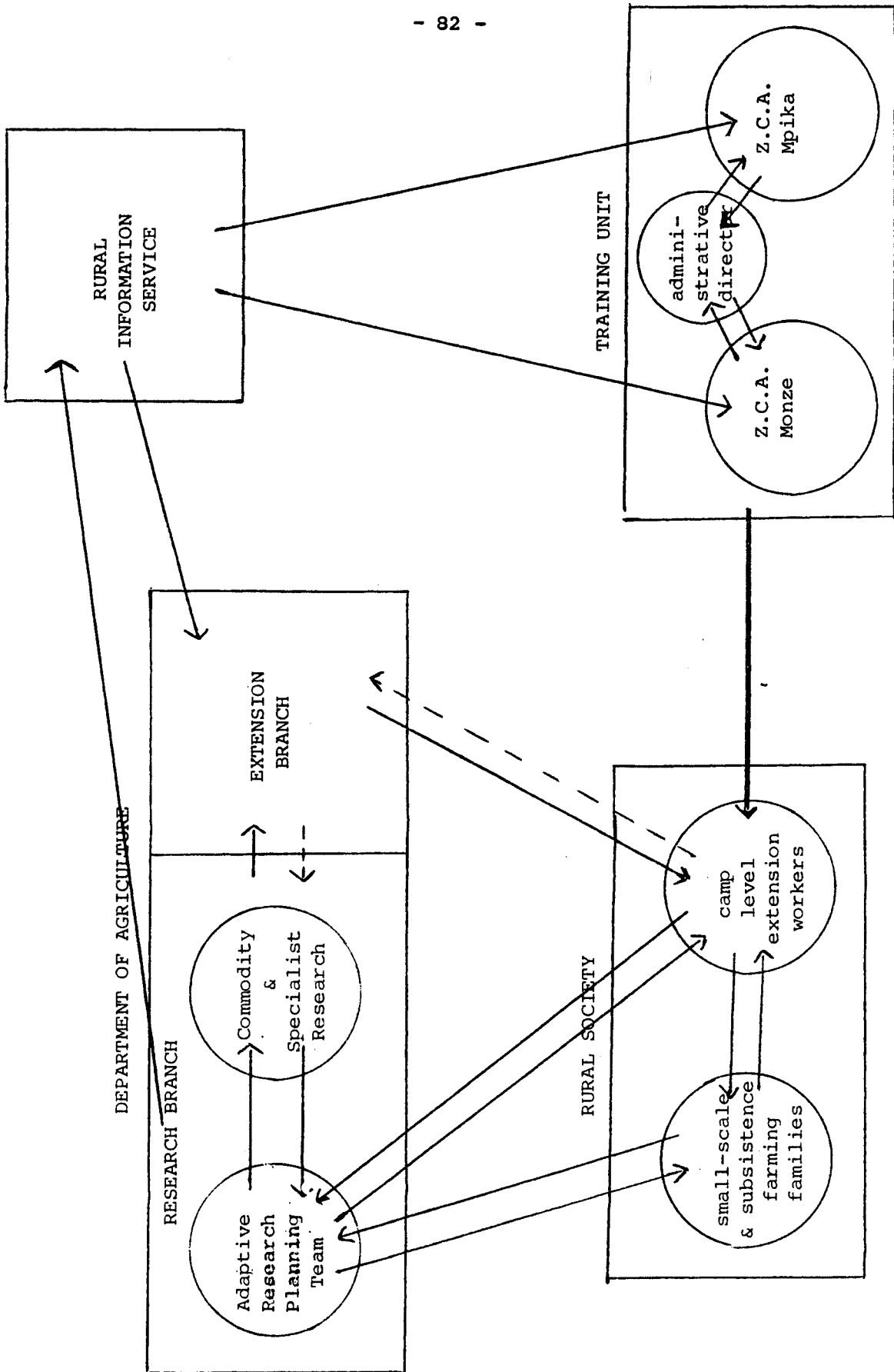


figure 1. Linkages Between Extension Related Systems Within the Ministry of Agriculture & Water Development

to communicate upwards.

- (c) Links between the Department of Agriculture's extension and research branches occur mainly at national level.
- (d) New technology developed through commodity research usually is processed through the Rural Information Services into other units and branches of M.A.W.D., including the extension branch. Direct communication of research results to the Extension Branch is poor.
- (e) Farming Systems Research (F.S.R.) being developed by provincial Adaptive Research Planning Teams (A.R.P.T.) is formally linked with the well-established research and extension branches of the Department of Agriculture, but its participatory team approach is not yet understood or accepted, separating it from the centralized hierarchical institutions.
- (f) Each A.R.P.T. is separately funded and expertly staffed by a bilateral aid agency which imprints its particular project with non-Zambian influences and controls which may impede linkages with the established branches of the Department of Agriculture.
- (g) The A.R.P.T.-F.S.R. concept is based on a commitment to small-scale and subsistence farming families. The level of this commitment manifested by the funding agency, individual team members and M.A.W.D. could vary as could the selection of and method of interrelating with target categories.

- (h) The A.R.P.T.-F.S.R. concept is based on multi-directional linkages between rural society, extension and research. It implies participation of small-scale farmers, field level extension workers and scientists in the process of developing technologies. Such teams are newly introduced; it is too soon to assess their application of these principles.
- (i) The Training Unit of M.A.W.D. is not formally linked with the Department of Agriculture research and extension branches.
- (j) Communication between the two Z.C.A.'s is not institutionalized and occurs through the business and administrative director of training (an Under-Secretary to the Permanent Secretary of the Ministry.
- (k) Z.C.A.'s are linked administratively within the Training Unit to other M.A.W.D. agricultural education institutions -- N.R.D.C., and specialist training institutions in veterinary, horticulture, and dairy production.
- (l) There are no formal links between Z.C.A.'s and the Department of Agriculture Farm Institutes and Farmer Training Centres.
- (m) There are no formal links between Z.C.A.'s and other agricultural education programs: University of Zambia (U.N.Z.A.),^{1*} primary and secondary school agriculture science department, Ministry of

* See Footnotes at the end of this chapter.

Community and Social Services literacy programming using Lima language package, non-government agricultural institutions.

- (n) There are no systems or formal links to facilitate information flow to Z.C.A.'s from either rural society or field level extension workers (Z.C.A. graduates).
- (o) There is no institutionalized system for agriculture education curriculum development within M.A.W.D.²
- (p) Extension workers are constituents of rural society and of the government extension service and therefore have the right to participate in each sector.
- (q) Extension workers are at the interface between rural society and M.A.W.D., a position which can be advantageous for either or both sectors. As employees of the Department of Agriculture, they are official agents of the state, however their isolation and inadequate working conditions encourages closer identification with rural society.
- (r) Extension workers are being influenced continually by messages from both the Department of Agriculture and rural society.
- (s) Extension workers were influenced formatively during two years of intensive residential training at a Z.C.A.
- (t) The only formal link between small-scale and subsistence farming families and the resources of M.A.W.D. is through field level extension workers.

- (u) M.A.W.D. exists because of the agricultural potential of the rural society. Members of that society have a right to participate in policies and decisions directly affecting them.

3.2.2 Role of Extension Workers

Ambiguities and inconsistencies within M.A.W.D. and the rural society place the front-line extension worker in a situation where his definitive role is incongruous with his feasible role. All too often, he is burdened with information gathering for administrative data banks. The established role of extension from government's perspective is that of technical advisor -- the liaison between researcher and farmer. If extension personnel are expected to implement the diffusion-adoption model successfully, it must be assumed that the message is appropriate for the defined category of clients, that requisite goods and services are available, and that producers are encouraged by risk-averting incentives. In the present Zambian situation, these assumptions are not realistic. Real alternatives to this model are being discovered and "increasingly embraced by governments and non-government organizations as extension objectives" (Roling, 1982).

A new definition incorporates the reality of the tension at the interface of rural society with other societies and systems.

Extension is - a carefully planned and designed
intervention to promote the utilization of knowledge
- which uses communication
- and must therefore involve voluntary
change in a client-oriented manner.

[Roling, 1985]

If small-scale and subsistence farming families are participating with research and extension in the creation and dissemination of knowledge and skills (as in F.S.R.), "client-oriented", "voluntary" "intervention" is a liberating process. The extension worker's role as facilitator and communicator is essential. In order to perform an effective service, extension workers must be able to fulfill stated functions (applied knowledge and skills), must know and understand the clientele and must have conditions of service and personal aspirations which bring job satisfaction.

3.2.2.1 Program

The extension worker should be able to plan his program of work by prioritizing technical, administrative, and organizational functions. Selection and use of appropriate adult education and communication skills facilitate the discovery and use of appropriate agricultural technologies. Administrative competence is necessary to maintain the smooth functioning of this programme locally and in relation to the larger system.

Organizational ability is required to mobilize and empower the community to request and obtain the goods and services necessary to implement their desired changes. The scope and method of extension's mandate for involvement in the politicizing of the rural poor may be dependent upon the position and power of mediating agencies as well as political willingness to allow changes in the established power structure. Roling (1982) states, "It has been a consistent experience that extension functions best when farmers are critical, demanding,

and have some political clout to influence extension work".

3.2.2.2 Clientele

Zambian government and political officials have indicated rhetorically that they are concerned with equitable rural development. Innovations such as the Lima Programme, establishment of A.R.P.T.'s, research and marketing programs for some subsistence crops (cassava and sorghum) and, to some extent, the implementation of the adapted Training and Visit System are tangible indications of concern for the rural poor. It must also be accepted that if the extension service existed mainly for emergent and larger producers, many camp officers would have no clients. The small-scale and subsistence farm families not only form the large majority of rural population but may be the only category in a camp area.

But, as argued in Section 2.1, within each rural community of small-scale and subsistence producers, there are different agricultural practices and requirements. If extension is to provide an equitable service to all categories of the rural poor, front-line workers must have tools and skills to analyze, monitor and evaluate the practices and needs of all potential clients.

It should be emphasized that an awareness of client categories and the programs planned with specific groups should include households, rather than males only. In this way, the production skills and needs of female producers should be incorporated into the overall extension program.

3.2.2.3 Conditions and Motivation

The legitimacy of reports of constraints of camp officers is well documented by the literature (see Section 2.2.2.4) as well as by hearsay. The resources of extension workers lie, to some extent, in their own resourcefulness and ability to locally apply the knowledge and skills in agriculture acquired while training at one of the Z.C.A.'s.

The morale and motivation of extension workers could be either a resource or a constraint having a real influence upon the effectiveness of their work. Factors influencing morale and motivation include the availability of equipment and tools to perform the tasks, positive reinforcement for work done from both clients and superiors, and satisfaction of basic human needs according to reasonable expectations.

Morale and motivation are also linked with the attitude of extension workers toward villagers, toward farming and hard physical work, and toward rural life in general. They are also linked to their own personal aspirations: whether or not to live out their life in rural areas, whether or not to remain in the Department of Agriculture, and if so, whether to be content as camp officers or to have greater career aspirations. The fulfillment or frustration of aspirations will affect the quality of work of an extension officer. Data about future aspirations have not been available, whereas there is ample evidence to identify specific constraints as causes for job dissatisfaction amongst extension workers.

3.2.3 Training Extension Workers

Undoubtedly, personal and educational background, as well as field experiences and in-service training, affect the performance of general extension workers. Because of widespread variation, it is difficult to standardize the form and quality of learning they receive from these experiences. On the other hand, during two years of residential training, novice extension workers engage in a common programme to learn skills, knowledge and attitudes in preparation for their work in the field.

3.2.3.1 Curriculum Development

Educational programmes can only be planned or curricula developed when there are clearly defined objectives of purpose. The problem of a realistic definition or objective which daunts the extension service has been passed to the Z.C.A.'s. However, the relatively isolated position of the colleges within M.A.W.D.'s structure allows them the freedom to define their objectives based on the realities of the Zambian situation, as well as the accumulated knowledge found in the literature. The objectives stated in the Monze Course Prospectus (G.R.Z., 1980) (see Section 2.3.1.2) indicate a departure from the accepted Department of Agriculture extension role.

A training program for such a broad, flexible client-oriented extension service must be formulated from field realities. Up to now, there is no system or faculty position for curriculum development. The content and emphasis of courses are reflections of what has been traditionally inherited and what current faculty are able to teach. A

course syllabus (G.R.Z., 1982) was jointly prepared by staff who itemized the content of theory and practical topics to be covered by each department. This syllabus serves as a handbook outline for teachers. It is not the result of an ongoing process of curriculum development, but rather of ad hoc pragmatic decisions. The scope of this situation offers opportunity to rethink and if necessary to reshape the present programme.

The lack of linkages between Z.C.A.'s and other agricultural institutions noted in Section 3.2.1 of this chapter suggests potential networks and resources. In Tanzania, an independent curriculum development body coordinates all agricultural education in accordance with national rural development policy and priority (Chilimboyi, personal communication). This model may be helpful in the development of a process-system of feedback and evaluation from farmers, extension workers (Z.C.A. graduates) and researchers into an effective training programme for Zambian extension workers.

3.2.3.2 Components of Extension Training

Incorporating lessons from the history of international and Zambian agricultural extension into an improved process-system requires adjustments in the content of current training. Learning opportunities should be provided for students to integrate the necessary values, principles and skills of rural extension with their own life experiences. A communal as well as individual identity of "rural extension worker" will be formed.

The technical nature of agricultural production incorporates

general principles, specific practices as well as underlying attitudes concerning crop production, animal husbandry, and agricultural engineering. The management and development of this knowledge are essential to the synthesis of narrow fields of study into an applied farming system. Therefore, curriculum should include farming systems and management as well as research methods.

In most of rural Zambia, all food chain activities occur within the community, from seed selection and food production, to processing, preservation and preparation. Technologies related to these activities are within the scope and training of extension workers. The sexual division of labour in rural households, and the lack of female rural extension staff raises issues relating to the role of male extension workers in areas usually within the female domain of domestic science.

The social aspects of agricultural production are important for effective extension performance. There is need for both understanding of the dynamics and principles of rural society as well as skills to participate in analysis, planning and organization of rural communities toward improving livelihoods. Basic extension training also includes programme planning, adult education and communication principles and skills.

3.2.3.3 Methods and Resources for Extension Training

A wide variety of resources are available to each Z.C.A. to provide learning environments and opportunities for students. The Z.C.A. institution can be a micro-learning society, offering

educational experiences not only within formal settings but also from informal interactions and from administrative policy and practice.

Formal class learning with young adults offers a setting for a variety of interesting teaching/learning methods. Teaching aids, past field experience of students, library facilities as well complimentary practical training allow ample material for realistic problem-solving learning projects. The college farm provides opportunity to experience and practice agricultural processes and techniques and to synthesize classroom principles into practical knowledge. A carefully designed curriculum integrates and prioritizes theory and practice into a total learning process.

The formal programme can also make use of resources in the surrounding rural community in various ways, e.g. visiting speakers, field trips, village curriculum practicals.

The manner of formally assessing and evaluating students is an important way of reinforcing priorities and methods of analysis, decision-making and performance. These formal educational activities evolve from programme design and should model extension's objectives, both in content and method.

Informal learning opportunities arise from personal interactions, from extracurricular happenings and from the college and surrounding constraints and resources. Personal interactions with students provide a rich environment of shared experience. Faculty, local farmers and extension workers provide role models. Selection criteria for students and faculty affect this interaction. Extracurricular events can reinforce group and leadership skills and encourage

participation in farming responsibilities. They can also provide attractions towards life styles which are seldom attainable in rural areas. The level of student comfort provided by residence life with ample food regularly prepared, modern washing and toilet facilities, electricity, as well as cleaning and groundskeeping staff, conditions students toward a much different standard of living than that which they find as camp officers.

Priorities and models are projected by the method of administration of the colleges, e.g. departmental structure, annual and daily timetables, and controls and incentives. The linkages between colleges, with the rural community as well as within the college community not only serve the college directly but indirectly provide students with learning models. Opportunities for students to participate in college decision-making increases their awareness of the process involved in organizing and planning within a system.

3.3 Summary

From the perspective of Zambian rural society with its variously different populations and its external pressures, the agricultural extension service which proceeds from the disjointed government Ministry of Agriculture and Water Development (M.A.W.D.) could be better adapted to the realities of subsistence and small-scale farming families. A study of the theories and models of extension which have developed from analysis of field situations indicates trends toward a more participatory, client-oriented approach to extension. Within Zambia, there are indications that the direction of rural development

planning is toward decentralization, more local autonomy and increased emphasis upon small-scale farmers. The role and performance of field level extension workers is affected by these trends and circumstances.

Ideally, the training programme for field extension workers is part of and, therefore, should be responsive to a client-oriented system. The process of feedback, evaluation and adjustment, which can keep an extension service relevant and meaningful to small-scale farming families, is similarly important to the training curriculum. The two Zambia Colleges of Agriculture at Monze and Mpika are relatively autonomous within M.A.W.D. These institutions could be at the forefront of new strategies. There is need for innovative thought in redesigning an educational program for a new breed of Zambian extension workers.

Footnotes

- ¹ U.N.Z.A. has offered an undergraduate degree in Agriculture for some years. However, this program is being upgraded and expanded in a current joint development project with the University of Manitoba. Starting in 1985, a five-year degree course in Agricultural Education will be jointly offered by the Departments of Adult Education and Agriculture.
- ² Within the Curriculum Development Centre of the Ministries of Education, one specialist prepares agricultural science syllabi and materials for primary and secondary schools. He works in coordination with the Zambian Agriculture Education Association (Zageda) of primary and secondary school teachers. Despite various attempts to initiate communication, they have had little success linking formally or informally with agricultural educators in either MAWD or UNZA (personal communication from J. Michello, Curriculum Development Centre).

CHAPTER FOUR

THE ROLE AND PERFORMANCE OF AGRICULTURAL EXTENSION WORKERS

4.1 Introduction

If an extension system is to work effectively, it is necessary that the role and job description of the front-line extension worker be clearly and realistically defined. Within the Zambian system, there is evidence of discrepancy of views among various groups about their expectations of extension workers. That they are primarily agricultural technical advisors seems widely accepted. However, Ministry administration also expect reports and records to be regularly submitted, while farmers expect assistance with procurement of loans and supplies and in organizing farming activities and enterprises.

Confusion about the role and performance of extension workers arises from a range of debatable issues. For example, which category of rural people should receive most/least from the extension workers? How appropriate is the prescribed extension message to the agronomic, economic and social conditions of the small-scale and subsistence farmers? Is the extension worker encouraged and skilled to adapt the message to local conditions? When pressured to complete government reports, respond to farmers' problems and to provide technical advice, what are his priorities and parameters? As a government officer and as a member of a rural community, where do his loyalties lie?

These issues cannot be resolved easily. This study will describe the responses of extension workers themselves to some of these questions concerning their role and performance.

4.2 Role of General Extension Worker

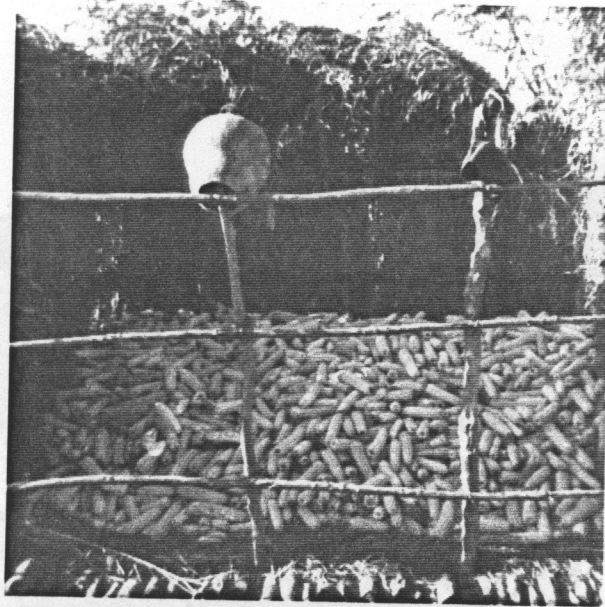
4.2.1 Definition of Agricultural Extension

During interviews with extension workers, they were asked to define their role. Most of the participants perceived themselves as a group separate from the rural community who were advisors or government officers representing its policy and research. Most perceived their role as bringing agricultural advice from a more knowledgeable source (research, government) to the farmer. Only one-third of the respondents perceived themselves in a mediating role between rural people and government. One-quarter of the respondents included as their goal the improvement of the standard of living in rural areas, along with increased agricultural productivity.

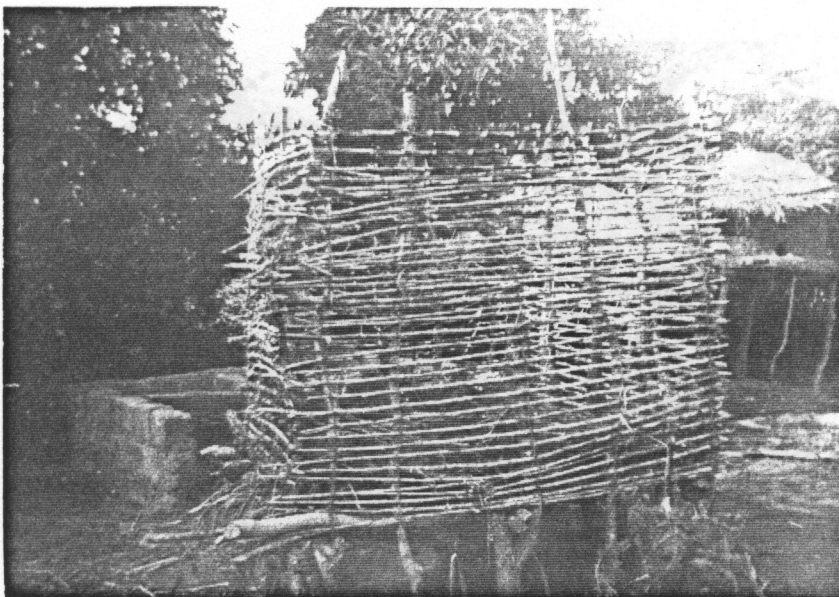
In describing their work, most extension workers used one-way communication words such as "tell", "teach", "impact", "advise", "educate". One respondent suggested that farmers had something to tell research; therefore, extension had a mediating role. Another described a facilitator role such as arranging loans and ordering supplies. Another suggested role conflict between the expectations of the Department of Agriculture and those of the aid agency in that area.

