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**RESEARCH-EXTENSION LIAISON OFFICERS
IN ZAMBIA**

BRIDGING THE GAP BETWEEN RESEARCH AND EXTENSION

by

Stuart Kean and Livingston Singogo

ISNAR

International Service for National Agricultural Research

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On-Farm Client-Oriented Research (OFCOR)

OFCOR—Discussion Paper No. 1

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The logo for ISNAR (International Service for National Agricultural Research) is displayed in a bold, italicized, sans-serif font. The letters are black with a white, speckled texture, giving it a dynamic and modern appearance.

International Service for National Agricultural Research

INTRODUCTION TO THE ISNAR STUDY ON ORGANIZATION AND MANAGEMENT OF ON-FARM CLIENT-ORIENTED RESEARCH (OFCOR)

Deborah Merrill-Sands
Study Leader

Introduction

In 1986, ISNAR initiated a major study on the organization and management of on-farm, client-oriented research (OFCOR) in national agricultural research systems (NARS). The study was developed in response to requests from NARS leaders for advice in this area and was carried out with the support of the Government of Italy and the Rockefeller Foundation. The objective is to analyze the critical organizational and managerial factors that influence the way national research institutes can develop and sustain OFCOR programs to realize their specific policies and goals.

What is OFCOR?

OFCOR¹ is a research approach designed to help research meet the needs of specific clients, most commonly resource-poor farmers. It complements — and is dependent upon — experiment station research. It involves a client-oriented philosophy, a specific research approach and methods, and series of operational activities carried out at the farm level. These activities range from diagnosing and ranking problems through the design, development, adaptation, and evaluation of appropriate technological solutions. Farmers are directly involved at various stages in the process.

In this study, OFCOR programs are analyzed in terms of the functions OFCOR can perform within the large research and extension process. We have identified the following seven potential functions as a framework for analyzing the organization and management of a range of on-farm research programs in nine national agricultural research systems. The functions are:

- 1) to support within research a *problem-solving approach, which is fundamentally oriented toward farmers as the primary clients* of research;
- 2) to contribute to the application of *an interdisciplinary systems perspective* within research;
- 3) to *characterize major farming systems and client groups*, using agroecological and socioeconomic criteria, in order to diagnose priority production problems as well as identify key opportunities for research with the objective of improving the productivity and/or stability of those systems;
- 4) to *adapt existing technologies and/or contribute to the development of alternative technologies* for targeted groups of farmers sharing common production problems by conducting experiments under farmers' conditions;
- 5) to *promote farmer participation in research* as collaborators, experimenters, testers, and evaluators of alternative technologies;
- 6) to *provide feedback to the research priority-setting, planning and programming process* so that experiment station and on-farm research are integrated into coherent program focused on farmers' needs;
- 7) to *promote collaboration with extension and development agencies* in order to improve the efficiency of the processes of technology generation and diffusion.

1. The designation *OFCOR* has been used as distinct from *farming systems research* (FSR) because the latter has come to have very different meanings for different people.

Why is the Organization and Management of OFCOR Important?

Over the last 15 years, many NARS have set up OFCOR programs of varying scope and intensity to strengthen the link between research and farmers — particularly resource poor farmers. While significant attention has been given to developing methods for OFCOR, provisions for fully integrating this approach within the research process have been inadequate and the institutional challenge underestimated. With the accumulation of experience, it is clear that NARS have confronted significant problems in implementing and effectively integrating OFCOR into their organizations. In many cases, OFCOR programs have become marginalized and have not had the intended impact on the research process.

Improved organization and management are crucial to overcoming these problems. Effectively integrating OFCOR within a research system implies forging a new research approach which complements and builds on existing research efforts. This is no small task. It involves establishing new communication links between researchers of diverse disciplines, extension agents, and farmers. It requires hiring people with the right skills or systematically training existing staff. It requires changes in planning, programming, review, and supervisory procedures. It creates increased demands for operational funds and logistical support for researchers working away from headquarters. And, it often involves working with one or more donor agencies. All of these make the management of OFCOR more demanding than that of traditional experiment station research.

This study focuses directly on these issues of implementation and institutionalization. We have analyzed and synthesized the experiences of diverse NARS in which OFCOR programs have been established for at least five years. The intention is to provide a body of practical experience upon which research managers can draw as they strive to strengthen OFCOR as an integral part of their research systems.