4.2.2 Job Satisfaction

A more indirect way of determining the role perceptions of general extension workers was an investigation of the determinants of job satisfaction or dissatisfaction. This information was obtained from two sources: photogathering records and an open-ended question on



8-1 The harvested maize corn. It reminds me of the good cobs from the farmers who had followed my advice during the 1983/84 season.



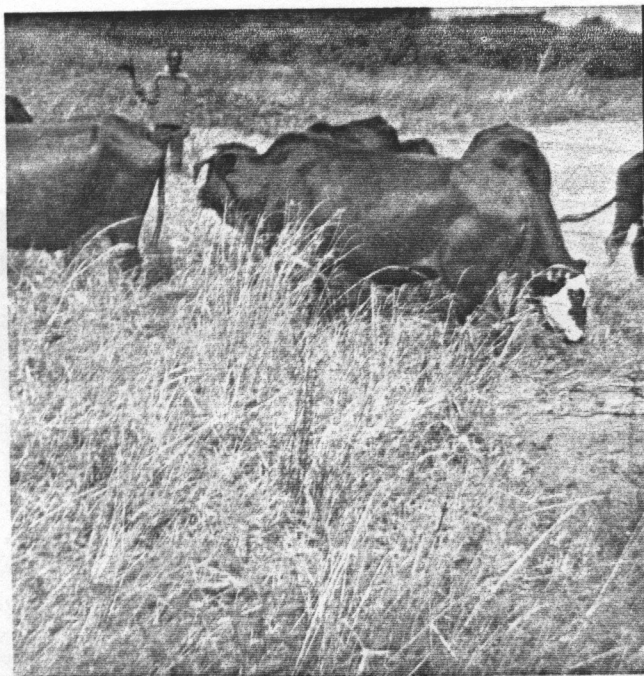
4-9 Barn for storing maize -- The system is not very safe. It's not strong. Thieves can easily steal and vermits can easily find their way to the stored food.



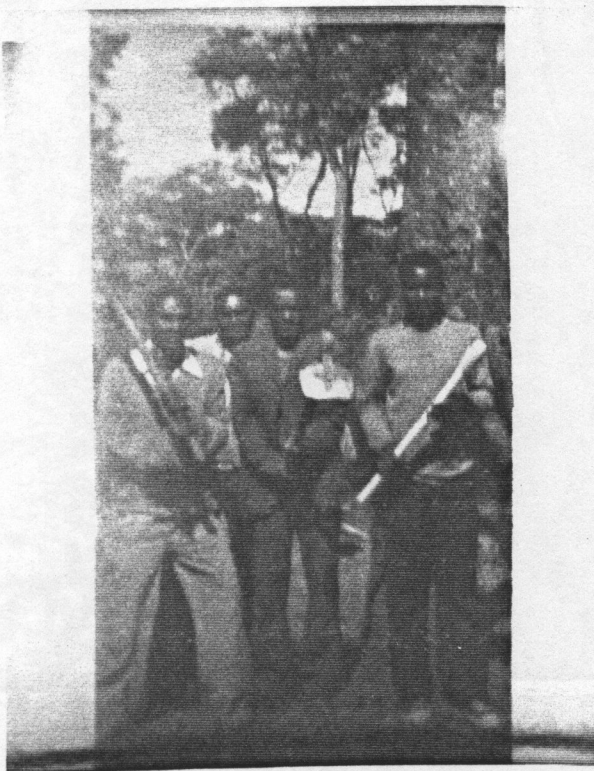
6-3 Farmer and wife in a field of finger millet. It was taken because the crop is one of the staple foods in the area. They brew beer from it.



5-8 Contact Farmer: These are some of the farmers and local leaders just for organizing some events, e.g. like meetings.

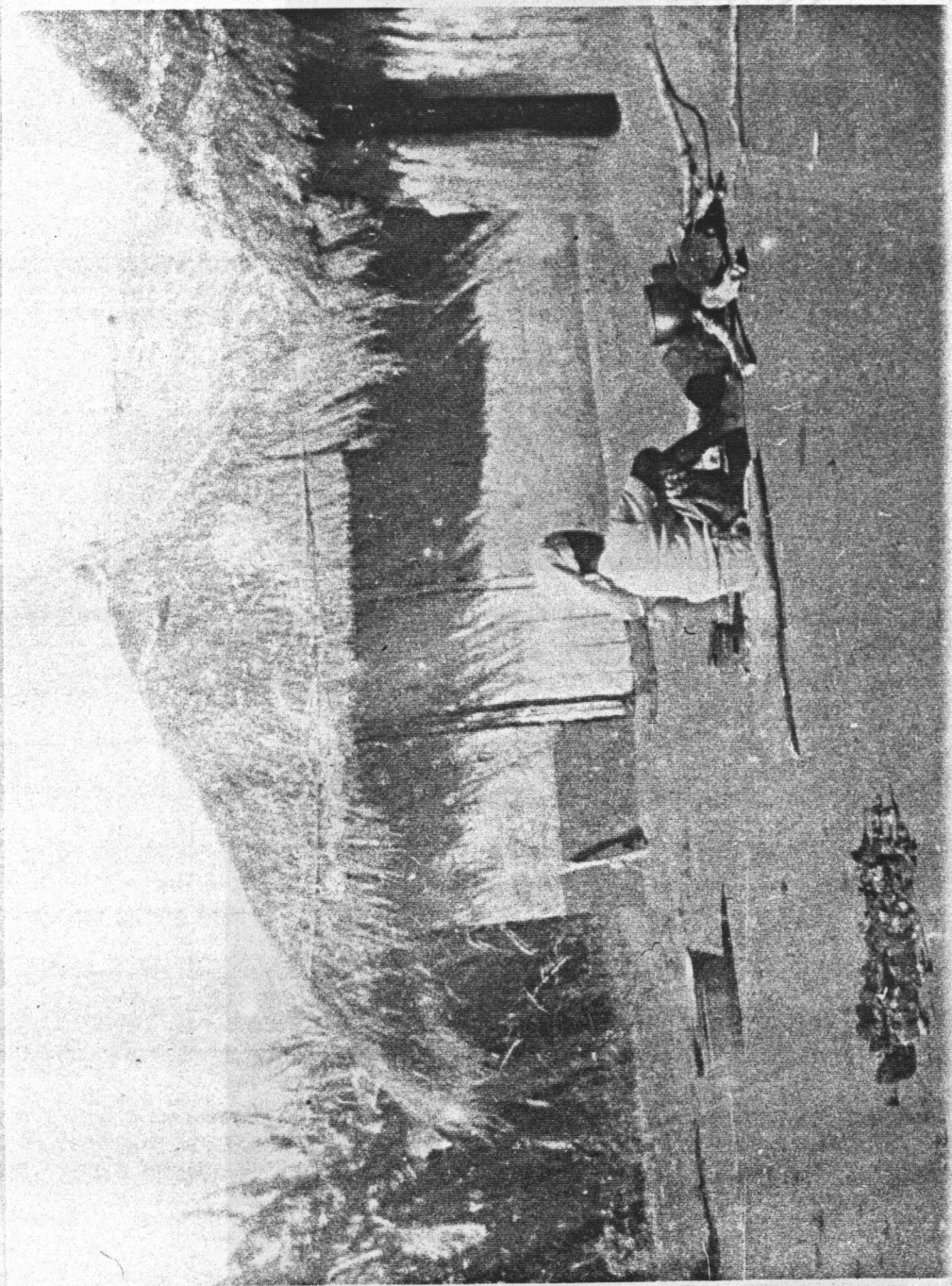


9-3 Mr. Bryson Mwila with a cow's tail in his right hand. He practises rotational grazing. His cattle are the best in this area because they are nicely fed.



6-9 The councillor demonstrating to the group of men the importance of the use of hoes. This was taken because our future lies in the importance we attach to our land.

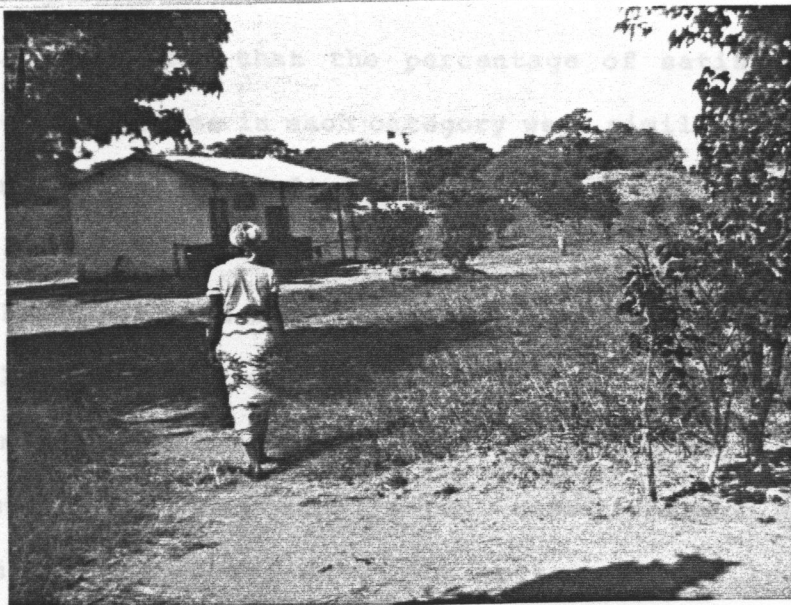
5-2 In this picture is a woman cooking. It reminds me of a contact farmer who went for citizenship after I promised that I would visit him.



5-2 In this picture is a woman cooking. It reminds me of a contact farmer who went for citemene after I promised that I would visit him.



5-7 Bicycle: This is the form of transport just for day to day work so far, or the most common transport for A.A.'s.



4-7 Walking -- extension officers spend hours walking and when they reach their place of work they are very tired and don't have enough energy to present the prepared material well.

the Graduate Survey.

4.2.2.1 Photogathering Records

The records of the seven participants in the photogathering experiment provided 62 photographs along with written descriptions and reasons for selecting each photographic subject. One-half (31) of the photos represented as aspect of extension work which the participants found satisfying or successful and the other one-half (31) represented aspects of the work which brought dissatisfaction or least success.

Responses were grouped into four categories: those dealing directly with agricultural productivity, those relating to local community or extension activities, those pertaining to services and standard of living, and those resulting from Department of Agriculture administration. Each of these categories provided both satisfying and dissatisfying experiences.

Table 4.1 indicates that the percentage of satisfying and dissatisfying experiences in each category were similar. About 50 percent of the photographs dealt directly with agricultural productivity. Most satisfactory experiences came when extension workers saw their advice being followed with good results and when they witnessed increased yields in their areas. Dissatisfaction came from a variety of production problems ranging from pests and disease to lack of water, poor storage and inadequate labour. Dissatisfaction was also felt when the advice of the extension worker was not followed, resulting in poor yields.

Participants were asked to explain the content of and the reason

Table 4.1. Analysis of Photogathering Records About Job Satisfaction and Dissatisfaction.

Areas Related to the Job	Intended Content of Photo					
	Satisfying Experience		Dissatisfying Experience		Total	
	No.	%	No.	%	No.	%
i) Agricultural Productivity						
Advice Followed/Not Followed	9		5		14	
Increased Productivity	6		0		6	
Citizens System	0		3		3	
Problems	0		8		8	
Subtotals	15	48	16	52	31	50
ii) Local Community or Extension Activity						
Ward Show/Demo. Plot/Field Day	4		3		7	
School Production Unit	1		3		4	
Contact Farmers	2		0		2	
Farmer Cooperatives	1		1		2	
Meetings with Local Leaders	1		1		2	
Beer Drinking	0		1		1	
Subtotals	9	29	9	29	18	29

Table 4.1. Continued.

Intended Content of Photo					
Areas Related to the Job	Satisfying Experience		Dissatisfying Experience		Total
	No.	%	No.	%	
iii) Standard of Living					
Happy/Unhappy Family	2		1		3
Nutrition/Malnutrition	3		3		6
Loans Available for Women	1		0		1
Subtotal	6	19	4	13	16
iv) Department of Agriculture/ Administration					
Deployment of Women A.A.'s	0		1		1
Transport for Extension Workers	1		1		2
Subtotal	1	3	2	6	5
TOTAL	31	99% ^a	31	100%	100%

^a Total does not equal 100 percent due to rounding.

for each photo. The following comments are taken from their records of photos which show either satisfaction or dissatisfaction with their work.

- a) Satisfaction: Maize planted in rows. This farmer I told him to apply fertilizer correctly and followed the right way. so he got 55 bags per hectare.
- b) Dissatisfaction: Cattle grazing on the natural pasture. This was near where three-quarters of the people here do practice citemene system. This is because of the costly farm inputs.

About 30 percent of the photographs illustrated the satisfaction and dissatisfaction associated with social institutions and patterns within the community. Some pertained particularly to extension work like ward shows, demonstration plots, field days and contact farmers. Others were within the agricultural sector but outside the specific responsibility of the A.A./S.A.A. such as school production units, farmer cooperatives and admonitions of local leaders to cease citemene practices and to cultivate more land. One photograph described beer drinking on a weekday which kept people from their work. Examples of participants' comments are:

- a) Satisfaction: Sugar cane production. Reminds me of the time people visited the plantation for a field day and freedom was given to eat some sugar canes.
- b) Dissatisfaction: Empty house - organized to meet for a meeting but found no-body. People couldn't leave their own work just to attend the meeting.

Nineteen percent of the satisfying experiences related to

improved standards of living. Good health, particularly of children, was a source of satisfaction and dissatisfaction for three of the participants in the photogathering. Comments included:

- a) Satisfaction: A group of people who have their standard of living improved. This was taken because this family is happy through farming.
- b) Dissatisfaction: Malnourished children - mothers are told of causes of malnutrition and how to conquer it but the problem is where to find food for the children. Locally grown food finishes before the stipulated time.

A small percentage of answers (about five percent) were associated with Department of Agriculture administration. One was satisfied because he had a bicycle. Another photo showed an extension worker footing (walking) as an expression of dissatisfaction. One male participant commented about the photo he took of a female extension worker:

Female extension worker going out for work. Ladies are very much not commonly found at camp level.

4.2.2.2 Graduate Survey Results

Of all graduate respondents (see Table 4.2), 78 percent said they enjoyed their work; 22 percent said they did not. They were asked to comment why they did or did not enjoy their work. There was a high frequency of respondents who gave multiple reasons for and against job satisfaction. These comments were categorized into those responses relating to conditions of service and those relating to work experiences. All responses were divided between those which were

Table 4.2. Job Satisfaction of Z.C.A. Graduates by Present Post.

<u>Job Satisfaction</u>	<u>Present Post</u>					
	<u>Extension Worker</u>		<u>Other</u>		<u>Total</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Enjoy Work	104	79%	41	73%	145	77%
Do Not Enjoy Work	<u>27</u>	<u>21</u>	<u>15</u>	<u>27</u>	<u>42</u>	<u>22</u>
Total	131	100%	56	100%	187	99% ^a

^a Total does not equal 100 percent due to rounding.

negative expressing dissatisfaction or complaints and those which were positive expressing satisfaction or enjoyment (see Table 4.3).

Table 4.3 indicates that nearly all comments relating to work experiences expressed satisfaction. Twenty-nine percent of the positive comments indicated enjoyment because of the type of work they did. This included strong interest in and liking for agriculture, opportunity to meet and work with many different kinds of people, and interesting and varied work which was not boring and kept one active (not sitting in an office all day). Over 20 percent of the positive comments suggested satisfaction in working with rural people/farmers who were described as cooperative, helpful, interesting, willing to follow advice. Another 20 percent of the comments expressing satisfaction indicated that the work was enjoyable because it provided opportunity to learn. Particular reference was made to gaining

Table 4.3. Z.C.A. Graduates' Comments About Job Satisfaction/
Dissatisfaction By Work Experience and Conditions of
Service.

<u>Areas Related to the Job</u>	<u>Comments About the Job</u>			
	<u>Satisfied</u>		<u>Dissatisfied</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
i) Work Experience				
Type of Work	57	29%	1	1%
Learning Opportunities	40	20	7	10
Rural People	41	21	2	3
Future Preparation	24	12	0	0
National Development	23	12	0	0
Other	<u>3</u>	<u>2</u>	<u>0</u>	<u>0</u>
Subtotal	188	96%	10	14%
ii) Conditions of Service				
Salary	4	2	15	21
Transport	3	2	15	21
General Conditions	2	1	10	14
Administration	0	0	11	15
Resources/Supplies	0	0	6	8
Accommodation	0	0	3	4
Colleagues	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Subtotal	9	5%	61	84%
TOTAL	<u>197</u>	<u>101%^a</u>	<u>71</u>	<u>98%^a</u>

^a Total does not equal 100 percent due to rounding.

practical experience, learning from farmers, learning from mistakes and learning for the future. A few participants showed dissatisfaction because their position did not provide opportunity for further study. A number of the participants (13 percent of responses) expressed satisfaction because their job prepared them for a future as full-time farmers. Another 12 percent indicated satisfaction from contributing to national development, alleviating food shortages or increasing the standard of living in rural areas.

In contrast to the favourable comments regarding work experience, 87 percent of those responses relating to conditions of service were negative. Most complaints were associated with lack of transport, poor salaries and frustrations from administration. Others were concerned with poor accommodation, lack of supplies (teaching aids, lima, ropes, stationery, tools) and general statements asserting that conditions were poor. Many respondents who said they enjoyed their work as an A.A./S.A.A. gave their reasons and then qualified those reasons with reference to the poor conditions of service.

4.2.3 Future Aspirations

Participants in the Graduate Survey were asked to indicate their future plans. The results are shown in Table 4.4.

Although nearly 40 percent of the general extension workers hoped to remain with the Department of Agriculture until retirement, fully one-half of the respondents indicated that they hoped to resign from their government office in order to operate their own farm. This information is corroborated by the job satisfaction results which

showed that a number of respondents found their work in extension enjoyable because it prepared them for their future as a private farmer.

Table 4.4. Future Aspirations of Extension Workers by Job Satisfaction.

Future Aspiration	Job Satisfaction					
	Enjoy Their Work		Do Not Enjoy Their Work		Total	
	No.	%	No.	%	No.	%
Remain A.A. until retirement	42	42%	8	32%	50	40%
Resign and have own farm	49	49	14	56	63	50
Resign to private company	4	4	1	4	5	4
Go for further education	4	4	1	4	5	4
Other	<u>2</u>	<u>2</u>	<u>1</u>	<u>4</u>	<u>3</u>	<u>2</u>
Total	101	101% ^a	25	100%	126	100%

^a Totals do not equal 100 percent due to rounding.

It seems significant that 11 percent of all respondents (extension workers and others) took the liberty to add a fifth option to the four given. They wrote that none of the choices suited them because they aspired to go for further education. A significantly larger number of graduates who were in more specialized posts indicated education goals (12 percent) than those who were in general

extension (four percent).

A cross-tabulation of job satisfaction by the future aspirations of extension workers indicates that close to 50 percent of both those who enjoy and those who do not enjoy their work hope to resign and own their own farm in the future (see Table 4.4).

4.3 Performance of General Extension Workers

The performance of extension workers at camp level can be studied from the perspective of the camp officers themselves. Data from the Graduate Survey and from interviews are used to present their description of the conditions of service and resources which affect their performance, their approach to programme planning and implementation, and the frequency with which they advice farmers on specific agricultural topics.

4.3.1 Working Conditions and Resources

4.3.1.1 General Conditions

The negative effect which poor conditions of service exerted upon job satisfaction of agricultural extension workers is described in Section 4.2.2. Of the 166 Graduate Survey respondents who commented on general agricultural extension, many expressed more than one concern about their work. Most comments were about the need for improvement in specific conditions of service.

The largest concern was the need for transport for extension workers to enable them to do their job better. Over one-half of the respondents commented to that effect. Nearly 30 percent of the

respondents commented on poor conditions relating to low salary, lack of subsistence allowances, poor accommodation, infrequent visits by supervisors and frustrations with administration (mainly at district level). A significant number of respondents (about 20 percent) expressed the need for educational upgrading and asked for refresher courses or in-service training, with a few requesting opportunity to go for further studies which would provide career advancement. About 20 percent of the respondents made comments relating to the actual job performance of extension workers such as programming, and administrative decisions. These included suggestions for more A.A.'s to be posted at each camp, better feedback from camp level to higher administration, greater powers and funds for P.A.O.'s, transfers and promotions to be based on performance (demonstration plots) criteria, and for more discussion and communication regarding local farming systems. A smaller percentage of comments pertained to the need for more supplies (tools and stationery) and teaching aids to do the job effectively. Other comments were difficult to categorize: some were general statements about the qualities of extension workers. Others were specific individual concerns, while some pertained to problems within the agricultural sector such as marketing, credit, prices or aid projects. A few comments were directed toward the training at Z.C.A.'s.

The following are sample comments taken from the Graduate Survey about general agricultural extension.

From Northern Province:

Agricultural extension is an interesting career if only the extension staff were provided with all necessary means and tools for even distribution of agricultural services to the farming community who needs it, without which extension work would prove a failure.

The people above the extension officers are making it difficult because even if you work extra hours you will never have subsistence allowance. It ends up to the top officer.

Many extension staff are able to do the job to expected 'dreams' but because they think their P.A.O. cannot terminate their duties they are relaxing in camps, waiting for their monthly draw. I can see more doom and stagnation in agriculture - until P.A.O.'s are given power to sack if need be. 'It is better to be cruel at times in order to be kind to our country.'

From Central Province:

Some extension workers should not misuse fertilizer given to them by the district for lima demo. plots. Theoretical agriculture extension is not very necessary but practical agriculture extension with experience from our homes because problems faced by farmers are not very identical as farmers pretend to know everything.

I would like to comment and suggest that if agriculture is to be improved officers at the roots (field officers) who are next to the farmer should not be forgotten in the department. This comes to the appointments, promotions and supplying the transport facilities.

This has not worked successfully due to transport problems and that the supervising officer cannot help to solve problems, in addition there has not been good communication.

From Luapula Province:

Extension service will undoubtedly be abused if the inefficiency continues in the marketing system. Farmers understand how uneconomic it is to produce things which will go to waste.

In general extension there is liberty at work only lack of good transport the distances are far from place to place - compared to this camp I am stationed there is too much magic practiced on ignorance basis - such camps should be closed as we are young - at night time difficult to sleep - very bad.

Villagers can easily adapt and follow what you want them to, but implements for cultivation is the limiting factor.

From Southern Province:

General agriculture extension helps the officers who are trained in it to be more productive and construct better farmers when they retire.

In camps we have no transport, stationery and equipment, e.g. dosing guns, no house maintenance, e.g. painting, and refresher courses.

Agricultural staff must be given transport like honda especially those who climb hills daily and special land must be provided to both retired and resigning officers to utilize their knowledge.

4.3.1.2 Personnel Support

In the Graduate Survey, Camp Officers were asked how frequently their Block Supervisor had visited them in the past six months. Nearly one-quarter of the respondents had never been visited. About 20 percent had one or two visits, 25 percent received three to five visits and over 30 percent had been visited six or more times.

There appeared to be a wide range of effectiveness in the implementation of the Block system. Comments were made that it had not yet been established in some areas, or if blocks were demarcated the system did not seem to be working yet. In other areas Camp Officers were regularly visited, and in some places Block Supervisors lived in

the same camp with one or two other Camp Officers, allowing for continuous interaction.

General Extension Workers were also asked how frequently they were visited by their District Agricultural Officers over the previous six months. Thirty percent had never been visited, 36 percent had received one or two visits, 23 percent had three to five visits and 11 percent had six or more visits. Included in these responses were the Block Supervisors (27 percent of all general extension workers) who were visited more frequently than Camp Officers.

4.3.1.3 Access to Information

Linked with the expressed need for improved two-way communication between administration and camp officers, was the request for more up-to-date information about agronomic practices. It was previously noted that about 20 percent of the survey respondents commented on the need for refresher courses for extension workers. Four questions in the Graduate Survey attempted to ascertain the frequency and sources of new research findings coming to camp officers.

To the survey question concerning access to the latest research concerning crop recommendations, the response is given in Table 4.5.

Survey respondents were also asked who told them about the latest crop recommendations. Again four percent indicated that they never received any new information. The largest percentages showed that the District Agriculture Officer (32 percent) and research staff (29 percent) were most responsible for disseminating information to Camp Officers. The Provincial Crop Husbandry Officer (nine percent) and

the Block Supervisor (eight percent) contributed a smaller amount. The Provincial Extension Training Officer seemed to have little influence in this regard (two percent).

Table 4.5. Frequency With Which Extension Workers Received Research Recommendations.

<u>Frequency Category</u>	<u>No. of Responses</u>	<u>Percent</u>
Frequently	27	21%
Occasionally	74	56
Seldom	25	19
Never	<u>5</u>	<u>4</u>
Total	131	100%

Two sources of agricultural information beyond direct personal communication from the Department of Agriculture, were agricultural radio broadcasts and reading material. The majority of camp officers seemed to have access to radios, 50 percent of them indicating that they listened to agricultural broadcasts frequently. Access to reading material seemed more difficult. Nearly 60 percent of general extension workers said they had read a book about agriculture in the last six months. The titles given were often vague or outdated, but also included the recently released Extension Handbooks. Over 40 percent had access to magazines, most frequently named was Farming in Zambia. Only 20 percent of respondents read the daily newspapers and 17 percent read newsletters, mainly the Lima newsletter. About five

percent of extension workers stated that they read from their old Z.C.A. notes to find out about agricultural practices.

4.3.2 Program of Work

Nearly all the extension workers surveyed said that they designed their own program of work, independently of anyone else. Thirty percent of the respondents indicated that they made a monthly plan, 27 percent that they made a weekly plan.

During interviews, the 12 participants described how they planned and implemented their work schedule. More than one-half said that the Camp was divided into several (three to eight) sections and village productivity meetings were held monthly and sometimes more frequently in each section. The topic for the next meeting was usually decided upon at the end of each meeting. However, one Block Supervisor who was interviewed said that:

Program planning is not good. People forget what they are to do in a year and A.A.'s don't follow the farming system. There are Rural Information calendars and some pamphlets but they are not distributed through the District Office to the Camp officer.

In several instances, the organizing and advertising of meetings seemed to be the responsibility of local leaders rather than that of the Camp Officer. Ward chairman, depot capitao, village headman and contact farmer were all mentioned as being organizers or at least consultants in the planning and implementation of the extension program. The Graduate Survey indicated that 95 percent of

extension workers cooperated with local community leaders in their work.

Individual farmer visits were usually made as a follow-up to those farmers who attend V.P. meetings. Sometimes, at the suggestion of the contact farmer or ward chairman, visits were made to those farmers who had not been visited. Only two of the interviewees said that they preferred individual visits rather than group meetings, suggesting that farmers did not understand the message at meetings as well as they did from personal visits.

Five of the 12 interviewees spoke of their contact farmers. The process of selecting these farmers varied. Sometimes it was a decision by the extension worker alone and sometimes in consultation with local leaders or other farmers. Several respondents mentioned that it was necessary to be in the camp for a considerable length of time (a few months to two years) before they felt they could establish a system with reliable contact farmers. The functions of the contact farmers were various. Some provided the venue for Village Productivity meeting and advertised and gathered farmers to the meeting. Some had demonstration plots on their farms. One interviewee spoke of the importance of the contact farmer for informing extension workers of problems and issues of concern to the local farmers.

Whereas extension workers used "farmers meeting", "contact farmer" and "Camp sections" as operating terms, they were not as familiar with the meaning of "training and visit system". In the Graduate Survey, 95 percent of the respondents indicated that they knew about the system but when asked to define it one-third of the

definitions were poor and less than one-tenth were excellent.

The Graduate Survey data provided a description of the frequency of the type of activities in which camp officers had participated from the beginning of the growing season in October 1983 through to April 1984. Farmers' meetings and demonstration plots were part of most extension programmes, but no one method was used by every extension worker, indicating considerable variation in the programme at each camp (see Table 4.6).

Table 4.6. Extension Workers' Participation in Specific Program Activities.

<u>Program Activity</u>	Extension Workers					
	Participating		Not Participating		Total	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.^a</u>	<u>%</u>
Demonstration Plot	105	80%	27	20	132	100%
Farmers' Meetings	98	74%	34	26	132	100%
Farm Tour	79	60%	53	40	132	100%
Field Day	59	45%	72	55	131	100%
Research Plot	32	24%	99	76	131	100%
Mobile Course	19	14%	113	86	132	100%
Agricultural Show	17	13%	114	87	131	100%
Other	9	7%	123	93	132	100%

^a Totals vary because of missing data.

It should be noted that the number of Agriculture Shows was very low because most shows were held in June and July after the harvest had been gathered.

As well as implementing their extension programme, extension workers were kept busy with their own lima plots. Less than ten percent did not cultivate a lima of land; most of these would be extension workers who were transferred to new camps too late for planting. Sixty-three percent of camp officers cultivated one or two limas; twenty percent three to four limas; and either percent had four (one hectare) or more. There was a wide variety of crops cultivated: 90 percent of all respondents grew maize; 20 percent grew groundnuts; 19 percent grew cotton or rice; and 17 percent grew beans.

4.3.3 Topics of Advice to Farmers

Data from the Graduate Survey provided indices of the frequency of advice extension workers gave on 24 specific topics. The responses were grouped into the four surveyed provinces. Several observations were made.

- a) Crop production topics had the highest overall advice frequency followed by farm management topics.
- b) Some topics were advised with consistent frequency across all groups of respondents -- for example, maize, groundnut, vegetable and fruit production, soil management, crop rotations, food storage, finances and budgeting, and farm labour.
- c) There was wide variation between topics in the frequency of advice given by all general extension workers.
- d) For some topics, Luapula and Northern Province shared similar

responses, as compared with Southern and Central Provinces which were more similar to each other. For example, the frequency of advice was considerably higher for rice, cassava, sheep and goat production in Northern and Luapula than in the other two provinces. Advice given for oxen use was more frequent in Southern and Central than in Northern and Luapula.

- e) In some instances the frequency of advice given in Southern Province stood quite apart from that given in other provinces. For example, poultry, dairy, beef and farm machinery had a much higher advice frequency in Southern Province.

Information about the frequency with which extension workers give advice on specific topics is helpful for the development of training curricula. These data will be discussed with other training data in Chapter Five and in Appendix B.

4.4 Summary

The role perceptions of extension workers appeared to be ambiguous. Whereas they defined themselves as agents of the government who were separate from the rural community, their job satisfaction was linked closely to rural people and activities. One-half of the respondents aspired to eventually resign from their government post and operate their own farms. Most extension workers expressed their role as directive in relation to the farmer. Few expressed a mediating or facilitating role. They defined themselves as the experts who told farmers the better way. However, they

admitted having great respect for the knowledge and skills of farmers and appreciated the opportunity of learning from them. Although inconsistent with their role definition, extension workers appeared to be people who not only enjoyed but preferred rural life and work. They were part of, not separate from, rural society.

People with such preferences constitute an important human resource for national rural development. The study showed that much dissatisfaction of extension workers was attributed to administrative inefficiencies. This indicates the need for improvement in the management and development of that resource.

Some inconsistencies also appeared between the expected and actual performance of extension workers. The lima programme to be implemented through the training and visit system was based on the centrally directed diffusion of innovations strategy. But, in fact, extension workers received little direction or supervision. Their work was mainly isolated from colleagues, support systems and new information. They were independently responsible for planning and implementing programmes. However, they did cooperate informally with local leaders and contact farmers.

The program followed by extension workers showed considerable variability, although it appeared that farmers' meetings and demonstration plots occurred in most camps. Extension workers clearly understood their role to be that of teacher, but other functions were often assumed by local leaders such as organization of meetings, selection of contact farmers, and leadership of community action, for example, forming of cooperatives, planning agricultural shows.

Extension workers did not have a strong perception of themselves in leadership roles.

Extension workers gave technical advice on a wide range of agricultural topics. The frequency of advice on any particular topic was dependent on the farming system used in specific areas.

A number of extension workers indicated that they felt they were contributing to the development of their nation and to the improvement of rural living standards. They received job satisfaction from seeing malnutrition reduced because of their intervention. Advice given about human nutrition by male extension workers was not very frequent but was consistently given in each province. Advice given about vegetable production was highly frequent, the results of which could improve family nutrition.

From these findings, it can be summarized that the situation in agricultural camps required extension workers to work independently under less than favourable conditions. They needed a wide range of agricultural technical skills and also human resource development skills such as organization, leadership and facilitation. They enjoyed rural life and gained satisfaction from observing the results of their contribution to rural development.

CHAPTER FIVE

THE TRAINING OF AGRICULTURAL EXTENSION WORKERS

5.1 Introduction

The understanding that extension workers have of their role and the skills they bring to effective job performance were developed significantly during their two years of intensive training at a Zambian College of Agriculture either at Monze or at Mpika. Following the same two-year syllabus, these colleges produce graduates with Certificates in Agriculture. Differences between their history, location and administration contribute to differences in the training received at each. Introductory details about the training institutions and their program is given in Section 2.3.

5.2 Personnel

5.2.1 Students

The present study inquired into the background of the students at both colleges, their prior experience within the Department of Agriculture, and their career aspirations. It also examined the living conditions experienced by students while at the Z.C.A.'s. The data were gathered mainly from the Student Survey and from participant observation of the researcher.

5.2.1.1 Background

The educational prerequisite of form III for entrance to Z.C.A.'s was met by all except for five respondents from Mpika Z.C.A. Over

seventy percent of all respondents had completed form V. Over sixty percent of the respondents had studied agricultural science in Secondary School; of whom 45 percent affirmed that much of that course was repeated in Z.C.A.

An examination of the rural experiences of Z.C.A. students showed that 37 percent spent the first fifteen years of their lives in rural areas, while 23 percent were from the cities. Almost one-quarter attended a rural secondary school. Thirty percent had never worked in a rural area. About 40 percent of the respondents had never cultivated a lima prior to entering Z.C.A.; however, over 40 percent had planted one or two limas and nearly 20 percent had planted three to eight limas.

5.2.1.2 Experiences with the Department of Agriculture

Prior to entering Z.C.A. all students were to be accepted by the Department of Agriculture as trainees, and should have completed a minimum of nine months experience in the field plus a three-month induction course at a provincial farm institute. The exceptions were those students who were seconded to the Z.C.A. by other ministries (nine percent) or parastatals (five percent).

About 85 percent of respondents to the Student Survey were employed by the Department of Agriculture before coming to Z.C.A. The majority (70 percent) of the respondents had worked in agricultural camps, about 14 percent had been at farm training centres, about 12 percent in District offices, and three percent in other Department of Agriculture posts. Over 80 percent of the respondents attended a

provincial induction course, and most (over 90 percent) evaluated the course favourably, although nearly one-half the respondents said that material taught in the Induction Course was repeated at Z.C.A. Some students commented:

Most of the lecturers they were from Z.C.A. so they taught us the material they learnt at Z.C.A.

The training here is good for us as farmers but not for the subsistence people, most of the ones we will be working with. Our induction course was good for that. We were from there, worked in the same district and were trained there. We needed another couple of months to six months.

The frequencies of experience with the Department and of the length of time spent in camps prior to college entrance were similar for each Z.C.A. Table 5.1 indicates that nearly one-quarter of those with camp experience were there for less than one year, but over one-half had spent two or more years in camps. Most of the respondents who had camp experience were posted with an experienced person - 61 percent with A.A.'s or S.A.S.'s, 15 percent with Commodity Demonstrators; however, about 20 percent indicated that they had been posted alone.

About 70 percent of Student Survey respondents who had camp experience enjoyed their study there. When asked to give reasons for the enjoyment or non-enjoyment of their experience in the camp, responses were similar to those of the general extension workers when asked a similar question about job satisfaction. Table 5.2 indicates that poor conditions of service accounted for most of the negative responses, whereas there was evidence that job satisfaction came

Table 5.1. Time Spent by Z.C.A. Students in Agricultural Camps.

<u>Time in Camp</u>	<u>Number of Students</u>	
	<u>No.</u>	<u>%</u>
Less than 1 year	54	24%
1 year	42	19
2 years	112	50
3 to 5 years	13	6
6 to 10 years	3	1
11 to 15 years	<u>1</u>	<u>0</u>
Total	225	100%

Table 5.2. Z.C.A. Students' Comments About Camp Enjoyment/Non-Enjoyment by Work Experience and Conditions of Service.

<u>Areas Related to the Job</u>	<u>Comments About the Job</u>			
	<u>Enjoyment</u>		<u>Non-Enjoyment</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
i) Work Experience				
Learning opportunities	15	21%	3	9%
Rural people	25	35	2	6
Type of work	<u>24</u>	<u>34</u>	<u>3</u>	<u>9</u>
Subtotal	64	90%	8	24%
ii) Conditions of service				
Transport	0	0%	11	31%
Accommodation	0	0	9	26
Salary	0	0	2	6
General conditions	0	0	5	14
Colleagues and supervisors	<u>7</u>	<u>10</u>	<u>0</u>	<u>0</u>
Subtotal	<u>7</u>	<u>10%</u>	<u>27</u>	<u>77%</u>
Total	71	100%	35	101% ^a

^a Total is more than 100 percent due to rounding.

primarily from the cooperation and friendliness of rural people/farmers, and from the work itself such as teaching, discussing, and agricultural activities. The trainees enjoyed the opportunity to learn from farmers, often mentioning the practical experiences gained. Unlike the responses of the Graduate Survey (see Table 4.3), there was no mention in these answers of contributing to national development or preparing for private farming in future. Also, unlike the Graduate Survey respondents, the trainees expressed more favourable responses to the support given by fellow workers and supervisors, and had no complaints about administration.

5.2.1.3 Career Aspirations

Over 60 percent of the Student Survey respondents indicated that agriculture was not their first career choice (see Table 5.3).

Table 5.3. First Career Choices of Z.C.A. Students

<u>Career Choices</u>	<u>Number of Students</u>	
	<u>No.</u>	<u>%</u>
Agriculture	113	35%
Technical/Trades	63	19
Education	58	18
Medicine/Health	29	9
Business	26	8
Industry/Mines	12	4
Other (e.g., Police, Military, Church)	<u>21</u>	<u>7</u>
Total	322 ^a	100%

^a Missing cases = 3

When asked why they had joined the Department of Agriculture, a variety of reasons were given. Over one-quarter of the respondents said they were interested in agriculture. Almost one-half referred to their desire to contribute to national agricultural productivity or to improve the standard of living in rural areas. Another 25 percent said they joined because training in agriculture prepared them for self-employment as a farmer in the future, after retiring or resigning from the Department of Agriculture. Only 10 percent said they joined when all other possibilities for career training had failed (see Table 5.4).

Table 5.4. Reasons Z.C.A. Students Chose Career with Department of Agriculture.

<u>Reason Given</u>	<u>Number of Students Giving Each Reason^a</u>	
	<u>No.</u>	<u>%</u>
Earn a living	15	18%
No job/other opportunities failed	9	11%
Interest in agriculture	23	27%
Contribute to national or rural development	37	44%
Prepare for future self- employment	21	25%
Father/family influence	5	6%
Other	3	4%

^a Percentages based on number of respondents. Total reasons is greater than N = 84 because some respondents gave more than one reason.

Students were asked what they hoped to do in the future years. Whereas 40 percent chose to remain with the Department of Agriculture until retirement, over one-third proposed to resign and work on their personal farm. Compared with the findings shown in Table 4.4, it appears that the aspiration to be a self-employed farmer was more frequent amongst extension workers (Z.C.A. graduates) than with Z.C.A. students.

Three aspects of the more immediate aspirations of Z.C.A. students were examined. They were asked to indicate what type of community, what province and what type of work they would prefer after graduation. Only one-half of the student respondents expressed a preference to work in rural areas rather than in small towns or cities. This percentage was slightly lower for second year students (45 percent) than for first year students (55 percent), whereas the number of students preferring to work in cities was higher for second-year than first-year respondents. These trends were present in the results from both Monze and Mpika Z.C.A.'s (see Table 5.5).

The largest representation of student respondents came from Northern Province (21 percent), then Eastern (20 percent) and Western (19 percent) Provinces, with a much smaller number coming from Central Provinces (seven percent). Survey results indicated that whereas an average percentage selected to return to work in Eastern (13 percent) and Western (12 percent), a small percentage selected Northern Province (eight percent), considered by some to be one of the most agriculturally underdeveloped provinces. The highest percentage of students decided to work in Central Province (19 percent), which is

Table 5.5. Choice of Community Students Prefer Upon Graduation.

Community Preference	Z.C.A. Students					
	First Year		Second Year		Total	
	No.	%	No.	%	No.	%
Rural Area	90	55%	69	46%	159	51%
Small Town	68	42	69	46	137	44
	<u>5</u>	<u>3</u>	<u>13</u>	<u>9</u>	<u>18</u>	<u>6</u>
Total	163	100%	151	101% ^a	314	101% ^a

^a Total more than 100 percent because of rounding.

one of the most accessible to goods and services. However, the smallest percentage chose Lusaka Province (seven percent), indicating some aversion to be posted in or near the capital (see Table 5.6).

Students were asked to indicate their first and second preferences for the type of work within the Ministry of Agriculture and Water Development which they wanted after graduation. They had six options: general extension camp officer, training (F.T.C., F.I.), planning, research, rural information or other.

Tables 5.7 and 5.8 indicate that the selection by all student respondents for general extension work (33 percent) was only slightly higher than for training (29 percent). Monze students showed a stronger preference for extension work (42 percent), whereas Mpika students showed most preference for training (37 percent). There appeared to be a tendency for the preference for extension work to

Table 5.6. Z.C.A. Students' Home Province and Provincial Choice After Graduation.

<u>Province</u>	<u>Home Province</u>		<u>Provincial Choice After Graduation</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Northern	63	21%	23	8%
Central	21	7	59	19
Luapula	28	9	25	8
Southern	29	10	33	11
Eastern	61	20	40	13
Western	57	19	37	12
North Western	32	11	34	11
Copper Belt	11	4	35	11
Lusaka	4	1	21	7
Total	306	102% ^a	307	100%

^a Total is larger than 100 percent because of rounding.

Table 5.7. First Preference of Z.C.A. Students for Work After Graduation.

<u>Type of Work</u>	<u>First Preference of Students</u>					
	<u>Monze Z.C.A.</u>		<u>Mpika Z.C.A.</u>		<u>Total Students</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
General Ext./						
Camp Officer	73	42%	32	23%	105	33%
Training	39	22	52	37	91	29
Land Use						
Planning	30	17	34	24	64	20
Research	25	14	16	11	41	13
Rural Info.	4	2	4	3	8	3
Other	4	2	3	2	7	2
Total	175	99% ^a	141	100%	316	100%

^a Total more than 100 percent because of rounding.

Table 5.8. Z.C.A. Students with First Preference for General Extension Work: Year of Training by Z.C.A.

<u>Year of Training</u>	Z.C.A.					
	Monze		Mpika		Total	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
First Year	43	59%	24	75%	67	65%
Second Year	<u>30</u>	<u>41</u>	<u>8</u>	<u>25</u>	<u>38</u>	<u>36</u>
Total	73	100%	32	100%	105	101% ^a

^a Total more than 100 percent because of rounding.

decrease from first to second year in both colleges, similar to the tendency to want to live in rural areas.

Table 5.9 indicates that of those 92 students who selected general extension work as their first choice, 78 of them (85 percent) enjoyed their pre-Z.C.A. stay in camp. Of all students who enjoyed their camp experience, the largest percentage (39 percent) chose to work in camps after graduation. On the other hand, of the students who did not enjoy their camp experience, the percentage who chose to return to camps (21 percent) was smaller than either those who chose training (32 percent) or planning (28 percent).

5.2.1.4 Living Conditions

Although parallels were observed between the two Z.C.A.'s, significant differences appeared in the living conditions at each college.

Table 5.9. Z.C.A. Students' First Preference for Work After Graduation by Enjoyment of Camp Experience.

First Preference for Post-Graduation Work	Camp Experience					
	Enjoyed		Did Not Enjoy		Total	
	No.	%	No.	%	No.	%
General Ext./						
Camp Officer	78	39%	14	21%	92	34%
Training	52	26	22	32	74	27
Land Use						
Planning	39	19	19	28	58	22
Research	25	12	10	15	35	13
Rural Info.	5	3	2	3	7	3
Other	3	2	1	2	4	2
Total	202	101% ^a	68	101% ^a	270	101% ^a

^a Total more than 100 percent because of rounding.

At Monze Z.C.A., where facilities are older, student residences were more crowded than at Mpika where each student was equipped with space and furnishings for private study. Bedding and all personal supplies were the responsibility of each student. Those previously employed by the Department of Agriculture received an allowance of K15 per month.

Students were served breakfast plus two cooked meals every day. Monze Z.C.A. provided a variety of nutritious meals, supplied mainly from the college farms. Protein food and vegetables were offered at all meals and milk was available at least once a day. At Mpika, where supplies were more difficult to obtain and where the college farm was less productive, meals were more repetitive, with fewer servings of

protein foods, vegetables and milk.