Operational Strategy and Products

Our approach has been to learn from the experiences of research managers in NARS. We have built the analysis around case studies of nine countries whose NARS have had sufficient time to experiment with and develop diverse organizational arrangements and management systems for implementing OFCOR. By region, the countries are as follows:

Latin America: Ecuador, Guatemala, Panama
Africa: Senegal, Zambia, Zimbabwe
Asia: Bangladesh, Indonesia, Nepal

The study has generated four different types of reports: country case studies, discussion papers, comparative study papers, and synthesis papers. These are briefly described below and a complete list of the study's publications follows.

Case studies: The case studies are stand-alone products. Each is a comprehensive analysis developed by a team of national researchers with personal experience in the individual OFCOR programs. The cases provide useful insights and lessons on the general issues, as well as specific guidance for research policy and the organizational and management of on-farm research in their countries.

Discussion papers: The discussion papers derive from the cases and are written specifically for research managers. They are short, analytic, pieces which highlight important experiences, lessons, or practical solutions to common problems encountered in the organization and management of on-farm research in national research systems.

Comparative study papers: The comparative study papers provide a systematic analysis across the case studies. Synthesizing the experience of the case study NARS, these papers provide practical advice for research managers on organizational and managerial issues central to the effective integration of on-farm client-oriented research within their research systems.

Synthesis papers: These are short papers designed to highlight the principal findings and conclusions from the study.

PUBLICATIONS FROM THE STUDY ON THE ORGANIZATION AND MANAGEMENT OF ON-FARM CLIENT-ORIENTED RESEARCH

OFCOR Country Case Studies

- No.1 Zambia: Organization and Management of the Adaptive Research Planning Team (ARPT), Research Branch, Ministry of Agriculture and Water Development. S.A. Kean and L.P. Singogo.
- No.2 Guatemala: Organización y Manejo de la Investigación en Finca en el Instituto de Ciencia y Tecnología Agrícolas (ICTA). S. Ruano and A. Fumagalli.
- No.3 Bangladesh: The Evolution and Significance of On-Farm and Farming Systems Research in the Bangladesh Research Institute. M.A. Jabbar and M.Z. Abedin.
- No.4 Nepal: Organization and Management of On-Farm Research in the National Agricultural Research System. B.N. Kayastha, S.B. Mathema, and P. Rood.
- No.5 Zimbabwe: Organization and Management of On-Farm Research in the Department of Research and Specialist Services, Ministry of Lands, Agriculture and Rural Settlement. M. Avila, E.E. Whingwhiri, and B.G. Mombeshora.
- No.6 Sénégal: Organisation et Gestion de la Recherche sur les Systèmes de Production. J. Faye and R.J. Bingen.
- No.7 Ecuador: Organización y Manejo de la Investigación en Finca en el Instituto Nacional de Investigaciones Agropecuarias (INIAP). R. Solíz V., P. Espinoza, and V.H. Cardoso.
- No.8 Panamá: Organización y Manejo de Programas de Investigación Agropecuaria de Panamá (IDIAP). M. Cuéllar M.
- No.9 Indonesia: Organization and Management of On-Farm Research in the Agency for Agricultural Research and Development. J. Budianto, I.G. Ismail, Sridodo, P. Sitorus, D.D. Tarigans, A. Mulyadi. (Forthcoming)

OFCOR Discussion Papers

- No.1 Research-Extension Liaison Officers in Zambia: Bridging the Gap between Research and Extension. S.A. Kean and L. P. Singogo.
- No.2 Closing the Gap Between Research and Resource-Poor Farmers: A New Model for Technology Transfer Developed in Guatemala. R. Ortez, S. Ruano, H. Juarez, F. Olivet, A. Meneses. (Forthcoming)

OFCOR Comparative Study Papers

- No.1 Strengthening the Integration of On-Farm Client-Oriented Research and Experiment Station Research in National Agricultural Research Systems: Management Lessons from Nine Country Case Studies. D. Merrill-Sands and J. McAllister.
- No.2 Organization and Management of Field Activities in On-Farm Research: A Review of Experiences in Nine Countries. P.T. Ewell.
- No.3 Resource-Poor Farmer Participation in Research: A Synthesis of Experiences from Nine National Agricultural Research Systems. S.D. Biggs.
- No.4 Linkages between On-Farm Research and Extension in Nine Countries. P.T. Ewell.
- No.5 Staff Management Issues in On-Farm Client-Oriented Research: Lessons for Managers. R.J. Bingen and S.V. Poats.
- No.6 Financial Resources and Management for On-Farm Research: A Review of Experiences in Nine Countries. E.H. Gilbert. (Forthcoming)