The relative remoteness of Mpika Z.C.A., compared with Monze Z.C.A., affected accessibility to goods and services. Markets at Mpika town were not only much further from the campus, but shops were fewer and not as well stocked as in the more populated and established commercial area of Monze. Each college had a clinic on campus where simple health services were available. Otherwise medical attention was sought at the nearby hospital in Monze. People from Mpika Z.C.A. preferred to travel fifty kilometres to the mission hospital at Chilonga rather than to the poorly equipped Mpika District Hospital in town.

Community entertainment was organized at both colleges in the form of film shows, discos, drama and dance groups. Organized sports competitions occurred between teams from neighbouring institutions and communities, while facilities were also available for individual and casual sports. Hobby clubs such as art, photography, dance and drama, functioned according to the enthusiasm of members and the availability of materials. The press club at each college published a Z.C.A. paper documenting some of the more informal campus happenings. Monze students could move quite easily to town and could request a weekend pass to go to Lusaka. Mpika's isolation made travelling difficult, if not impossible. However, people of each Z.C.A. community, as well as from nearby villages, hosted private parties to entertain interested students and staff.

At Monze Z.C.A., students participated in most aspects of college life through a system of committees (e.g., academic, disciplinary,

entertainment, catering), through class monitors, dormitory heads and a students' council. These bodies formed a system which provided channels of communication between levels and sections of the Z.C.A. community. Nearly 60 percent of Monze Student Survey respondents said they felt that students were involved in college decision-making. Generally, discipline was considered firm and consistent.

The principal, assisted by the vice-principal, each with considerable Zambian administrative experience, managed staff and student personnel as responsible adults, allowing freedom to work and live their lives within established behavioural bounds.

When invited to comment on Z.C.A. life, there were few complaints from Monze students. Some sample comments follow:

I am well treated, trained, though some books, etc.
to use are lacking.

Good meals ad lib.

A very competent place to be in.

There is freedom and free learning.

At Mpika, although student representatives sat on the various college committees, it appeared that the college had not yet established its own traditions, standards of discipline and efficient systems of administration. In its short history, there have been several principals, vice-principals and acting administrators, both Swedish and Zambian. There were incidents of student unrest and rumours of double standards and injustice in the application of discipline, particularly in matters of relationships between staff and

female students and with regard to drunkenness. Sixty-three percent of the Mpika respondents said that students were not involved in college decision-making (see Table 5.10).

Table 5.10. Perceptions of Students' Involvement in Decision-Making by Z.C.A.

Students Involved in Decision-Making	Z.C.A.					
	Monze		Mpika		Total	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Yes	95	58%	50	37%	145	48%
No	<u>70</u>	<u>42</u>	<u>85</u>	<u>63</u>	<u>155</u>	<u>52</u>
Total	165	100%	135	100%	300	100%

Comments from the Mpika sample of the Student Survey indicated a higher incidence of complaints along with favourable statements, compared with Monze. Some examples follow:

It's a problem to get things like soap, washing powder, etc. Not balanced diet.

Poor diet, being used for cheap labour, no entertainment, we are being treated as children, hopeless rules, etc.

There is no freedom of students suggestions, everything is just dished to students without question.

We are properly catered for socially and academically.

The course curriculum is good but the content is poor because of teachers coming while drunk and the leadership is poor.

People are being unfair by giving their girl friends more marks and we are suffering.

There appeared to be differences between the living conditions of students of each college. However, when asked if they enjoyed being at Z.C.A., the overall affirmative response was high (90 percent); 83 percent of Mpika students saying 'yes' and 96 percent of the Monze students saying 'yes' (see Table 5.11).

Table 5.11. Students' Enjoyment of College by Z.C.A.

	Z.C.A.					
	Monze		Mpika		Total	
	No.	%	No.	%	No.	%
Students Enjoy Z.C.A.						
Yes	170	96%	120	83%	290	90%
No	7	4	24	17	31	10
Total	177	100%	144	100%	321	100%

5.2.2 Training Staff

Although the extent of the influence of Z.C.A. training staff upon student extension workers is not quantifiable, it can be assumed that such influence over a two-year intensive training period and eventually upon the extension system, is considerable. Therefore, a

better understanding of extension workers will be gained from a description of those directly responsible for their training.

5.2.2.1 Academic Qualifications

Training staff were officially categorized mainly according to educational qualifications. The upper categories, Training Officer and Senior Training Officer, who usually were university educated, received the highest salaries and high-cost housing. There was wide variation in their practical experience. Practical Instructors, the majority of the junior staff, were recent diploma graduates of Natural Resources Development College, who could realistically hope to be selected for university studies abroad. Those few members of the training staff who had only a Z.C.A. certificate plus several years experience, had little hope of promotion beyond Senior Agricultural Assistant.

The Staff Survey results indicated that of the 21 respondents, one had only a Z.C.A. certificate. Sixteen (76 percent) were N.R.D.C. graduates, half of whom had further training since receiving that diploma. Five (25 percent) had a university degree, most of whom had other specialized training as well.

The shortage of staff at both colleges necessitated that all levels of staff be given a range of temporary responsibilities - teaching, practical demonstration, farm operation and management - for short or long time periods. It was not uncommon to find people with little experience or education attempting to carry double work loads.

The main reason for staff shortages was the high percentage of

staff who were away from their post on study leave. When a staff member was selected for study abroad, notification was usually given less than a month before the course commenced, during which time many administrative procedures were necessary, leaving little time or opportunity for planning, execution and distribution of training responsibilities. The number of staff on study leave varied every few months because the length of courses abroad ranged from six weeks to three years. It could be anticipated that thirty to forty percent of the training staff were away on study leave at any one time (see Table 5.12).

The appropriateness of foreign studies to Zambians working with subsistence and small-scale farming systems was in question. Most training staff preferred to be sent to Europe or North America; some were sent to Tanzania, where it was said that shortages were more acute than in Zambia; or the University of Zambia, Lusaka, which rarely was as appealing as flying abroad. Northern hemisphere agricultural institutions generally tend to emphasize modern, capital-intensive farming technologies applied to temperate climatic conditions. Young Zambians are faced with a challenge to apply this new knowledge to the very different realities of Zambia's agricultural sector. They were sent out with very little preparation and given little assistance in readjusting when they returned. The confusion arising from this foreign study experience could be reflected in their teaching at the Z.C.A.'s. Several observations were made of staff teaching students about foreign concepts such as the need for controlled environment in poultry housing, calibration of tractor

Table 5.12. Z.C.A. Training Staff Location by Department.

Department																
	Animal Prod.		Crop Prod.		Ext.		Agro Eng.		Farm Mgmt.		Home Science		Agric. Science		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Monze																
On post	5	63%	3	43%	2	50%	3	75%	2	50%	2	100%	2	100%	19	61%
On study leave	8	37	4	57	2	50	1	25	2	50	0	0	0	0	12	39
Total	13	100%	7	100%	4	100%	4	100%	4	100%	2	100%	2	100%	31	100%
Mpika																
On post	3	50%	6	60%	6	100%	6	100%	3	75%	-- ^a	--	1	33%	25	71%
On study leave	3	50	4	40	0	0	0	0	1	25	--	--	2	67	10	29
Total	6	100%	10	100%	6	100%	6	100%	4	100%	--	--	3	100%	35	100%
Total																
On post	8	57%	9	53%	8	80%	9	90%	5	63%	2	100%	3	60%	44	67%
On study leave	6	43	8	47	2	20	1	10	3	37	0	0	2	40	22	33
Total	14	100%	17	100%	10	100%	10	100%	8	100%	2	100%	5	100%	66	100%

^a Figures not available.

mounted sprayers, and preparation of sponge cakes and beef stew with dumplings using electric cookers.

5.2.2.2 Practical Experience

Whereas much importance appears to be given by the M.A.W.D. to increasing the academic qualifications for training staff, there seems to be much less emphasis placed upon the value and acquisition of practical experiences. Although 50 percent of the Staff Survey respondents spent their first 15 years in a rural area, one-third said that they have never had farming experience and another 24 percent said that they had one year of experience or less. A large majority of the respondents had had no experience in the Department of Agriculture at provincial, district, or camp level or in training centres. A Z.C.A. post was considered a career beginning for young diploma graduates who aspired to achieve higher status within the Ministry of Agriculture and Water Development. One-quarter of the respondents were at Z.C.A. as their first post since leaving college; it was only the second posting for another 24 percent (see Tables 5.13 and 5.14). Just over one-half of the Staff Survey respondents were personally cultivating some limas.

Students of both Z.C.A.'s commented about the lack of practical experience and the shortage of training staff:

Some staff have no field experience while students have! Funny.

To me now lecturers are not experienced, therefore some are not good. Most teachers time and again are going out for studies and leaving us with only unexperienced and bad staff.

Table 5.13. Length and Variety of Work Experience of Z.C.A. Training Staff.

Type of Work Experience																
Length of Experience	Rural Work		Camp		District		Province		FTC or FI		Extn. Work		Farming		Z.C.A.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
None	7	35%	19	95%	15	75%	13	65%	16	80%	13	62%	5	31%	0	0%
2 years or less	3	15	0	0	1	5	2	10	1	5	--a	--	7	44	6	30
More than 2 years	10	50	1	5	4	20	5	25	3	15	--	--	4	24	14	70
Total	20	100%	20	100%	20	100%	20	100%	20	100%	21	100%	16	100%	20	100%

a Figures not available.

Table 5.14. Number of M.A.W.D. Posts Held by Z.C.A. Training Staff.

Z.C.A. Teaching Staff		
<u>Number of M.A.W.D. Posts</u>	<u>No.</u>	<u>%</u>
One	5	25%
Two	5	25
Three	4	20
Four	1	5
Five	3	15
Six	<u>2</u>	<u>10</u>
Total	20	100%

We are running short of staff due to going abroad, otherwise if all were around, subjects would have been interesting.

Students were asked whether they thought staff had the theoretical knowledge or the practical skills needed to work with small-scale farmers. The results indicated that students felt that staff were more capable in theory than in practice. Mpika students had less confidence in the abilities of their staff than Monze students (see Table 5.15).

Staff members also expressed their concerns about training at Z.C.A.'s. Some examples follow.

... alright, only Swedish.

Staff with little practical training [N.R.D.C. and U.N.Z.A.] are often in difficulty with students who have had field induction course and at least one year experience. Therefore, it would be better if after graduation, they could have one to two years in the field before coming as staff. Certificate course has more practicals than diploma or degree.

Table 5.15. Confidence of Z.C.A. Students in Training Staff at Each Z.C.A.

<u>Area of Confidence</u>	Z.C.A. Students					
	Monze		Mpika		Total	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Staff Practical Skills						
Have confidence	121	72%	80	58%	201	66%
Have no confidence	46	28	57	42	103	34
Total	167	100%	137	100%	304	100%
Staff Theoretical Knowledge						
Have confidence	141	84%	112	82%	253	83%
Have no confidence	27	16	25	18	52	17
Total	168	100%	137	100%	305	100%

Problem with Mpika is not training but administration. There are many systems, not judging them, they work where they are, e.g. Swedish, British, Zambian. The Zambians are used to the British system and are patterning theirs from that; used to discipline and authoritarian hierarchical set up.

There is no discipline in this place. The students run this place.

Their [N.R.D.C. Graduates] training is urban biased and they are urban motivated, a problem area because they cannot apply to rural realities - not trained in rural development.

5.2.2.3 Job Satisfaction and Career Choice

Over 80 percent of the Staff Survey respondents indicated that they enjoyed their work. Reasons given included their liking for agriculture and for teaching, and the opportunity to learn more, to gain practical experience and to contribute to national agricultural development. Only two respondents did not enjoy their work, one because of departmental administrative problems and the other because promotions were hindered.

Most (95 percent) Staff Survey respondents indicated that agriculture was their first career choice. The one exception said that forestry was his first choice before moving into agriculture. Nearly 40 percent were influenced to make this career choice because they grew up in a rural and/or farming family, or because they enjoyed working in a primary or secondary school farm production unit. There was a strong indication that the respondents had a deep positive feeling for agriculture, including the long-term benefits of it as a viable personal enterprise.

At the Z.C.A.'s, staff did not appear to be encouraged to keep up to date with their subjects and to introduce new findings into their teaching, but rather appeared to be bound to the course outline laid down in the syllabus. Neither staff room had a magazine rack. New publications or newspaper articles were seldom posted to create awareness in agricultural developments beyond the Z.C.A. campuses. Lack of transport and time restricted staff opportunities to visit and learn from other agricultural ventures. However, for a few months, the I.R.D.P. based at Mpika initiated regular joint seminars with Z.C.A.

and I.R.D.P. staff, when current information from each project could be shared. Unfortunately, Z.C.A. staff were not prepared to assume responsibility for alternative sessions, so seminars were discontinued.

5.3 Program

5.3.1 Calendar and Timetable

Both Z.C.A.'s were following the same academic program and syllabus. The annual college calendars were parallel, however the day-to-day execution of calendar and curriculum was distinctive to each college.

The college year opened in early October and continued through to graduation day early in July following the Zambian growing season. The year was divided into two terms separated by a month long break around February as shown in Table 5.16. In recent years, courses had not been conducted at either college from July to October, although training staff, farm managers and general workers remained on-site. However, current proposals from the Department of Agriculture and Training suggest in-service courses for Z.C.A. graduates during those months. Only exceptional circumstances such as the funeral of a staff member altered the annual calendar.

Class attendance at Monze college was taken by the class monitors, who were also responsible for controlling the noise level of students and attending to any errands such as collecting chalk and handouts. At Mpika, the teachers usually called the roll and signed the class list at the beginning of each period. Class monitors were

Table 5.16. Proposed Academic Program for 1983/84 Z.C.A. Calendar.

October, 1983	College opens
December 21-28, 1983	Christmas break
January 20, 1984	Teaching stops
January 26, 1984	Terminal exams start
February 3, 1984	First term ends
March 5, 1984	Second term starts
June 1, 1984	Teaching stops
June 7, 1984	Final exams start
June 15, 1984	Final exams end
June 27-29, 1984	Supplementary exams
July 6, 1984	Graduation day

used for errands and timekeeping, but did not assume the same degree of authority as was observed of their counterparts in Monze.

5.3.2 Teaching/Learning Methods

Engrained in the formal education system of Zambia is an authoritarian pedagogy, oriented principally toward final examination results. This approach supports teacher-centred rote learning rather than learner-centred problem-solving education for the development of life skills. Z.C.A. students and their training staff were products of such a system and it was not uncommon for a more liberal approach to education to be neither understood nor appreciated.

For the last few years, Wolverhampton Polytechnic U.K., had been involved in a project to provide short-courses in educational theory and teaching techniques for staff of Zambian Agricultural education institutions. Each August, faculty from Wolverhampton joined Zambian training staff for a three-week intensive

Table 5.17. Monze Z.C.A. Daily Timetable, December 1983.

Monze Student Timetable			
<u>Time</u>	First Year	Second Year	
	<u>Monday to Friday</u>	<u>Monday, Tuesday, Thursday, Friday</u>	<u>Wednesday</u>
0800-0850	Theory	Theory	Practicals
0855-0945	Theory	Theory	Practicals
0950-1040	Theory	Theory	Practicals
1040-1055	BREAK	BREAK	BREAK
1100-1150	Theory	Theory	Practicals
1155-1245	Theory	Theory	Practicals
	LUNCH	LUNCH	LUNCH
1400-1700	Practicals	Practicals	Practicals

Table 5.18. Mpika Z.C.A. Daily Timetable, January 1984.

Mpika Student Timetable				
<u>Time</u>	First Year		Second Year	
	<u>Day 1</u>	<u>Days 2,3,4,5</u>	<u>Day 1</u>	<u>Days 2,3,4,5</u>
0600-0700	Routine Duty	Routine Duty		
0800-0840	Theory	Theory	Theory	Practicals
0855-0925	Theory	Theory	Theory	Practicals
0930-1010	Theory	Theory	Theory	Practicals
1010-1030	BREAK	BREAK	BREAK	BREAK
1030-1110	Theory	Theory	Theory	Practicals
1115-1155	Theory	Theory	Theory	Practicals
	LUNCH	LUNCH	LUNCH	LUNCH
1350-1415	Theory	Practicals	Theory	Theory
1420-1500	Theory	Practicals	Theory	Theory
1505-1545	Theory	Practicals	Theory	Theory
1550-1630	Theory	Practicals	Theory	Theory

session at one of the Zambian college campuses, and each year Z.C.A. staff were selected to attend three to six month courses in Wolverhampton. Staff members of both Z.C.A.'s spoke highly of the courses and evidence of their influence was observed in improved teaching skills and planned lessons.

Included in the Student Survey was a list of fifteen teaching/learning methods. Respondents were asked to indicate how frequently each method was used at Z.C.A. An index was established with scores from zero to 30. High scores indicate the teaching methods frequently used; low scores, those seldom used (see Table 5.19). The results revealed that the lecture method was used most frequently at both Z.C.A.'s in both years. There were noticeable differences between the frequency of methods used at each college. A comparison of the means seems to indicate that a greater variety of methods were used with more frequency at Monze Z.C.A. than at Mpika Z.C.A.

Through the survey questionnaire, each student was also asked to indicate which teaching methods were most effective in helping him or her to learn. Most students indicated that they learned best through discussions, either in class or small groups. Next, they selected group projects and then lectures as their preferred way of learning. Opportunity to practise skills, farm tours and individual projects were also rated highly. Discrepancies were evident between the preferred student learning methods and the frequency of teaching methods used at each Z.C.A.

A variety of teaching methods and a wide range of skills were

Table 5.19. Z.C.A. Student Survey: Index Indicating Use of Various Teaching Methods at Each Z.C.A.

<u>Teaching Method</u>	Index of Use of Teaching Methods ^a			
	Monze		Mpika	
	<u>First Year</u>	<u>Second Year</u>	<u>First Year</u>	<u>Second Year</u>
Lecture	29	29	29	27
Class discussion	14	21	14	19
Small group discussion	6	13	4	9
Reading assignments	15	22	14	9
Group projects	19	27	10	18
Individual projects	28	25	10	10
Helpful corrections	12	19	9	4
Role play/sketches	6	7	6	5
Staff demonstrations	8	12	8	6
Staff observation of student, then advising	15	19	11	8
Staff working alongside student to give example	17	21	11	11
Student opportunity to practice new skills	11	21	9	13
Learning from other students	18	25	15	20
Farm tours	11	24	5	10
Village visits	<u>5</u>	<u>14</u>	<u>4</u>	<u>8</u>
Mean	14	20	10	12

^a Index from 0 to 30, with high scores indicating the teaching method most frequently used.

observed at the Z.C.A.'s during two weeks of participant-observation at each college. There was a marked difference between the theory lessons conducted in classrooms and the practical lessons, usually conducted at the relevant farm location.

5.3.3 Theory Classes

Throughout the participant-observation of 53 theory classes, modifications of the lecture method prevailed, with only two exceptions when problem-solving learning was skillfully facilitated. Student participation and discussion varied according to subjects and teachers, some of whom allowed students to challenge the lesson content, while others were more defensive. At neither college did students appear intimidated by staff, some students admitting openly that they would study the lesson for examination purposes, but would not necessarily agree with what was taught. Only a few teachers invited students to share their field experiences in class discussions. Occasionally, however, students readily expressed their opinions and asked questions. Sometimes, however, the content was uninspiring and the students seemed dozy, particularly when they had been working long hours each day in the field.

Language and vocabulary were observed to present communication problems. Teachers tended to assume that students understood specialist terms, so that definitions were not often given. Occasionally, when students asked for explanations, it was revealed that teachers themselves did not have a clear understanding of the meaning of words. Following are three examples of confusion arising from poor comprehension of English.

e.g. a) Discussion during an Applied Science class.

Students: How are acids formed in the soil?

Teacher: May I ask a question first? What are acids made of?

Students: [No answer]

Teacher: You mean all these days I've just been talking to myself? Only 1-2-3-4-5-6 people know about an acid, and yet a test is coming. [after some time] An acid is a combination of hydrogen ion plus a radical. You still have a doubt! There is a question in your face.

b) Discussion during Agricultural Engineering class on water control.

Student 1: What is silt?

Teacher: How do you know it?

Student 1: Old boots, wood, lumber, etc.

Teacher: Class, what is it?

Student 2: Small particles of soil.

Teacher: Not floating boots, but small particles.
[Laughter]

Student 2: It is a language problem sir. What do you actually mean by impound water?

c) Following a lively class debate on the advantages and disadvantages of bugetting, one student commented: "I think probably language is also a problem."

d) During a botany class about photosynthesis, when a teacher was quickly dictating notes using the words "absorption", "processes", "chlorophyll", "molecules", "reduction", "carbohydrates", a student was heard commenting, "This is English!"

There was little creative use of teaching aids in theory classes at either college. Most teachers made extensive use of the black-board to write note headings, to draw diagrams, or to write full

notes for students to copy. Each college was equipped with operational overhead, slide and film projectors as well as acetates and other visual aids but only one teacher used an overhead projector and some posters, and one used a plastic model to teach the anatomy of a chicken. Although chairs and tables were movable in both colleges, the furniture was always arranged in rows facing the teacher. No teacher attempted to organize the class in more interactive spatial arrangements.

One major problem facing Z.C.A. training was the lack of textbooks and shortage of duplicating paper and ink. This necessitated dependency on class notes for study. Students, even Form V graduates, did not appear to have developed skills in notetaking and such training was not included in the Z.C.A. curriculum. Therefore, much class time was spent dictating or writing on the blackboard and copying notes. The quality, completeness and conciseness of class notes depended on the varying skills of the teachers who also did not have official notes from which to copy. Frustration was evidenced because of the pace of dictation, spelling and comprehension difficulties, blackboard visibility and hand-writing legibility. Examination of several students' notebooks revealed some serious errors and incomprehensible statements. Occasionally teachers would have notes and diagrams duplicated from stencils for distribution to students, at which times most students would put away their pens and appear to be less attentive to the lesson.

Some teachers gave class assignments to students, however most student work was allotted during practical classes. It was observed

that in the evenings, students tended to group themselves with friends to work on class assignments and to revise their notes. The occasional reading assignment encouraged students to use the library facilities, but it appeared there were few books available at their comprehension level. Being an older institution, Monze possessed the larger library. Efforts were made to receive complimentary texts from publishers, but these volumes appears to be for far more advanced students. However, students were observed perusing books as time permitted. Both libraries received a small range of periodicals and magazines, but there was no presentation or new material through bulletin boards, browsing tables or by staff direction.

In the Student Survey, respondents were asked to check beside a list of given adjectives, those words which described their classes. The percentage of students who checked each adjective is given in Table 5.20, indicating that the majority of students found theory classes interesting and that they were not highly critical of them.

Some comments made by students about theory classes follow.

The presentation of the material is okay, but there are no discussions made or practices but spoon-feeding only.

The teaching methods are good since we are given free periods for reading.

The teaching methods are mostly only one way but very little feed back from student.

Good lectures should have the extension approach to students as we are adults.

Methods are good but staff should get involved more practically than theoretically.

Table 5.20. Z.C.A. Students' Opinions of Theory Classes.

<u>Description of Classes</u>	<u>Percentage of Students Who Checked Each Description</u>		
	<u>Monze Students</u>	<u>Mpika Students</u>	<u>Total Students</u>
Interesting	80%	58%	71%
Boring	2%	7%	5%
Too many	30%	34%	32%
Too few	4%	7%	5%
Appropriate	39%	28%	34%
Irrelevant	9%	20%	14%

The teaching method is not good because the lectures are presented according to the wishes of the lecturer. However, learning is possible.

Too much untold material given in handout. Too much work to be covered in a short period.

Comments about their theoretical training were also made by extension workers on the Graduate Survey. Looking at their training in retrospect seemed to make them generally less critical of it than in-course students were. However, some did say that the training was difficult and worth of more than a certificate, comparing it with the N.R.D.C. diploma. There were a number of comments about the need for specialization during the last few months of training. Examples of some of their comments follow.

The knowledge I acquired at Z.C.A. Mpika was very helpful. This time I'm writing I have not much problems in my work. I'm still praising the staff at Z.C.A. to continue with the same spirit of teaching methods.

The training was exemporally perfect, but it was/is too soft compared to the actual situation in the field.

More visual aids should be used in their teaching rather than learning in abstract.

The college had no idea of letting students learn from other students in some areas but the full course was quite educative and good.

The courses we take at Z.C.A. are really helping most of the students who graduate at these colleges to have many opportunities, e.g. leave employment and run their own farm or be employed by other companies.

5.3.4 Practical Classes

A wide variety of teaching-learning methods were observed in the programming of student practicals. These included staff demonstrations, students individually practising new skills, group and individual projects, visits to farmers and agribusinesses, guest speakers and routine duties. Each department used different techniques which students could observe and practice, each requiring procedural planning.

Reaching a balance between theory and practical classes and between each department's requirements and demands, without overtaxing the stamina of the students, and keeping within the constraints of weather and breeding patterns, required continuous efficient administration as well as careful annual planning.

The importance of practical agricultural training for future extension workers was demonstrated by the large financial investment in the development and maintenance of the Z.C.A. farms, whose primary

stated function was to provide educational opportunities for the students. Both colleges had facilities for demonstrating many aspects of farm operations, albeit within the realistic constraints of farming in Zambia today. These constraints were more obvious at Mpika because of its location in a more remote area of Zambia than Monze. Students observed not only specific animal or crop production practices but also the management of the college farm.

It appeared that students at Mpika Z.C.A. were assigned more laborious field work than their colleagues at Monze. In crop production, every second year Monze student was responsible for three 100 metres rows -- one of cotton, one of maize and one of sunflower. Mpika students had twice that amount -- 200 metre rows each of maize, beans and groundnuts. With heavier soils and higher rainfalls in Mpika, the students were working from dawn to dusk, cultivating and weeding, as well as attempting to attend to their theory lessons and other assignments. First year students at Monze did not have routine duties every morning from six to seven hours as their counterparts did at Mpika.

The opinions of Z.C.A. students about their practical training were expressed on the Student Survey and shown in Table 5.21. As in Table 5.20, students selected from a list those words which described their practical training. Table 5.21 shows the percentage of students who checked each adjective. Obvious differences can be seen between the opinions of Monze and Mpika students, the latter being more critical of their practical training.

Table 5.21. Z.C.A. Students' Opinions of Practical Training.

<u>Description of Training</u>	<u>Percentage of Students Who Checked Each Description</u>		
	<u>Monze Students</u>	<u>Mpika Students</u>	<u>Total Students</u>
Interesting	65%	48%	58%
Boring	8%	11%	9%
Too many/much	20%	49%	33%
Too little/few	13%	6%	10%
Appropriate	37%	28%	33%
Irrelevant	12%	12%	12%
Well organized	39%	17%	29%
Poorly organized	11%	25%	17%

On both the Graduate and the Student Surveys, the respondents were invited to comment on the training of extension workers. This elicited a large number of responses about the importance and nature of practical training. There seemed to be concern that theory lessons took precedence over practicals because less time was scheduled for actual teaching of practicals and less emphasis seemed to be placed upon them during final examinations. Some demonstrations were only given once and opportunity could not be given to each student to try the technique. However, the practical assignments required a large amount of student's time to do repetitive work, which drew several complaints. Students commented on the importance of practical over theory in training them for their future as extension workers, but there were varied opinions about the suitability of the practical training to the subsistence and small-scale farmer. Students also asked to be provided with protective clothing from the

college, and to be given more opportunity to visit villages and farms to see other farming methods. Some examples of students' comments follow.

Practicals are doing a lot to prepare us for field work.

Some practicals are useless.

Whatever we are taught theoretically should be done practically immediately after classes.

They should put more practicals because we are not going to use theory in the field.

On the practical point of view, there is too much repetition of training, hence giving no chance for other topics, most of them are irrelevant to small-scale farmers.

The practical part is too much compared to the allowances we get.

There should be more practical than theory since we rely on the practical in rural Zambia when training farmers. Practical must involve students going in villages and not only doing practical work in the college area. We should train to teach farmers and not fellow students.

Shortage of tools for practicals.

Due to limited time practical learning seems to be complicated.

Graduates of both Z.C.A.'s posted in agricultural camps contributed comments about their practical training. Most comments were complimentary of their training but there were a number of graduates who emphasized the importance of practical over theory lessons in preparation for extension work. Several respondents made specific suggestions concerning the improvement of practical training. Some

examples follow.

Training at Z.C.A. is quite good if they can increase the more practical training because in the field mostly we are involved in practical things.

My training at Z.C.A. was very nice but in some subjects I had no equipment for experiment.

Students should be allowed enough time to practice new skills, enough animals should be reserved for practical purposes, e.g. branding, castration, etc. for every student to practice. More visits to farmers so that students will be getting used to the type of people they will be serving in the field.

At Z.C.A. there are a lot of things to learn with a very short time. You can learn at castration today and you never learn about it again until graduation. There are plenty of material to learn. So it could be better if students were given chance to practice on a new skill while material is too much (make it three years) and in-service training should be there.

There should be more practical experience such as farm tours, demonstrations in villages, especially during the planting time, working systems of organizations such as A.F.C., R.D.C. and others that we work with when we are in the field.

Students don't learn at practicals but only labour to produce more to have more marks. Students don't evaluate different treatments because research methods are not taught.

At Z.C.A. I enjoyed very much with practicals because here in the field is which helps with these illiterate farmers. I have found in this rural life when teaching them it should frequently be taught than theory.

5.4 Curriculum

There was no system or faculty position associated with the Z.C.A.'s for continuous curriculum development. The content and

emphasis of courses reflected what was inherited over the years and what the current faculty were able to teach. A course syllabus (M.A.W.D., 1982) jointly prepared by staff itemized the content of theory and practical topics to be covered by each department. This syllabus served as a handbook outline for teachers. It was not the result of an ongoing process of curriculum development, but rather of ad hoc pragmatic decisions.

A training curriculum preparing workers in an effective extension service which is adaptable to its clients must be formulated from field realities. The opinions of extension workers (Z.C.A. graduates) about the curriculum are worthy of consideration because they live and work with small-scale farming families in rural communities. The majority of Z.C.A. students have also had at least two years experience in rural postings. Z.C.A. graduates and students were asked to participate in assessing college curriculum topics as to how well the training prepared extension workers for work with small-scale and subsistence farmers. They were also asked to indicate their opinions as to which topics were most important to their work in the field. As well, they were requested to comment about their training.

Opinions of Z.C.A. students and graduates were formed by their field experiences and by their training experiences. They were first-hand and could not be neglected. However, this method of data collection had some limitations because most respondents had little other educational experience with which to compare their Z.C.A. training. They had limited knowledge of the scope of the subjects, and they had attitudinal biases with which they judged their training.

Although comments were generally appreciative and complimentary about Z.C.A. training, a significant number of Z.C.A. graduates posted in each of the four surveyed provinces expressed opinions that aspects of the curriculum were not appropriate to small-scale farming. They also noted that theory training was often too detailed, with not enough opportunity given for the development of practical skills, which they thought to be more important in the field than theory. Sample comments follow:

More emphasis should be based on conditions of an average Zambian farmer as most of the material is not practicable in the field, i.e. not yet highly mechanized.

The training offered at Z.C.A. Monze is too advanced to teach rural farmers - it is good to teach commercial farmers with the knowledge obtained at Z.C.A.

Training offered to students at Z.C.A.'s should be similar and simpler to the level of understanding by the people in rural villages.

The training offered at Z.C.A. is satisfactory but does not effectively cover some other problems encountered in the field. The training was supposed to have more practical skills.

I beg the people who prepare syllabus to be considering what is actually happening in rural areas [subsistence farming].

Departmental divisions at each Z.C.A. tended to isolate various farm enterprises. There was little indication that the various conditions, resources and undertakings of the farm contributed to an interdependent system. Such a farming systems approach, inherent in small-scale and subsistence agriculture, is based on concepts which

were not obvious to those being trained in large Z.C.A. farm enterprises.

Z.C.A. graduates posted as extension workers were asked (i) to rate the importance of the teaching of each Z.C.A. department/subject area to their present camp situation and (ii) to evaluate the teaching each department offered. (i) Importance was rated by the percentage of respondents who selected topics from each department as the ten most important to their training. (ii) Training was evaluated as excellent, good, fair or poor, then responses were collated to form an index from minus two for poor to plus two for excellent.

Table 5.22. Z.C.A. Departments Rated for Importance to Extension Workers and Evaluated for Quality of Training.

<u>Z.C.A. Department/ Subject Area</u>	<u>Opinions of Extension Workers</u>	
	<u>Rating of Importance</u>	<u>Evaluation of Training</u>
	(% of respondents)	(Index -2 to +2)
Agricultural engineering	10%	0.9
Agricultural science	5%	0.8
Animal production	14%	1.2
Crop production	23%	1.3
Extension	19%	1.4
Farm management	20%	1.4
Government procedures	14%	0.9
Home Science	6%	0.8
Rural life (Sociology)	15%	0.8

From Table 5.22, it is observed that crop production, extension and farm management subjects were rated by extension workers as most important for work with small-scale farmers. Z.C.A. training in these subjects received the highest evaluation. Next in importance were subjects relating to rural life, government procedures and animal production. However, training in rural life and government procedures received low evaluations. Agricultural engineering received a lower importance rating than the preceding subjects. Home science and agricultural science subjects were considered least important in training of extension workers.

Within each subject area there were divergent opinions about specific topics. Appendix B presents topics within each department/subject area with their importance rating, training evaluation and the frequency with which extension advice was given. Notes are based on the ratings and frequencies and also on comments and observations.

5.5 Summary

It was stated in the Course Prospectus (1980) that Z.C.A. "aims its training at the needs of the general extension worker", who "has a very challenging job" requiring "a great deal of initiative, imagination and farming skills". He should be training in problem-solving and decision-making skills for adaptable, responsible job performance.

All aspects of an educational institution affect the realization of its training aims. The differences between the farming systems surrounding each college, the management of each Z.C.A. farm, the living conditions and the administrative efficiency of each college

constitute a different learning environment for each group of students.

The interests, aspirations and experiences, as well as the academic qualifications of the people in the Z.C.A. community contribute to the mutual learning which occurs there. This study showed that the majority of students came to the colleges with Form V education. Even though their first career choice was not agriculture, most joined the Department of Agriculture for positive reasons. On average, students had spent two years in agricultural camps, an experience which they enjoyed because of the type of work they did and because of the cooperation of farmers and colleagues. Nevertheless, only one-half the students wanted to work in rural areas after graduation, only one-third chose to become general extension workers and fewer than thirty percent wanted to go to the remote provinces - Northwestern, Northern and Luapala.

The staff of the Z.C.A.'s generally did not have much experience in rural living or in field postings with the Department of Agriculture. Their first career choice was usually agriculture from which they found satisfaction along with their work as a teacher. They aspired to and probably would eventually pursue further academic studies abroad, thus advancing their career goals. Nevertheless, their weakness in practical skills and experience and in awareness of current trends in Zambia's rural and agricultural development was recognized by themselves as well as by their students and graduates. The shortage and lack of continuity of staff affected the quality of training as well as the management of Z.C.A. farms.

The Z.C.A. learning environment was markedly influenced by the lack of awareness, experience and skills relative to the methods and principles of adult education. Teaching methods were based on the assumption that the teacher was the authority and, therefore, central. There was little evidence of a planned programme for self-directed learning, shared experiences, or for students to evaluate the course of study and the teacher. Assignments and course work tended to be prescriptive rather than flexible, thus discouraging the development of problem-solving and decision-making skills. Staff showed little initiative to use available teaching aids or to vary their teaching techniques or to adapt technical vocabulary. The lack of textbooks and limited library selection necessitated much class time to be taken up in the dictation of terms.

Although close to one-half the scheduled time was for practical work, it was generally expressed by students and graduates that the development of practical skills was the most important part of their training. There was concern that the general emphasis of the college was toward theoretical work. Practical training would be improved if there were better opportunities for students to practice new skills, and if student projects had stated objectives other than repetitious labour.

Extension workers ranked the importance of specific topics of study to their work in the field. Program planning was selected as the most important of all topics. The relative unimportance of other topics raised questions about their inclusion in a curriculum of training for extension officers who were working with small-scale and

subsistence farming families. Curriculum development was not an established process in the college programme. There was no ongoing system of feedback from graduates, nor of evaluation of the effectiveness of the training programme in equipping extension workers for their job.

Despite the stated aims of the Z.C.A., the curriculum as demonstrated in the programming and course content appeared to veer away from the intended objectives of preparing extension workers to be effective in remote areas alongside subsistence and small-scale farming families. A close examination of each department and subject area revealed several specific points of weakness and irrelevance, as well as some commendable efforts by Z.C.A. staff (see Appendix B).

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

The research focused on the content and quality of training provided at the Zambia College of Agriculture and the congruence of that training with both the role and performance expectations which the Department of Agricultural Extension Branch had for its front-line officers, as well as with their actual performance in the field.

The general goals of the study were realized. The extension system and its role/performance expectations for extension workers were described. Extension theory was examined and related to the practices and possibilities of the Zambian extension system. The actual role perceptions and performance of extension workers were described, as were the methods and technical components used in the training of extension workers. As well, the research facilitated a participative process through a multi-method approach, and provided recommendations for further research and for policy and program development for agricultural colleges and extension services.

Zambia's extension system has three components. Its clients are mainly engaged in a variety of small-scale and subsistence farming practices. The centralized government's Department of Agriculture administers the extension service. Agricultural research within the administration is not clearly linked with extension except in the recently implemented Adaptive Research Planning Teams. The training of extension workers is the third component. It occurs in the two

Z.C.A.'s which are relatively autonomous institutions within the Ministry of Agriculture and Water Development. The isolated position of the Zambian Colleges of Agriculture within the extension system places few restrictions on them with regards to innovative programming. However, institutional isolation also means that the colleges have little accountability to their graduates, to farmers or to the Department of Agriculture.

At the front-line of the extension system, there was frustration as personnel tried to perform as technical advisors despite inappropriate messages and/or unreliable supplies and services. The research showed that field workers did not have a uniform perception of their role. Their job satisfaction came mainly from their work and interaction with rural people. One-half of extension workers hoped to eventually resign from their government posts to manage their own farms.

The performance of extension workers was limited by poor working conditions. Supervision and support from senior officers was generally infrequent, as was communication about new research recommendations. There was some access to agricultural radio broadcasts but limited access to agricultural reading material. There was wide variation in the way extension workers planned and implemented their programs, particularly with regard to the selection and use of contact farmers and the practice of the Training and Visit System. They did not appear to assume leadership roles. The type of advice field officers gave to farmers varied from province to province but in all areas, advice was mostly related to crop production and farm

management.

At the two Z.C.A.'s, the majority of students had Form V education, and had enjoyed working for two or more years in agricultural camps. Agriculture was not their first career choice. Less than one-half hoped to remain with the Department of Agriculture and over one-third proposed to resign to manage their own farm. Only one-half of all students preferred to work in rural areas after graduation.

Most Z.C.A. staff had selected agriculture as their first career choice. They enjoyed their work. They were academically qualified and would likely have opportunity to pursue higher education. However, they had limited practical skills and experience, a fact also recognized by the students.

The training program covered both theory and practical instruction. Problem areas in the theory classes arose from the use of the English language, the lack of textbooks, poor note-taking skills and the limited use of innovative teaching methods. It was recognized by many students as well as graduates that practical training should receive priority in the preparation of extension workers.

Several clear distinctions were identified between Monze and Mpika Z.C.A.'s. More Monze students preferred to work in agricultural extension after graduation. They also felt more involved in college decision-making, appeared to complain less about college matters, and had more confidence in the practical skills of their instructors, than Mpika students. There was more expatriate (Swedish) influence at

Mpika college.

The curriculum followed at Z.C.A.'s was not the result of ongoing evaluation and feedback. A close examination of each department revealed several weak areas which could be brought more in line with the goal of preparing extension workers for their work with small-scale and subsistence farming families.

6.2 Conclusions

This research has identified problems linked with the lack of communication skills and networks within Zambia's extension system. It can be concluded that the process of communication is a neglected, albeit an essential, element of an extension program.

An equitable extension system in which its various components are linked and actively participating in the development of policy and program is difficult to implement within a centralized hierarchically controlled system, which does not encourage innovation within its education and research programs. The findings suggest that a participatory process model of technology development and transfer contradicts the top-down research extension model such as is found in the Training and Visit System. For the participatory concepts advocated in Farming Systems Research to be applied within an autocratic structure, such a structure requires modification in such a way as to allow the more even distribution of power and resources. Communication networks between institutions and ongoing evaluation of *policies and practices facilitate such re-distribution.*

This study identified problems which occur when agricultural

educational institutions are autonomous, having little accountability to and weak communications links with their graduates, with rural society and with government and parastatal bodies serving the rural community. The study underlines the importance of formalizing such links, thus ensuring better communication, greater corporate responsibility as well as facilitating evaluation of the relevance of *training programs and curriculum*. However, the autonomy of colleges to pursue innovative paths should not be threatened.

Serious problems arise when the conceptual role of extension worker as message-bearer to farmer from research is applied to a situation of isolated front-line workers and farmers who have limited resources and support from outside their rural community. Modified role and performance expectations are more realistic if extension workers are more independent of the government structure, thus giving them the mandate to innovatively apply general agricultural concepts and practices to local situations as well as to communicate with and organize small-scale farming households into positions of greater strength in the agricultural sector.

Several characteristics of extension workers were identified during this study which should be considered when revising their role definition and job description. They prefer to live in rural areas. They enjoy working with a wide variety of people. They find satisfaction from helping to increase agricultural productivity and from helping to improve the standard of living of rural people and in contributing to national rural development. They aspire to eventually operate their own farm. Despite dissatisfaction with their conditions

of service, they stay in poor isolated locations working independently.

There is little doubt from the findings of this and other studies that poor working conditions cause much frustration to camp officers and detract from the effectiveness of their work. Improved conditions include better access of front-line workers to research recommendations and to agricultural reading materials as well as improved transport, housing and administrative support.

Analysis of the performance of extension workers indicates that Z.C.A. graduates have poor skills in leadership, program planning, the selection and management of contact farmers, and in the application of the Training and Visit System. Their use of extension techniques suggests that they lack skills to select and evaluate the most effective method.

With regard to the selection criteria for Z.C.A. students, there appeared to be a trend to select people to work at camp level whose background was quite different from that of the rural people with whom they would be working. However, the length of time students experienced working in Agricultural Camps is an important consideration when assessing the background of Z.C.A. students. Another consideration when comparing the experiences of students with those of rural people is the difference between living standards at the colleges and those in typical agricultural camps.

Several problem areas regarding Z.C.A. staff selection and development were observed during this study. These included staff shortages, the relevance of foreign education, and the lack of

practical experience in agricultural techniques.

Both colleges had extensive facilities for the implementation of training adult students in agricultural theory and practice. Problems which were identified were linked to the development and management of resources and personnel as well as to general administration. There was room for improvement in the continual use of the facilities throughout the year, in the development of a stimulating learning environment for staff and students, and in particular, in the relevance and design of the practical training program.

The research indicated that the training program and curriculum did not stress the development of the process skills of decision-making, problem-solving, adaptability, needs assessment and leadership. Considering the lack of in-service training available to extension workers, it can be concluded that there has been little opportunity for the development of these human resources.

From the observed differences between Mpika and Monze Z.C.A.'s, it can be concluded that although attention needs to be paid to the administration and staffing of Mpika College, its location could be more favourable for the training of extension workers than the location at Monze college.

Concerning the approach and methodology used in this study, it can be asserted that there was value in the use of multiple methods. Different perspectives of the subject were brought out with each method, thus reflecting a broader view of the reality of the complexity of the situation. To use only one method would have limited the findings and distorted the reality.

Many of the people involved in the research process were not familiar with the concept of multi-tiered participation. This new approach was used with people who had little understanding, experience or skills in evaluation and analysis. However, the consistent cooperation, openness and lack of defensive behaviour encountered in this study encourages further research of this sort.

Significant insights were provided in the photogathering data. There were difficulties implementing a method which required meeting with isolated individuals on four separate occasions: (1) to explain the procedure and deliver the camera, (2) to pick up the camera, (3) to return the developed photographs and engage in discussion with the participant, and (4) to meet with all who participated in the photogathering for group discussion.

Following the nine-month research process, people from several levels of the agricultural sector attended a Workshop and examined preliminary findings of the study. The experience of multi-tiered participation in such discussion was summed up by the Provincial Agricultural Officer who had interrupted his leave in order to attend the Workshop. His conclusions were:

This is the beginning in the direction toward arriving at something very, very important in the agricultural development ... resolutions made here somebody will pick up interest to show to other fellows who may be interested in what we are doing. Eventually you will find the idea being consolidated and being made into our national policy. And definitely that is the hope we expected it to be.