OFCOR Synthesis Papers

- No.1 Management of Key Institutional Linkages on On-Farm Client-Oriented Research: Lessons from Nine National Agricultural Research Systems.** D. Merrill-Sands, P.T. Ewell, S. Biggs, J. McAllister, J. Bingen and S. Poats. (Forthcoming)

FOREWORD

Findings from the ISNAR study show that developing effective links with extension or other types of technology transfer agencies is a chronically weak area in organization and management of on-farm client-oriented research in national agricultural research systems.

Of the nine countries reviewed in the ISNAR study, Zambia has given most attention to forging links with extension through the on-farm research teams deployed in the country's nine provinces. Research Extension Liaison Officers (RELOs), assigned to the teams, have been the key linkage mechanism. Kean and Singogo provide a very useful analysis of the reasons for creating the RELO position, the RELOs' responsibilities and activities, their accomplishments, and the difficulties that have arisen in managing this position which straddles two departments within the ministry.

Posting of Research-Extension Liaison Officers is a commonly proposed solution to linkage problems. This paper provides research managers with a very insightful and candid assessment, based on several years of practical experience, of the strengths and weaknesses of this linkage mechanism. The Zambian experience shows that RELOs can make a significant contribution to strengthening links and broadening the impact of on-farm research. Several institutional conditions are necessary, however, if the mechanism is to be used effectively. Managers in both research and extension have to support the liaison position. Given the RELO's dual reporting relationship within research and extension, careful attention must be given to defining their roles, responsibilities, and reporting relationships clearly. The RELO should be posted with researchers. And, lastly, the position has to be managed closely during the early stages of implementation.

Deborah Merrill-Sands
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Country *

Area: 735 000 km²
Population: 7.2 million
Population density: 9.6 persons/km²
GDP per capita: US\$ 250
% GDP = Ag GDP: 12
Av. annual growth rate Ag GDP (1980-87): 3.2
% economically active population employed in agriculture (1986): 71.2
Index of food production per capita (1985-87): 74 (1979-81 = 100): 97

Research System **

Number of researchers: 157
Number of technicians: 247
% researchers with advanced degrees (MSc, PhD): 59
% foreign researchers: 46
% researcher person-years allocated to OFCOR: 20

Notes:

- * All figures for 1987, unless otherwise specified
Source: *World Development Report 1989*. IBRD/World Bank, Washington D.C.
- ** All figures for 1986
Source: Kean and Singogo, 1988

INTRODUCTION

Zambia is one of nine countries studied in a major project undertaken by the International Service for National Agricultural Research (ISNAR) on the organization and management of on-farm client-oriented research in national agricultural research systems (Kean and Singogo, 1988). In an effort to bridge the gap between on-farm research and extension, Zambia has created a number of linkage mechanisms. One of the most important of these is the use of Research-Extension Liaison Officers (RELOs), seconded from extension to the provincial units of the Adaptive Research Planning Team (ARPT).

By undertaking such activities as testing promising technologies on-farm, revising crop recommendations, and coordinating provincial demonstration programs, RELOs have contributed to an improvement in research-extension links. Recently, the demand for their services has increased from both research and extension, to the extent that they now serve to link extension not only with the ARPT but with all research teams in the Research Branch of Zambia's Department of Agriculture. In spite of this success, however, the RELO position still faces a number of problems, particularly in relation to recruitment, job description, channels of responsibility, and staff turnover.

This paper analyzes the role, activities, and achievements of RELOs, the difficulties which have arisen in managing them, and attempts which are being made to overcome these difficulties.