And one thing ... you have enabled us to meet with our farmers -- the thing which has never happened before. We have been reaching our farmers through

programs in extension -- agricultural demonstrations and agricultural shows. But we have not met as three sections, the farmers, the extension workers and the trainers.

And while we are here we did actually make friendship so strong with the principal that the next senior staff meeting probably will be held here ... to allow dialogue between trainers and D.A.O.'s.

[from Tape of Workshop Proceedings]

These observations suggest that when oral communication skills are better developed than skills in literacy, then the value of written reports is limited when compared with methods which involve group dynamics. For example, workshop sessions are effective forums in which to introduce concepts and skills of the participation process. They informally link sectors and groups which do not interact routinely. They contribute to the process of changing attitudes, policies and practices.

6.3 Recommendations

6.3.1 Recommendations for Action

The following suggestions arose out of the research process, findings and conclusions. They are presented here for consideration as possible ways in which the performance and training of extension workers can be improved.

6.3.1.1 **The Extension System**

1. That the importance of a participatory process be recognized and developed within the extension system among all three components. One way this could be facilitated might be through inter-

institutional workshop sessions.

2. A goal-oriented educational curriculum should be developed from the realities of all levels and sections of the extension system. Farmers, researchers, administrators, camp officials and trainers each have their distinctive perspective to contribute. Coordination of objectives and programs of the whole extension system would be more feasible if a feedback and evaluation process for curriculum development were given a clearly defined mandate and incorporated into the structure of M.A.W.D. The responsibilities of a curriculum board could include gathering information about current trends in agricultural practices and rural society, evaluating existing educational programs, developing new curriculum, preparing teaching materials, planning for staff development, advising on student selection criteria, and recommending the efficient use of college facilities. The board could be composed of one full-time curriculum development specialist, plus representatives from all levels and sections of the extension system.
3. That formal communication networks be established and/or improved between the levels and sections of M.A.W.D. related to the extension system, i.e. research, extension, A.R.P.T., rural information, training and bilateral aid projects.
4. That the A.R.P.T.'s be included as an integral part of the extension system and that the relationship and the areas of

cooperation between them and the extension branch, and particularly the field extension workers, be defined.

5. That the development and evaluation of extension methods be incorporated into ongoing research programs, possibly within the A.R.P.T.'s.
6. That the form and quality of extension services for rural women be evaluated with a view to improvement of those services.
7. That the importance of the participation of extension workers and small-scale producers in extension programming be recognized, and that the structure of the system be adjusted to incorporate such participation.

6.3.1.2 Role of Extension Workers

1. That the role of the extension worker be examined and redefined relative to current Zambian realities so that programmes are designed according to the limitations and possibilities of front-line personnel.
2. That the role of the extension worker be broadened to include his participation in agricultural development through organizing and facilitating innovative problem-solving within rural communities.

6.3.1.3 Performance of Extension Workers

1. That a career structure for extension workers be designed with rewards and incentives given for the quality of job performance

determined by objective evaluation criteria.

2. That the characteristics and strengths of extension workers be recognized when decisions are made affecting their work and career structure.
3. That a career structure for extension workers offer an option for career change after ten years service, with a land grant in lieu of pension, allowing them to continue to contribute significantly to agricultural development as full-time farmers.
4. That current agricultural and rural development information be made accessible to extension workers. This could be done by providing a library with newspapers and periodicals, and having a planned educational program each month-end when extension workers gather at district centres.
5. That every effort be made to improve the conditions of service of extension workers. This would mean the allocation of a larger percentage of maintenance and capital budgets for such things as housing improvements, bicycle loans, transport and subsistence allowances, stationery and equipment.
6. That in-service education programs be made available to extension workers offering training in such skills as leadership, program planning and evaluation.
7. That seasonal programs be planned by camp officers and distributed to Block Supervisors and District Agricultural Officers.

Programs should include needs assessments, setting of measurable objectives, management of resources and evaluation.

6.3.1.4 Training of Extension Workers

1. That the aims of the Z.C.A. be re-examined and adjusted so that each college follows a program which most efficiently utilizes its unique resources.
2. That Mpika Z.C.A. be responsible for educating rural development and agricultural extension workers. The college environment provides opportunity for students to study small-scale and subsistence farming systems and to interact with groups of small-scale producers and villagers.
3. That Monze Z.C.A. be responsible for preparing people to work in the commercial farming sector and in agribusiness. The college environment provides opportunity for students to study a broad range of commercial and parastatal agricultural enterprises.
4. That the specialization of each college be developed toward a certificate in agriculture from Monze and a certificate in rural development from Mpika. However, both programs should emphasize fundamental agricultural concepts and skills.

6.3.1.5 Z.C.A. Students

1. That the criteria for acceptance into extension training include a stated preference to live and work in rural areas.

2. That Z.C.A. students, as adults with an average of two years of field experience, participate in setting the objectives, planning the programs and the evaluation of their education. This process would help to make the curriculum more relevant to the students and would be part of their learning experience.

6.3.1.6 Z.C.A. Staff

1. That the selection and development of training staff for extension workers stress rural experience, agricultural and adult education skills.
2. That staff who are involved in the training of extension workers have prior experience working with small-scale farmers and have continuing opportunity to interact with farmers and field staff.
3. That Z.C.A. staff members be given specific responsibilities on the college farm which enable them to gain practical experience in agricultural techniques as well as management skills, and that they are encouraged to apply and develop appropriate innovations. This form of staff development would be improved when college farms are managed with their own revolving fund independent of Lusaka.
4. That training staff understand and apply adult education principals in all their interactions with students.
5. That the importance of continuity in educational and farm programs be a consideration in decisions relating to training staff.

6. That attempts be made to ascertain the relevance to training objectives of advanced study programs offered to training staff.

6.3.1.7 Program

1. That adult education principles be applied in the training of extension workers. This implies learner-centred self-directed learning and the full development and utilization of the college as a learning environment. Training staff are role models of extension/adult education methods.
2. That measurable objectives and evaluation of courses, lessons and training staff be incorporated into the program.
3. That assessment of students' skills and knowledge be continuous as well as summative, and that external examiners be utilized to maintain a high standard of achievement.
4. That teacher and student handbooks be prepared for each subject area, replacing dictation of notes. Class sets of Handbook for Agricultural Field Workers (M.A.W.D., 1983) would be useful for some courses.
5. That the training program utilize the resources within the college environment such as subsistence and small-scale farmers, local leadership, direct administration, rural development and agricultural projects.
6. That students participate in the management of the college farm

through joint staff-student decision-making and through long-term group management projects.

7. That during the three-month break between first and second year of training:

- a) students be required to complete a major assignment such as the assessment of rural households and farming systems in their home/rural area;
- b) staff be exposed to agricultural and rural development projects away from the college;
- c) In-service and refresher courses be conducted at the college for extension and rural development workers.

8. That the practical training program include simulation projects. For example, students could be divided into village groups; then given land, capital and tools, with which they must integrate their mutual knowledge and skills to plan, implement and evaluate a viable village agricultural programme. The dynamics within and between student groups could be studied as part of the learning process.

6.3.1.8 Curriculum

- 1. That curriculum objectives for each department be established and regularly evaluated against the realities of extension work with small-scale and subsistence farming households.
- 2. That the development of process skills such as decision-making, problem-solving, adaptability and innovative thinking be incorporated into the objectives of the course.

3. That program planning be emphasized throughout the training curriculum and incorporated into all aspects of the training program such as courses, lessons, farm projects. This would include skills in needs assessment, setting objectives, resource management, organization, implementation and evaluation.
4. That the college administrative system incorporate communication networks and interdependence between departments and farm enterprises.
5. That the agricultural concepts and skills included in the curriculum be applicable to subsistence and small-scale farming systems.
6. That the curriculum include a course of study to examine the structure of Zambia's rural society; the dynamics affecting particular socio-economic groups; and current development trends, policies and programs. One objective of the course would be to develop skills in political-economic analysis.

6.3.2 Recommendations for Research

A number of areas covered in this study suggest the need for further research. Some recommendations follow.

1. Ongoing research in Zambia on the evaluation and development of extension methods.
2. A follow-up study of Z.C.A. graduates could determine where they

are, what they are doing and the factors affecting their choices and career aspirations.

3. A longitudinal action-research could be designed to study full-time farmers who were extension officers at one time in order to determine their influence upon farmers in their community.
4. A follow-up study could be made of Garvey's dissertation (1982) to determine the influence of Z.C.A. on villages, farming households and agricultural activities surrounding the two colleges.
5. An evaluation study could be conducted on the form and quality of extension services to rural women.
6. Research could be conducted into the training objectives of the foreign study programs undertaken by Z.C.A. staff, particularly examining the emphasis and quality of content related to rural development in Third World nations.
7. A study could be implemented using the photogathering method of data collection, assessing the strengths and weaknesses of that method.

6.4 Postscript

It is significant to note the timeliness of this research in the history of Zambia's rural development. From the outset of the researcher's arrival in Zambia in October 1983 until the completion of the report on the research in August 1985, several changes were

observed within the Zambia Colleges of Agriculture and within the Department of Agriculture Extension Branch. The process of this research cannot claim to have caused these changes, however, it undoubtedly provided opportunity for reflection and dialogue which contributed to the change process.

Examples of some of the innovations follow. Included are some of the recommendations made at the Workshop in July 1984 which have now been implemented.

1. Joint staff meetings between Monze and Mpika Z.C.A.'s have been held.
2. A tour of agricultural development projects in Malawi is planned as in-service training for Mpika Z.C.A. staff.
3. Due to the implementation of revolving funds, Z.C.A.'s are now permitted to retain profits from farm income for college expenses.
4. In-service training courses for extension workers will be held at Z.C.A.'s during the college mid-year break.
5. The role of extension worker is being re-examined to include a component encouraging greater innovation and adaptability to local conditions. The concept is being disseminated through notices and discussions at Provincial and District level.
6. The Workshop format is being implemented in several situations within M.A.W.D., for example by the Senior Extension Advisor, Lusaka with Provincial, District and Block level staff, and also by several Integrated Rural Development Projects.

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APPENDIX A

DATA GATHERING INSTRUMENTS

APPENDIX A-1

Z.C.A. GRADUATE SURVEY

Rural Development Studies Bureau
University of Zambia

March 29th 1984

District Agriculture Officers
Central & Luapula Provinces
Zambia

Dear friend:

The agriculture extension service in this country has great potential. Many people have been trained and employed for the job. However, as you know, there are problems.

In order to assist the Department of Agriculture to improve extension and training, a study is being conducted in four provinces. All graduates from Mpika and Monze Colleges of Agriculture since 1979 are requested to complete a questionnaire. Their answers are confidential. Therefore they are instructed to seal the completed forms into the envelope and return it to their D.A.O. by month end. You will then return these to your P.A.O. as soon as possible.

The names on your list are taken from the college class lists. However there may be some error in the location of these people. Would you try to help us locate each ZCA graduate so that the study can be as accurate as possible. Please write any corrected location on the envelopes and ensure their delivery. If someone cannot be located please write an explanation when you return your envelopes. For example, Mr. So&so resigned, Oct 82, went to Zamseed

In the upper left hand corner of the envelope the numbers indicate the year of graduation and the college where the person studied. Monze is number 1, Mpika number 2. Therefore "2/82 means this person graduated from Mpika ZCA in 1982. This information will help you locate the right AA or SAA.

This research is being done at the request of the Department of Agriculture, and is being conducted by myself, a research affiliate with the Rural Development Studies Bureau, UNZA, funded by the Canadian International Development Agency.

Thank you for your helpful cooperation. You are an important part of this study which will contribute to the improvement of Zambia's rural development.

Sincerely yours,

(Mabel Jean Rawlins)Ms
c/o Box 450 143, Mpika

cc: P.A.O. Central and Luapula
Provinces

Rural Development Studies Bureau
University of Zambia

March 28th 1984

to: Selected Graduates of Monze and Mpika
Colleges of Agriculture

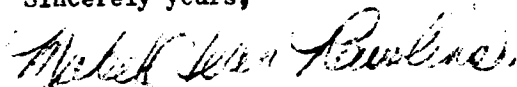
More and more people are recognizing the importance of the extensions service to agricultural development in Zambia. A study is now being carried out to look at methods of improving the training of extension workers. As ECA graduate, trained in general extension, your assistance is extremely valuable. Your personal opinions are needed. The attached questionnaire will help you express these opinions.

You have been chosen from among the ZCA graduates to answer these questions. Please find a quiet place where you can work undisturbed for about one hour. Answer each question the best way you can. When you have completed the fifty questions please place the pages into the envelope, and seal it securely. Then return it promptly to your District Agriculture Officer by month end.

The information you give is confidential. Your envelope will be opened and read only by myself. I am a Research Affiliate with the Rural Development Studies Bureau of the University of Zambia, doing this study for the Department of Agriculture.

Thank you very much for your kind and thoughtful cooperation. You are contributing to the betterment of agricultural development in Zambia.

Sincerely yours,



(Mabel Jean Rawlins) Ms
c/o I.R.D.F.
Box 450 148
Mpika Zambia

ECA GRADUATE SURVEY

INSTRUCTIONS - PLEASE READ CAREFULLY

- The information you give in this questionnaire will be strictly confidential. When you have completed every question please seal the questionnaire into the envelope provided and return it to your District Agriculture Officer no later than month end. It will be collected and opened by the researcher.
- Please answer every question as carefully and truthfully as possible.
- Where there is a line (.....) mark an X in the most appropriate place.
- Where there is yes or no (y/n), circle the most appropriate letter.
- Where there is a table, mark an X on each line under the appropriate column.

SECTION A - BASE DATA

1. Which province is your home?
2. Where did you spend most of the first fifteen (15) years of your life?
 - in a rural village
 - in a small town
 - in a city
3. Where did you attend secondary school?
 - in an urban centre(name school)
 - in a rural area(name school.....)
 - in a small town(name school.....)
4. What level of education did you complete?
 - less than form III
 - form III
 - form IV
 - form V
 - other (specify)(specify.....)
5. Did you study agricultural science in secondary school? y/n
 - if yes, was there much repetition in ECA? y/n
6. For how many years have you been employed in rural areas?
 - less than one year
 - give number of yearsyears
7. Before entering the ECA, how long did you work for the Department of Agriculture
 - never
 - less than nine months
 - nine to twelve months
 - give number of years

2.

8. From which College of Agriculture did you graduate?

Monze
Mpika

9. In which year did you graduate from ZCA?

1979 1982
1980 1983
1981 other, specify

10. At the present time, are you

Camp Officer
Block Supervisor
Research - District
 - Provincial
Training - F.A.C.
 - Farm Institute
Land Use Planning
Home Economics
Other, specify

11. List your postings from graduation to the present.

DATES(month&year)		PLACE	POSTING
starting	ending	district, camp, Prov'l office, FTC, etc.	Camp Officer, Block Super.
:	:		
:	:		
:	:		

(use other side if you need more space)

12. Who was in your present post before you came there?

S.A./A
CB/AD
TAA
it was vacant
it is a new position

13. Are you male

or female

14. In what year were you born?

SECTION B - GENERAL EXTENSION

15. Who plans your program of work?

the B.A.C.
the block supervisor
yourself
there is no plan
other, specify

16. Do you have a written program or plan of work?
- daily plan
 weekly plan
 monthly plan
 seasonal plan
17. Have you ever done an evaluation of your program? y/n
 if yes, describe it,.....

18. Do you ever meet with other community workers to discuss problems of your area?
 e.g. health, education, community development, UNIF, etc. y/n
19. How do you learn about the most up-to-date recommendations for crops?
- from the District Agric. Officer
 Prov'l Crop Husbandry Officer
 Prov'l Extn & Trng Officer
 Block Supervisor
 Research Staff
 other, specify
20. How often do you hear about the latest research concerning crop recommendations?
- frequently
 occasionally
 seldom
 never
22. Do any of the farmers in your area set up their own farm experiments? y/n
 if yes, explain,.....

23. Do you listen to any radio broadcasts about agriculture?
- frequently
 occasionally
 seldom
 never
24. Since October 1983, what have you read about agriculture? specify
- books
 magazines
 newsletters
 newspaper articles
 other
25. Do you know about the Training and Visit System? y/n
 if yes, how is it working in your area?.....
26. What is the average size of all the farms in your area?ha.
27. What is the average size of all the farms that you visit?ha.

28.

How often do you advise farmers about:

4.

	frequently	occasionally	seldom	never
.....
soil management
water control
maize
beans
ground nuts
rice
cassava
millet
crop rotations
vegetables
fruit
poultry
beef cattle
dairy cattle
oxen
sheep/goats
farm tools
farm machinery
farm finances/budgeting
obtaining loans
nutrition
sanitation
food storage
farm labour

29.

This crop season have you had a:

demonstration plot	.....
field day	.....
agriculture show	.....
farm tour	.....
farmers' meeting	.....
research test plot	.....
mobile course	.....
other, specify	.....

30.

When husband and wife are farming together, do you usually visit

just the husband	.....
just the wife	.....
both together	.....

31. Approximately what percentage of your farmers are women farming alone?
32. Do you visit such women farmers: frequently
occasionally
seldom
never
33. Who helps women farmers the most:
female AA's only
male AA's only
any AA, male or female
home economics staff
- In your opinion, how can the extension service best help women in agriculture?
.....
34. How many times are you personally growing this year?
none
give number
which crop/crops?
35. Do you enjoy your work as an AA/SAA? y/n
Why?.....
.....
36. In the years to come are you planning to:
remain an AA/SAA until retirement
resign and have your own farm
resign and work for a private company
become a film star!
37. How many times has the District Agriculture Officer visited you since October 1
..... times
38. If you are a Camp Officer, how many times has a Block Supervisor visited you
since October 1983? times
39. If you have any further comments about general agriculture extension, please
write them here.
.....
.....
.....

SECTION C - TRAINING OF EXTENSION WORKERS

40. How did your training at ECA prepare you for your work in your present post?
extremely good preparation
satisfactory preparation
unsatisfactory preparation
extremely poor preparation

41. In the following table, indicate the usefulness of your ZCA training in preparing you for your present post. Put an X on each line under the appropriate column.

	extremely good preparation	satisfactory preparation	unsatisfactory preparation	extremely poor preparation	not taught at ZCA	question number 42
CROP HUSBANDRY:						
commercial crops						
subsistence crops						
intercropping						
crop rotation						
vegetable production						
fruit production						
compost						
pest control						
water management						
harvesting						
soil management						
harvesting						
food storage						
ANIMAL HUSBANDRY:						
poultry						
sheep/goats						
pigs						
oxen						
beef cattle						
dairy cattle						
animal health						
FARM MANAGEMENT:						
labour management						
securing loans						
marketing						
record keeping						
budgeting						
AGRICULTURAL SCIENCE:						
botany						
zoology						
chemistry						

41, continued

	extremely good preparation	satisfactory preparation	7. unsatisfactory preparation	extremely poor preparation	not taught at ZCA	question number 42
EXTENSION METHODS:						
planning a work program						
communicating with illiterate farmers						
leading discussions						
conducting meetings						
demonstration plots						
contact farmers						
organizing events						
leadership methods						
problem solving						
project evaluation						
visual aids						
research methods						
FARM ENGINEERING:						
surveying						
hand tools						
ox drawn implements						
machines e.g. pumps, handmills						
Hondas						
combustion engines						
tractors						
bicycles						
HOME SCIENCE:						
human nutrition						
food storage						
food preparation						
sanitation						
meal planning						
GOVERNMENT PROCEDURES:						
party structure and system						
communication e.g. letters, telegrams						
salary & finances						

41. continued

	..... extremely good preparation .....	..... satisfactory preparation .....	..... unsatisfactory preparation .....	..... extremely poor preparation .....	..... not taught at ZCA .....	..... question number 42
RURAL LIFE:						
large scale farming systems						
subsistence farming systems						
local leadership						
illiterate villagers						
women in agriculture						
rural marketing						
urban/rural relationships						
political/gov't involvement						
land claims & ownership						

42. From the complete list given in question 41, choose the ten (10) topics which you think are the most important to prepare MA's/GAA's to work in your present post. Mark them in the last column.
43. In your ZCA training, would you want to specialize in selected subjects? y/n
If yes, in what area would you like to specialize?.....
44. In your opinion, do the ZCA staff have the practical skills needed to work with small-scale farmers? y/n
45. In your opinion, do the ZCA staff have the theoretical knowledge needed to work with small-scale farmers? y/n
46. At the ZCA did you feel that students were involved in the decision-making? y/n

47. How often were the following teaching methods used while you were at ZCA?

	frequently	occasionally	seldom	never	number 48	number 49
lecture						
class discussion						
small group discussion						
reading assignments						
group projects						
individual projects						
helpful corrections						
role play/sketches						
staff demonstrating						
staff observation of student, then advising						
staff working alongside student to give example						
student opportunity to practise new skill						
learning from other students						
farm tours						
village visits						

48. In column four of question 47, choose and mark four (4) of the teaching methods which you use most often when teaching farmers.
49. In column five of question 47, choose and mark the four (4) methods by which you learn best.
50. In this space write any further comments you may have about the training officers at Zambia Colleges of Agriculture.

.....

.....

.....

THANK YOU FOR CONTRIBUTING YOUR TIME AND YOUR IDEAS TO THIS STUDY.

ALL THE BEST TO YOU

IN YOUR WORK.

APPENDIX A-2

Z.C.A. STUDENT SURVEY

ZCA STUDENT SURVEY

INSTRUCTIONS: PLEASE READ CAREFULLY

- Please answer every question as carefully and truthfully as possible.
- Where there is a line (.....) mark an X in the most appropriate place.
- Where there is yes or no (y/n) circle the most appropriate letter.
- Where there is a table mark an X on each line under the appropriate column.

SECTION A

1. Which is your home province?
2. Where did you spend most of the first fifteen years of your life?

in a rural area	.....
in a small town	.....
in a city	.....
3. Where did you attend secondary school?

in a rural area	.....
in a small town	.....
in a city	.....
4. What level of education did you complete?

less than form III	.....
form III	.....
form IV	.....
form V	.....
other, specify	.....
5. Did you study agricultural science in secondary school? y/n
If yes, is there much repetition in ZCA courses? y/n
6. When you completed secondary school, which career was your first choice?

education/teaching	.....
medicine/health services	.....
business	.....
industry/mines	.....
agriculture	.....
technical/trade skills	.....
other, specify	.....
7. For how many years have you been employed in rural Zambia?

never	.....
number of years	.....
8. Before entering ZCA, did you work for:

the department of agriculture	.....
other gov't ministry, specify	.....
private/parastatal company	.....
came directly from secondary school	.....
9. If you were with the Department of Agriculture, why did you join it?
.....
.....
.....

2.

10. I you worked for the Department of Agriculture, were you in
an agricultural camp
a Farm Training Centre
a District office
other, specify
11. If you worked in an Agricultural Camp:
How long were you there?
Were you with an AA/SEA?
a CD
other, specify
alone

Did you enjoy your work there? y/n
Why?.....
.....
12. Did you complete a three month Induction Course? y/n
If "yes", how well did it prepare you for work in the camp?
excellent preparation
satisfactory preparation
unsatisfactory preparation
extremely poor preparation

Is there much repetition of the Induction Course in the ZCA Course? y/n
your comments please.....
13. The year before you came to ZCA, how many limas did you grow personally?
none
give number
which crops
14. At which college are you now a student?
Monze
Mpika
15. In which year do you hope to graduate?
1984
1985
16. After graduation, in which province do you wish to work?
17. After graduation, where would you prefer to live?
in the rural area
in a small town
in a city
18. After graduation, in which Department of Agriculture branch do you prefer to work?
Indicate first choice (mark "1") and second choice (mark "2").
camp officer, general extension
training (F.T.C., F.I.)
planning
research
rural information
other, specify

19. In the years to come are you hoping to
 remain with the Department of Agriculture until retirement
 resign and operate your own farm
 resign and work for a private company
 transfer to another department or ministry

20. Are you male
 or female

21. In what year were you born?

22. Do you enjoy being at the Zambia College of Agriculture? y/n
 Why?

23. Explain what is meant by
 the Training and Visit System.....

 Contact Farmer...;.....

 Adaptive Research Planning Team.....

24. Do you think the agricultural extension service in Zambia should be mainly for
 commercial farmers
 emergent farmers
 subsistence farmers
 Comment:.....

SECTION B

25. In the table on the following pages, indicate the usefulness of your SOA training in preparing you to be an extension worker. Put an X on every line under the appropriate column.

	extremely good preparation	satisfactory preparation	unsatisfactory preparation	extremely poor preparation	not studied yet at SOA	for question number 26
ANIMAL HUSBANDRY:						
poultry						
sheep/goats						
pigs						
oxen						
beef cattle						
dairy cattle						
animal health						

CROP HUSBANDRY:

commercial crops
 subsistence crops
 intercropping
 crop rotation
 vegetable production
 fruit production
 compost preparation & use
 pest control
 water management
 harvesting
 soil management

FARM MANAGEMENT:

labour management
 securing loans
 marketing
 record keeping
 budgetting

AGRICULTURAL SCIENCE

botany
 zoology
 chemistry

EXTENSION METHODS:

planning a work program
 communicating with
 illiterate farmers
 leading discussions
 conducting meetings
 demonstration plots
 contact farmers
 organizing events
 leadership problems
 problem solving
 project evaluation
 visual aids
 research methods

extremely good
preparationsatisfactory
preparationunsatisfactory
preparationextremely poor
preparationnot studied yet
at ZCAfor question
number 26

	extremely good preparation	satisfactory preparation	unsatisfactory preparation	extremely poor preparation	not studied yet at ECA	for question number 26
FARM ENGINEERING:						
surveying/measuring fields						
hand tools						
ox drawn implements						
machines: pumps, hammermills, etc.						
Hondas						
combustion engines						
tractors						
bicycles						
HOME SCIENCE						
human nutrition						
food storage						
food preparation						
sanitation						
meal planning						
first aid						
GOVERNMENT PROCEDURES:						
party structure & system						
communications: letters, telegrams, etc.						
salary & finances						
RURAL LIFE:						
large scale farming systems						
subsistence farming systems						
local leadership						
illiterate villagers						
women in agriculture						
rural marketing						
urban/rural relationships						
political/gov. involvement						
land ownership & claims						

26. From the complete list given in question 25, choose the ten (10) topics which you think are most important to prepare AA/SA's to work in general extension as Camp Officers. Mark them in the last column.

27. Please comment on the course curriculum & content at ECA.

28. Is the practical training at ZCA
- | | | |
|----------------------------------------|------------------------------------|-------|
| interesting | or boring | ..... |
| too much | or too little | ..... |
| appropriate for
small farmers | or irrelevant for
small farmers | |
| well
planned | or poorly
organized | |
- Suggestions:.....
29. Are the theory classes at ZCA
- | | | |
|----------------------------------------|------------------------------------|-------|
| interesting | or boring | ..... |
| too many | or too few | ..... |
| appropriate for
small farmers | or irrelevant for
small farmers | |
- Suggestions:.....
30. At ZCA should there be opportunity for specialization in selected subjects? y/n
31. In your opinion, do the ZCA staff have the practical skills needed to work with small-scale farmers? y/n
32. In your opinion, do the ZCA staff have the theoretical knowledge needed to work with small-scale farmers? y/n
33. At ZCA do you feel that the students are involved in the decision-making? y/n
34. How often are the following teaching methods used at ZCA?
- | | frequently | occasionally | seldom | never | question 35 | question 36 |
|----------------------------------------------------------|------------|--------------|--------|-------|-------------|-------------|
| lecture | | | | | | |
| class discussion | | | | | | |
| small group discussion | | | | | | |
| reading assignments | | | | | | |
| group projects | | | | | | |
| individual projects | | | | | | |
| helpful corrections | | | | | | |
| role play/sketches | | | | | | |
| staff demonstrations | | | | | | |
| staff observation of
student, then advising | | | | | | |
| staff working alongside
student to give example | | | | | | |
| student opportunity to
practise new skills | | | | | | |
| learning from
other students | | | | | | |
| farm tours | | | | | | |
| village visits | | | | | | |

7.

35. In column five of the previous question, mark the four (4) teaching methods which you think are most effective when teaching small-scale farmers.
36. In the last column of question 34, mark the four (4) teaching methods which help you to learn the best.
37. Please comment on the teaching/learning methods used at ECA.....
.....
.....

THANK YOU FOR CONTRIBUTING YOUR TIME AND YOUR IDEAS
TO THIS STUDY.

ALL THE BEST TO YOU IN YOUR FUTURE.

APPENDIX A-3

Z.C.A. STAFF SURVEY

ZCA STAFF SURVEY

INSTRUCTIONS: PLEASE READ CAREFULLY

- Please answer every question as carefully and truthfully as possible.
- Where there is a line (.....) mark an X in the most appropriate place.
- Where there is yes or no (y/n) circle the most appropriate letter.
- Where there is a table mark an X on each line under the appropriate column.

SURVEY QUESTIONS

- [illegible]

11. At which college are you a staff member?
 Monze
 Mpika
12. In which department do you work most of the time?
 agricultural science
 animal production
 crop production
 extension
 farm engineering
 farm management
 home science/economics
13. Are you mostly
 a practical instructor
 a theory teacher
 equal practical and theory
 administrator
14. When you first arrived on ZCA staff could you confidently perform the practical skills
 which you were teaching students? y/n
 comment:.....
15. Have you ever lived and worked on a farm? y/n
 If yes, for how long?
16. How many limas are you personally growing this year?
 none
 give number
 which crop/crops
17. Have you ever been an extension officer? y/n
18. Explain what is meant by:
 Training and Visit System:.....

 Contact Farmer:.....

 Adaptive Research Planning Team:.....

19. Has agriculture always been your first career choice? y/n
 explain.....
20. In years to come are you planning to
 remain with Dept. of Agric. until retirement
 resign and have your own farm
 resign and work for a private company
 other, specify
21. Do you enjoy your work at the college? y/n
 Why?.....

22. In the following table, please indicate your opinion of the usefulness of the ZCA training program in preparing future extension workers.

	extremely good preparation	satisfactory preparation	unsatisfactory preparation	extremely poor preparation	not taught at ZCA	for question number 23
CROP HUSBANDRY:						
commercial crops						
subsistence crops						
intercropping						
crop rotation						
vegetable production						
fruit production						
compost preparation & use						
pest control						
water management						
harvesting						
soil management						
ANIMAL HUSBANDRY:						
poultry						
sheep/goats						
pigs						
oxen						
beef cattle						
dairy cattle						
animal health						
FARM MANAGEMENT:						
labour management						
securing loans						
marketing						
record keeping						
budgeting						
AGRICULTURAL SCIENCE:						
botany						
zoology						
chemistry						
GOVERNMENT PROCEDURES:						
party structure & system						
communication: letters, telegrams, etc.						
salary & finances						

	extremely good preparation	satisfactory preparation	unsatisfactory preparation	extremely poor preparation	not taught at ZCA	for question number 23
EXTENSION METHODS:						
planning a work program						
communication with illiterate farmers						
leading discussions						
conducting meetings						
demonstration plots						
contact farmers						
organizing events						
leadership methods						
problem solving						
project evaluation						
visual aids						
research methods						
FARM ENGINEERING:						
surveying/measuring fields						
hand tools						
or drawn implements						
machines: pumps, handmills, etc.						
Hondas						
combustion engines						
tractors						
bicycles						
HOME SCIENCE:						
human nutrition						
food storage						
food preparation						
sanitation						
meal planning						
RURAL LIFE:						
large scale farming systems						
subsistence farming systems						
local leadership						
illiterate villagers						
women in agriculture						
rural marketing						
urban/rural relationships						
political/gov't involvement						
land claims & ownership						

23. From the complete list given in the previous question, choose the ten (10) topics which you think are the most important to prepare AA/SAA's to work in general extension as camp officers. Mark them in the last column.
24. Is the practical training at ZCA: interesting....., or boring.....; too much..... or too little.....; appropriate for small-scale farmers....., or irrelevant to small scale farmers.....; well planned....., or poorly organized.....?
Comment & suggestion:.....
25. Are the theory classes at ZCA: interesting....., or boring.....; too many....., or too few.....; appropriate for small-scale farmers....., or irrelevant for small-scale farmers.....?
Comment and suggestion:.....
26. At ZCA should there be opportunity for specialization in selected subjects? y/n
27. In your opinion, do the ZCA staff have the practical skills needed to work with small-scale farmers? y/n
28. In your opinion, do the ZCA staff have the theoretical knowledge needed to work with small-scale farmers? y/n
29. At the ZCA do you think that the students are involved in the decision-making? y/n
30. Please write your comment on curriculum/course content at ZCA.....
.....
.....
31. How often do you use the following teaching methods at ZCA?
- | | frequent | occasionally | seldom | never | question 32 | question 33 |
|-------------------------------------------------|----------|--------------|--------|-------|-------------|-------------|
| lecture | | | | | | |
| class discussion | | | | | | |
| small group discussion | | | | | | |
| reading assignments | | | | | | |
| group projects | | | | | | |
| individual projects | | | | | | |
| helpful corrections | | | | | | |
| role play/sketches | | | | | | |
| staff demonstrating | | | | | | |
| staff observation of student, then advising | | | | | | |
| staff working alongside student to give example | | | | | | |
| student opportunity to practise new skills | | | | | | |
| learning from other students | | | | | | |
| farm tours | | | | | | |
| village visits | | | | | | |

6.

32. In column five of the previous question (no. 31), mark the four (4) teaching methods which you think are most effective when teaching small-scale farmers.
33. In the last column of question 31, mark the four (4) teaching methods which help you to learn the best.
34. Please comment on the teaching/learning methods used at ZCA:.....
.....
.....

THANK YOU FOR CONTRIBUTING YOUR TIME AND IDEAS
TO THIS STUDY.

ALL THE BEST TO YOU IN YOUR WORK.

APPENDIX A-4

PHOTOGATHERING

Rural Development Studies Bureau
University of Zambia
P.O. Box 40900
Lusaka.

You have been chosen to be part of a study which is being conducted through the Rural Development Studies Bureau of the University of Zambia. The purpose of the study is to make recommendations to the Ministry of Agriculture and Water Development which may lead to improving the effectiveness of the agricultural extension services.

In order to give us a better understanding of the work done by AA's and SAA's in the field, we are asking you to carefully read and follow the procedures given on the attached pages.

Thank you very much for your cooperation in this special assignment. I hope you have enjoyed taking the photos. We will meet in a few weeks to review them together. If there are any problems please contact me at I.R.D.P., Mpika.

Sincerely yours,

Mabel Jean Rawlins
Research Affiliate
C/o Mpika IRDP
P.O. Box 450148
Mpika

Phone: 02 370491.

PHOTO GATHERING

PROCEDURES

1. THINK BACK OVER THE PAST YEAR ABOUT YOUR WORK AS A GENERAL EXTENSION WORKER.

WHAT ARE SOME OF YOUR BEST MEMORIES?

WHAT PARTS OR EVENTS HAVE BEEN THE MOST SUCCESSFUL FOR YOU?

WHAT ARE SOME OF YOUR UNPLEASANT MEMORIES?

WHAT PARTS OR EVENTS IN YOUR WORK HAVE BEEN THE LEAST SUCCESSFUL FOR YOU?

2. WITH THE CAMERA WHICH HAS BEEN LOANED TO YOU PLEASE TAKE THE FOLLOWING PHOTOS:

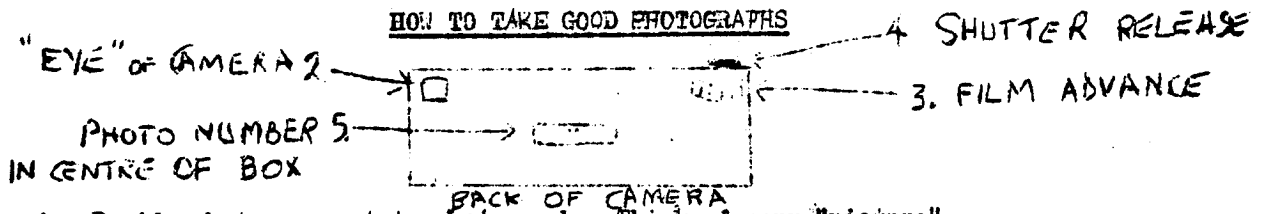
- (a) 5 (~~five~~) photos of something which reminds you of some of the MOST SUCCESSFUL parts of your work.
- (b) 5 (five) photos of something which reminds you of some of the LEAST SUCCESSFUL parts of your work.
- (c) 2 (two) personal photos of your choice, which you will be given to keep

3. AFTER TAKING EACH PHOTO PLEASE COMPLETE THE RECORD CHART.
Put an "X" in the correct column if the photo you took is about a MOST successful or LEAST successful part of your work. Then write a brief description of the intended photo, in case it does not come out clearly.

4. AT MONTH END PLEASE RETURN THE CAMERA, WITH THE FILM STILL INSIDE, TO YOUR D.A.O. Someone will collect it, process the film and return the photos to you within a few weeks.

THANK YOU for participating in this study. Your kind and careful cooperation is a very important part of research. We hope the results of this study will one day help you in your daily work.

HOW TO TAKE GOOD PHOTOGRAPHS



1. Decide what you want to photograph. Think of your "picture".
2. Stand in front of your "picture". Hold the back of the camera to your face. Close one eye and hold the "eye" of the camera to your open eye.

LOOK AT YOUR "PICTURE" THROUGH THE "EYE" OF THE CAMERA. IS IT WHAT YOU WANT? TRY MOVING CLOSER. OR TRY MOVING FARTHER AWAY. TRY LOOKING AT IT FROM ANOTHER SIDE OR FROM A DIFFERENT HEIGHT.

WHEN YOU HAVE THE "PICTURE" YOU WANT IN THE "EYE" OF THE CAMERA....

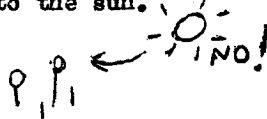
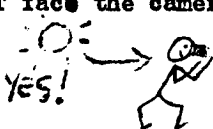
3. Move the "film advance" to the right as far as it will go. The next photo number will appear in the box.
4. Hold the camera very still. Press the "shutter release" and then lift your finger again.

YOU HAVE DONE IT! DO NOT ADVANCE THE FILM AGAIN UNTIL YOU ARE READY TO TAKE YOUR NEXT PHOTO. THE CAMERA IS LOCKED SO THAT YOU CANNOT ACCIDENTALLY TAKE PRESS THE "SHUTTER RELEASE". BUT YOU ARE NOT FINISHED.

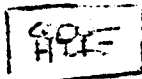
5. On your record chart write the photo number and complete the columns.

A FEW TIPS FOR PHOTOGRAPHERS

- Always take photos where there is plenty of sunlight. Photos will not come out if there is too little light. e.g. electric light or candle light or many clouds. DONOT take photos indoors or after 17 hours or when there is heavy clouds.
- ALWAYS have the sun coming over your shoulder when you take a photo. DO NOT face the camera directly into the sun.



- ALWAYS hold the camera very still when you take a photo. DO NOT move your body or the camera, or your photo will be blurred.



- ALWAYS look at the complete picture through the "eye" of the camera. Is everything included that you want? Look at the sides, the top, the bottom.

DO NOT cut out someone's head or feet - or miss any important part of your "picture".



KEEP YOUR PICTURE IN THE CENTRE

PHOTO RECORD CHART

Name of extension worker/photographer.....

districtcamp.....block.....

Photo number	date taken	MOST successful	LEAST successful	DESCRIBE the photo, and TELL WHY you took it
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	Personal	Personal		
12	Personal	Personal		
Total		5	5	

APPENDIX A-5

WORKSHOP

(ADDRESS OF THE ORGANIZER AND PERSONS TO BE INVITED TO ATTEND)
 JULY 11 - 12, 1964
 ZAMBIA COLLEGE OF AGRICULTURE - LUSAKA

Funding for this Workshop was graciously provided by the
 Royal Netherlands Embassy
 in Lusaka

MONDAY, JULY 11

07.30 hours	- breakfast
08.00	- Introductions
09.30	- SESSION ONE: THE FARMER'S PROBLEMS
10.15	- tea/coffee break
10.45	- Discussion Groups
11.45	- Plenary Reports
12.00	- lunch
14.00	- SESSION TWO: THE CAMP OFFICERS' PARTICIPATION
15.00	- Discussion Groups
15.45	- tea/coffee break
16.30	- Plenary Reports
16.00	- dinner
TUESDAY, JULY 12	
07.00 hours	- breakfast
08.00	- TOUR OF Z.C.A. AREA
09.30	- CLINE PRESENTATION OF TWO D.A.O.'s
10.00	- tea/coffee break
10.30	- SESSION THREE: RECOMMENDATIONS FOR TRAINING
13.00	- lunch
14.00	- Discussion Groups
15.00	- SESSION FOUR: RECOMMENDATIONS FOR FUTURE
16.00	- dinner

WORKSHOP PARTICIPANTS

Mr. Bwalya	Camp Officer	Salama, Mpika District
Miss M. Chewemukululo	Reception	
Mr. Chibuye	Farmer	Mpumba, Mpika District
Mr. D. Chiliboyi	Principal	ZCA Mpika
Mrs. D. Chiliboyi	Home Science	ZCA Mpika
Dr. Paul Francis	Resource	I.R.D.P. Mpika
Mr. Kampamba	P.A.O.	Kasama, Northern Province
Mr. Kamukwanda	Dep'y P.A.O.	Kasama, Northern Province
Mr. Mbewe	Block Supervisor	Lukulu, Mpika District
Mr. O. Mutale	Farmer	
Mr. F. Mulenga	Farmer	Luchembe, Mpika District
Mr. M. Mulenga	Camp Officer	Chalwe, Mpika District
Mr. I. Muuny	Farm Management	ZCA Mpika
Mr. Musanda	Agricultural Science	ZCA Mpika
Mr. Musakanya	Extension	ZCA Mpika
Mr. Muachindalo	Crops	ZCA Mpika
Mr. Mwila	Camp Officer	Mtati, Mpika District
Mr. Mwindula	Agro-Engineering	ZCA Mpika
Mr. Ng'ambi	Animal Husbandry	ZCA Mpika
Mr. A. Nilsson	Agro-Engineering	ZCA Mpika
Mr. Phiri	Farmer	Mpika
Ms Mabel Jean Rawlins	Resource	Rural Development Studies Bureau
Mr. Siame	Camp Officer	Chundeponde, Mpika District
Mr. Sichenba	Provincial Extension Training Officer	Kasama, Northern Province
Mr. Sipingwe	Assistant D.A.O. 1	Mpika District
Mr. Simukonde	Camp Officer	Lukulu, Camp Officer
Mr. Wapamasa	D.A.O.	Luwingu District
Mr. Mubita	Extension	ZCA Mpika

APPENDIX B

TABLES OF Z.C.A. DEPARTMENTS AND SUBJECT AREAS

Following are tables for each Z.C.A. department: agricultural engineering, agricultural science, animal production, crop production, farm management and extension. The extension department curriculum has included government procedures and rural sociology. At Mpika Z.C.A., home science is also included within the extension department. In this study, these areas of the extension curriculum have been treated separately.

The tables include three areas: (i) the frequency with which extension workers advise farmers on specific topics, (ii) the opinions of extension workers about the importance of specific topics to their work, and (iii) an evaluation by Z.C.A. students and graduates of their training.

The data are analyzed as follows:

i) Frequency of advice to farmers

Extension workers indicated whether they advised farmers frequently, occasionally, seldom or never on specific listed topics. An index was compiled from zero (never) to three (frequently). The respondents were grouped by province, indicating variations in type and frequency of advice among the provinces.

ii) Most important topics

Extension workers were asked to select from a list on the questionnaire the ten topics they considered the most important to their work. The tables show the percentage of all respondents who

selected each topic. The higher percentages indicate that more extension workers thought the topic was important. The respondents were grouped by province indicating the differences among provinces in the degree of importance given to specific topics.

iii) **Evaluation of training**

Participants in both the Z.C.A. Student and Graduate Surveys were asked to evaluate how well the training at Z.C.A. prepared people for work as extension officers. The preparation given was rated as excellent, good or poor for the specific listed topics. Where applicable, they were to indicate if a topic was taught at Z.C.A. The data were collated to form an index for each topic ranging from minus two for poor to plus two for excellent. Respondents were grouped according to college as well as into students and graduates.

The comments accompanying each table were based on the percentage and indices explained above and also on discussions and observations noted during the research process.

B-1. AGRICULTURAL ENGINEERING DEPARTMENT (See Table B-1)

The maintenance and use of ox drawn implements was considered to be the most important topic in this subject. Training in this area was mainly theoretical, with little emphasis upon the handling of oxen, particularly at Monze Z.C.A. At Mpika, teams of oxen were regularly used by workers for a wide variety of tasks on the college farm.

Training in the operation and maintenance of tractors received

TABLE B-1. Agricultural Engineering Department

	FREQUENCY OF ADVICE TO FARMERS (Index 0 to 3)						MOST IMPORTANT TOPICS (% of Respondents)						EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)					
	Extension Workers by Province						Extension Workers by Province						Evaluating Groups					
	Extension Workers	Northern	Central	Luapula	Southern		Extension Workers	Northern	Central	Luapula	Southern		Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year	
Surveying/Measuring Fields	--	--	--	--	--		8%	8%	15%	8%	9%		0.9	0.8	1.1	1.0	1.4	
Hand Tools	2.2	1.9	2.5	2.0	3.0		5	10	0	4	0		1.6	1.4	1.5	1.7	1.5	
Ox Drawn Implements	--	--	--	--	--		27	22	33	27	27		1.5	1.4	1.5	1.7	1.6	
Machines: Pumps, Hammelmills	--	--	--	--	--		12	14	7	15	0		0.9	0.8	1.6	1.0	0.8	
Hondas	--	--	--	--	--		6	4	7	12	0		0.2(36) ^a	0.0	0.0	0.4	0.0	
Combustion Engines	--	--	--	--	--		4	4	7	0	0		0.8 (2)	0.8	1.6	0.8	1.0	
Tractors	--	--	--	--	--		19	16	22	23	9		0.7 (1)	0.6	1.3	0.9	0.6	
Bicycles	--	--	--	--	--		1	2	0	0	0		0.7(71)	0.7	-0.4	0.6	-0.6	
Farm Machinery	1.2	1.0	1.5	0.9	2.3		--	--	--	--	--		--	--	--	--	--	
Subject Mean	1.7						10.3%						0.9	0.868		1.102		

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

relatively low evaluation with a number of complaints that it was only theoretical. Students were not allowed to drive college tractors.

The appropriateness of teaching about farm machinery and combustion engines was questioned. A sample comment of one extension worker:

I am still against the teaching of machinery, e.g. mower, combine harvester, which the AA/SAA cannot find in rural areas, since we deal with small scale farmers and villagers. I suggest these lectures to be cancelled and teach more about the use of animals. There is no need of foreign exchange with oxen.

The making and use of simple hand tools, e.g. ax heads, knives, lima beakers, and ox yokes, was criticized because machines and materials which were used at Z.C.A. were not available in the village. Some thought such practical training too simplistic.

A significant number of respondents said that maintenance and use of motorbikes (Hondas) and bicycles was not taught at Z.C.A., even though more extension workers were acquiring these to alleviate transport problems.

Extension workers spent considerable time measuring fields, even though they did not consider it important work. Z.C.A. students were taught to use survey equipment, but their ability to estimate area (e.g., a lima) indicated poor education in spatial concepts. It was suggested that students conduct measuring projects on fields of local farmers using lima ropes.

Second year female students at Monze did not study agro-engineering but took domestic science instead. Thus they missed the

second year classes on water and soil conservation, topics about which female graduates frequently advised their clients.

The appropriateness of the technology taught in agro-engineering was an issue with Z.C.A. graduates and students. One representative commented:

I would rather like the engineering subjects at Z.C.A. to be based mostly on practical work and related to the equipment in the country.

There was little evidence of developing concepts and skills for the adaptation and use of available materials in local situations.

B-2. AGRICULTURAL SCIENCE DEPARTMENT (See Table B-2)

Complex scientific theory was taught. It was suggested that much of the detail could be omitted and the basic concepts of botany, zoology and chemistry be applied where relevant to the study of crop and animal production, similar to the way physics was incorporated into agricultural engineering.

B-3. ANIMAL PRODUCTION DEPARTMENT (See Table B-3)

Animal health was considered important to a significant number of extension workers, even though training in this area was not evaluated highly. Animal health and the production of beef, poultry and dairy was considered particularly important in Southern Province. A criticism of practical training in animal production was the difficulty in providing enough animals to allow students opportunity to practice skills such as dehorning and castration. Advice was given

TABLE B-2. Agricultural Science Department

	MOST IMPORTANT TOPIC (% of Respondents)				EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)					
	Extension Workers by Province				Evaluating Groups					
	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year
Botany	9%	8%	7%	15%	0%	0.8 (8) ^a	1.0	1.4	1.1	1.3
Zoology	4	0	0	12	9	1.1 (3)	1.1	1.5	1.2	1.3
Chemistry	2	2	4	0	0	0.4(24)	0.7	1.3	0.2	0.3
Subject Mean	5%					0.8	0.916		0.873	

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

TABLE B-3. Animal Production Department

	FREQUENCY OF ADVICE TO FARMERS (Index 0 to 3)					MOST IMPORTANT TOPICS (% of Respondents)					EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)				
	Extension Workers by Province					Extension Workers by Province					Evaluating Groups				
	Extension Workers	Northern	Central	Lusapula	Southern	Extension Workers	Northern	Central	Lusapula	Southern	Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year
Poultry	1.5	1.3	1.4	1.5	2.7	24%	25%	22%	19%	36%	1.5	1.4	1.7	1.6	1.5
Sheep and Goats	1.3	1.4	0.7	1.8	0.8	4	2	0	15	0	0.6(1) ^a	0.6	0.8	0.6	0.0
Pigs	--	--	--	--	--	1	0	0	0	9	1.4	1.5	1.6	1.5	1.5
Oxen	1.7	1.4	2.0	1.6	2.8	17	16	19	23	0	1.2	1.1	0.8	1.4	1.4
Beef	1.4	1.2	1.4	1.2	2.5	20	22	15	4	55	1.4	1.5	1.7	1.4	1.5
Dairy	0.5	0.4	0.5	0.4	1.3	9	6	7	4	36	1.2	1.3	1.7	1.2	1.2
Animal Health	--	--	--	--	--	25	16	30	19	64	1.1(4)	0.9	0.8	1.3	1.0
Subject Mean	1.3					14.3%					1.2	1.202			1.279

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

most frequently about oxen, but low evaluation was given for this training, particularly at Monze Z.C.A.

Poultry production was considered an important topic and quite frequently advised. In theory and particularly in practicals, most time was spent teaching the large scale production of hybrid chickens, despite the difficulty, particularly at Mpika, of procuring adequate feeds. Small flocks of ducks and geese were also part of each production unit.

Beef production, most important in Southern Province, was advised regularly in all provinces. Both colleges had a large herd of mainly traditional animals. Training was evaluated satisfactorily. There was a marked contrast between Monze and Mpika in the use and management of pasture and fodder.

Dairy was not considered important by many extension workers and was not frequently advised, except in Southern Province. However, considerable effort was made to maintain Friesian herds at each Z.C.A. At Mpika, a small Zam Zebu cow-calf herd was used for training students in milk production from indigenous animals. At Monze Z.C.A., unlike Mpika, students did not have opportunity to practise milking skills because production levels declined with inexperienced handlers.

Although advice about sheep and goats was given with more frequency than about dairy, training on the topic received a low evaluation. Mpika had no goats and few sheep on the college farm.

Pig production was considered least important. However, large-scale commercial hog production was attempted on both college farms.

B-4. CROP PRODUCTION DEPARTMENT (See Table B-4)

This subject was considered the most important and was most frequently advised, although there were considerable differences between provinces. Commercial and subsistence crops, vegetable production, pest control and crop rotations were rated highest in importance.

Soil management had a high advice frequency and was considered quite important. The long range concerns of water management, soil conservation and fertility did not appear to receive strong emphasis at either college. The use of organic fertilizers, particularly compost, was not stressed, despite its applicability to less capital-intensive farming systems.

Field crop production was unique to each Z.C.A. because of major differences in precipitation, soil type and fertility. Students at Monze did not cultivate rice, while those at Mpika did not grow cotton. The subsistence crops of finger millet and cassava were not grown at either college.

Horticultural training at both colleges required students to be responsible for a variety of vegetable and fruit crops. Advice about vegetable production was given frequently and considered quite important by all extension workers, despite the general opinion that vegetable production is women's work. Management of college gardens and orchards appeared to suffer because of lack of staff continuity.

B-5. EXTENSION DEPARTMENT (See Table B-5)

Extension workers placed great importance on training in

TABLE B-4. Crop Production Department

	FREQUENCY OF ADVICE TO FARMERS (Index 0 to 3)						MOST IMPORTANT TOPICS (% of Respondents)						EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)					
	Extension Workers by Province						Extension Workers by Province						Evaluating Groups					
	Extension Workers	Northern	Central	Luapula	Southern		Extension Workers	Northern	Central	Luapula	Southern		Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year	
Commercial Crops	--	--	--	--	--		39%	43%	33%	35%	46%		1.5	1.5	1.7	1.5	1.1	
Subsistence Crops	--	--	--	--	--		34	29	41	39	27		1.5	1.5	1.4	1.5	1.0	
Intercropping	--	--	--	--	--		9	8	11	12	0		0.9	1.0	0.9	0.9	0.6	
Crop Rotations	2.8	2.8	2.9	2.8	3.0		30	22	33	35	46		1.6	1.7	1.6	1.6	1.3	
Vegetable Production	2.8	2.8	2.6	2.8	3.0		39	45	26	42	36		1.4	1.5	1.7	1.4	1.6	
Fruit Production	2.3	2.4	2.0	2.1	2.6		21	20	11	27	36		1.2	1.2	1.4	1.3	1.4	
Compost Prep. and Use	--	--	--	--	--		6	8	7	4	0		0.9	1.1	1.2	0.8	-0.2	
Pest Control	--	--	--	--	--		34	37	19	31	64		1.3	1.4	1.5	1.3	1.0	
Water Management	1.6	1.6	1.5	1.6	1.6		12	12	7	12	27		0.6(10) ^a	0.5	1.0	0.6	0.7	
Harvesting	--	--	--	--	--		9	10	4	12	9		1.6	1.6	1.6	1.5	1.0	
Soil Management	2.5	2.5	2.4	2.5	2.7		18	20	7	23	18		1.3	1.2	1.1	1.2	0.8	
Maize	3.0	2.9	3.0	3.0	3.0		--	--	--	--	--		--	--	--	--	--	
Beans	2.6	2.8	2.2	2.7	2.0		--	--	--	--	--		--	--	--	--	--	
Groundnuts	2.7	2.7	2.6	2.8	2.7		--	--	--	--	--		--	--	--	--	--	
Rice	1.7	2.1	0.6	2.7	0.1		--	--	--	--	--		--	--	--	--	--	
Cassava	1.2	1.8	0.8	1.6	0.0		--	--	--	--	--		--	--	--	--	--	
Millet	1.6	2.5	1.2	1.3	0.5		--	--	--	--	--		--	--	--	--	--	
Subject Mean:	2.3						22.8%						1.3	1.295			1.244	

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

TABLE B-5. Extension Department

	MOST IMPORTANT TOPIC (% of Respondents)					EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)				
	Extension Workers by Province					Evaluating Groups				
	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year
Programme Planning	48%	53%	52%	39%	36%	1.5	1.6	1.5	1.4	1.5
Communicating with Illiterate Farmers	31	37	22	35	18	1.5	1.6	1.6	1.5	1.6
Leading Discussions	5	2	15	4	0	1.3	1.4	1.4	1.3	1.3
Conducting Meetings	24	20	26	23	36	1.7	1.7	1.4	1.7	1.4
Demonstration Plots	27	37	26	23	0	1.6	1.6	1.5	1.6	1.6
Contact Farmers	10	6	11	15	9	1.5(3) ^a	1.5	1.3	1.5	1.4
Organizing Events	7	8	11	4	0	1.0(2)	1.2	1.1	0.9	1.2
Leadership	16	18	15	12	18	1.2(3)	1.3	1.3	1.1	1.1
Problem Solving	26	27	15	31	36	1.3(1)	1.4	1.2	1.2	1.6
Project Evaluation	6	6	7	4	9	1.0(1)	1.1	1.3	0.9	1.0
Visual Aids	9	8	7	15	0	1.4	1.5	1.6	1.4	1.1
Subject Mean	19%					1.4	1.381		1.239	

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

extension education. The highest importance rating of all topics in all subjects was given to program planning. Communication with illiterate farmers, demonstration plots, problem solving and conducting meetings also received high importance ratings. The training offered in extension methods was evaluated highly relative to other subjects.

Each Z.C.A. followed a distinctive approach to extension training, although both colleges devoted most of the first year syllabus to government systems and bureaucratic procedures. The second year syllabus included theory of social structures and social change, problem solving, adult education principles and practices, and program evaluation. Extension theory was based on the adoption - diffusion model using stereotyped adopter categories.

At Monze Z.C.A., all second year students came together for lectures in extension theory, the large class inhibiting discussion and debate. Nevertheless, lively controversies between some students after class indicated critical social and political analysis. At Mpika, much effort and time had gone into the development of a new syllabus with extensive teachers' and students' notes. Material was presented simply with little critical content, however classes were small and discussion lively. Included within the Mpika extension department was training in home science (see SECTION 5.4.7).

Practical training was unique to each college. Monze, surrounded by large commercial farms, offered little opportunity for students to interact with small-scale farmers. Teaching demonstrations were presented to fellow students. At Mpika, practical classes comple-

mented theory. Small-scale farming and village conditions surrounding the Z.C.A. were not unlike many agricultural camps. Students visited local farmers and completed a village study practicum for one week, learning from villagers and conducting demonstrations.

An active ongoing extension program in the districts around each Z.C.A. was not initiated from either college. No formal links occurred between the colleges and the Department of Agriculture extension services in the area, although this had occurred in past years at Monze. A number of Z.C.A. graduates and students commented that practical training in extension should include more interaction with farmers and be similar to village conditions.

B-6. FARM MANAGEMENT DEPARTMENT (See Table B-6)

Extension workers most frequently advised farmers on securing loans but they evaluated their training on that topic quite poorly.

Rated highest in importance was budgeting and finances, with high evaluation ratings also. However, comments indicated divergent opinions about the applicability of complex budgeting procedures, such as cash flow, to the average Zambian farmer.

Record keeping was considered important by a significant number of extension workers. At Mpika, the keeping of farm management records was incorporated in daily routine duties.

Several comments suggested that practical management projects should be assigned using the actual conditions of local farmers. Emphasis should not only be on financial management, but on efficient management of available resources such as land, labour and inputs.

TABLE B-6. Farm Management Department

	FREQUENCY OF ADVICE TO FARMERS (Index 0 to 3)					MOST IMPORTANT TOPICS (% of Respondents)					EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)				
	Extension Workers by Province					Extension Workers by Province					Evaluating Groups				
	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year
Labour Management	2.0	2.1	1.7	2.2	1.9	16%	14%	7%	31%	9%	1.4	1.3	1.5	1.4	1.4
Securing Loans	2.7	2.8	2.7	2.6	2.8	12	14	15	8	9	1.0(7) ^a	1.1	0.5	1.0	0.2
Marketing	--	--	--	--	--	5	4	11	4	0	1.1(4)	1.1	0.6	1.0	0.6
Record Keeping	--	--	--	--	--	28	25	33	31	27	1.6	1.6	1.6	1.6	1.4
Budgeting/Finances	2.0	2.0	2.0	1.9	2.3	40	39	41	42	36	1.7	1.6	1.7	1.7	1.5
Subject Mean	2.2					20.2%					1.4	1.359		1.348	

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

Farm management concepts were taught in a pupil-centred problem solving manner at Monze College, where the staff member acted as resource person facilitating non-directive learning in a highly skilled manner. At Mpika College, a new handbook was printed containing farm management theory and assignments.

Basic mathematical procedures were taught to first year students at both colleges. It was observed that some students had great difficulties comprehending the concepts.

B-7. HOME SCIENCE DEPARTMENT (See Table B-7)

At Monze Z.C.A., all first year students were taught the biochemical complexities of human nutrition. Only second year female students studied home economics, while their male colleagues studied agricultural engineering. The home economics course included organization of women's clubs, child care, sewing and homecraft skills. Culinary and sewing skills were practiced on modern electrical equipment.

At Mpika Z.C.A., all male and female students studied home science as part of the extension programme. The syllabus included basic concepts of human nutrition, identification and prevention of malnutrition, preparation of simple balanced meals, sanitation, and the making and use of stoves, storage bins, and other implements using appropriate materials and technologies. The syllabus used at Mpika Z.C.A. was approved for use at both colleges, but Monze had not yet adopted it.

Human nutrition was rated quite important and was frequently

TABLE B-7. Home Science Department

	FREQUENCY OF ADVICE TO FARMERS (Index 0 to 3)						MOST IMPORTANT TOPICS (% of Respondents)						EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)					
	Extension Workers by Province						Extension Workers by Province						Evaluating Groups					
	Northern		Central		Luapula		Northern		Central		Luapula		Extension Workers		Monze Graduates		Monze 2nd Year	
	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern	Workers	Southern
Human Nutrition	1.5	1.3	1.1	1.9	1.5	1.5	20%	22%	19	19%	9%	9%	1.1(16) ^a	1.2	1.3	1.0	1.3	1.3
Food Storage	--	--	--	--	--	--	12	12	15	8	9	9	1.1(10)	1.1	1.2	1.1	1.3	1.3
Food Preparation	--	--	--	--	--	--	4	6	0	0	9	9	0.7(30)	0.9	1.0	0.6	1.2	1.2
Sanitation	1.4	1.4	1.0	1.9	1.6	1.6	5	6	4	4	9	9	0.6(27)	0.9	1.0	0.4	0.8	0.8
Meal Planning	--	--	--	--	--	--	1	2	0	0	0	0	0.6(42)	0.9	0.7	0.4	1.1	1.1
Subject Mean	1.5						6.2%						0.82	0.968		0.684		

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

advised by extension workers, both male and female.

B-8. GOVERNMENT PROCEDURES SUBJECT AREA (See Table B-8)

This subject area was incorporated into the extension syllabus, although a significant number of respondents said they had not studied government salary and financial procedures.

B-9 RURAL LIFE SUBJECT AREA (See Table B-9)

Some topics in this subject were covered in the extension syllabus.

Extension workers considered the study of local leadership to be very important.

Land claims and ownership was considered important but received a poor evaluation, and a significant number of respondents said it had not been taught at Z.C.A.

Extension workers did not appear to be aware of the importance of understanding the implications of women in agriculture nor the relationship between rural and urban societies. A significant number of respondents said these topics were not taught at Z.C.A.

The study of farming systems was considered important. However, the concept of farming systems was not well presented in the curriculum.

Research methodology received very low evaluation, yet was given some importance. Extension workers had few skills in initiating field trials within their camps and recognized their need to do this.

TABLE B-8. Government Procedures Subject Area

	MOST IMPORTANT TOPIC (% of Respondents)				EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)			
	Extension Workers by Province				Evaluating Groups			
	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Monze Graduates	Mpika 2nd Year Graduates
Party Structure and System	--	--	--	--	--	1.2(13) ^a	1.1	1.3
Communications, Letters, Telegrams, etc.	16	12	26	12	18	1.2 (5)	1.3	1.2
Salary and Finances	12	14	15	12	0	0.4(35)	0.9	0.1
Subject Mean	14					0.9	1.108	0.978

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

TABLE B-9. Rural Life Subject Area

	MOST IMPORTANT TOPIC (% of Respondents)				EVALUATION OF Z.C.A. PREPARATION (Index -2 to +2)					
	Extension Workers by Province				Evaluating Groups					
	Extension Workers	Northern	Central	Luapula	Southern	Extension Workers	Monze Graduates	Monze 2nd Year	Mpika Graduates	Mpika 2nd Year
Research Methods	13%	16%	7%	19%	0%	0.4(14) ^a	0.6	1.0	0.3	0.2
Large Scale Farming Systems	14	14	22	12	0	1.0 (6)	1.1	1.1	1.0	0.7
Subsistence Farming Systems	17	16	19	19	9	1.5 (3)	1.5	1.3	1.5	1.1
Local Leadership	35	25	44	42	46	1.3 (4)	1.4	1.4	1.3	1.0
Illiterate Villagers	10	16	7	0	9	1.1 (9)	1.2	1.1	1.1	0.9
Women in Agriculture	5	6	4	8	0	0.4(25)	0.8	0.8	0.3	0.3
Rural Marketing	12	16	7	12	9	0.5(16)	0.8	0.5	0.4	0.3
Rural Urban Relationships	9	6	7	15	9	0.5(26)	0.6	0.8	0.5	0.5
Government Involvement	10	6	19	12	0	0.7(14)	0.8	0.9	0.6	0.6
Land Claims and Ownership	22	25	33	8	18	0.2(48)	0.4	0.7	-0.1	-0.3
Subject Mean	14.7%					0.6	0.969		0.808	

^a Bracketed numbers indicate the number of respondents who said the topic was not taught at Z.C.A.

APPENDIX C

WOMEN AND AGRICULTURAL EXTENSION

C-1. Agricultural extension service to rural women has mainly been the mandate of the Home Economics section of the extension branch. It is available only in a few localities and its effectiveness is limited.

C-2. The study brought forth considerable information about female extension work, but time and space restrict adequate treatment of this important topic. This appendix provides a brief list of some of the findings.

C-3. re: Z.C.A. Female Students

Female students had background experience in home economics, community development, and general extension. Some female students had no rural or work experience, having come directly from Secondary School.

The majority of female students did not want to work in rural areas after graduation.

The majority of female students had no preference to be extension workers after graduation.

There were few female role models on Z.C.A. staff in agricultural, rather than home economics, posts.

There appeared to be considerable pressure for educated (Form V) women to marry a suitably educated man and enjoy a standard of living not easily attainable in rural areas.

The training programme at Monze offered a first year course in Human Nutrition to all students and a course in Home Economics to all second year female students, while the males

studied agro-engineering. At Mpika, male and female students followed identical programmes including Home Science theory and practicals in second year.

C-4. re. **Extension Services to Rural Women**

Only nine percent of the Z.C.A. Graduate Survey respondents were women. Only one respondent classified herself as an extension worker. Most female graduates were posted in district and provincial centres.

Z.C.A. graduates were asked how rural women could benefit best from the extension service. They suggested that more female extension staff should be posted to camps and that more services such as credit and machinery hire should be provided for women. It was frequently expressed that women farmers needed the same advice as men and did not need a separate extension programme. The extension service should not exclude women, but deliberately aim at including them in the regular programme.

C-5. The research findings pointed to the need for further study to determine:

The extension needs of rural women;

Effective ways of helping rural women;

Realistic objectives for the selection and training of female extension workers; and

A realistic and effective career structure for female Z.C.A. graduates.