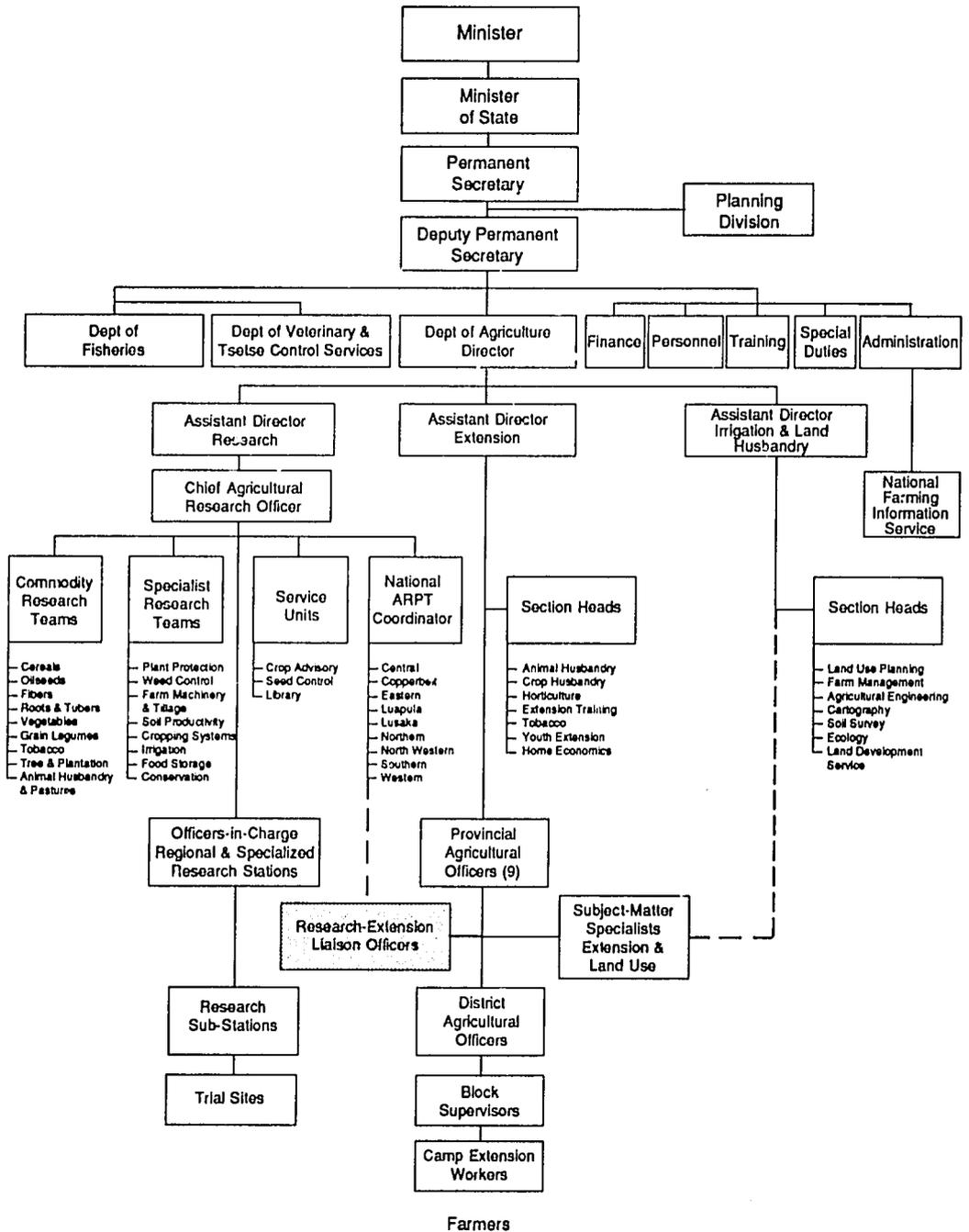
The Adaptive Research Planning Team

The responsibility for agricultural research in Zambia lies with the Research Branch in the Department of Agriculture (*see Figure 1 overleaf*). This branch is headed by the Assistant Director (Research), supported by the Chief Agricultural Research Officer. Until 1980, it was organized along disciplinary lines. It was then reorganized into a two-level system which includes 16 Commodity and Specialist Research Teams (CSRTs), three Service Units, and the ARPT.

The ARPT is designed to complement the work of the CSRTs. The latter have a commodity focus and a national mandate; they conduct applied research, mainly at research stations located in Zambia's four main agroecological zones. The ARPT, like the extension service, has a geographical focus, with teams deployed in the provinces. The teams are responsible for adapting and testing the technologies developed by the commodity and specialist researchers according to the needs of specific farming systems in each of Zambia's nine provinces. The ARPT has primary responsibility for on-farm client-oriented research within the Research Branch.

The ARPT program is headed by a National Coordinator and, in 1986, accounted for about 20% of the scientists in the Research Branch. Like other research programs, it relies heavily upon expatriate scientists and external donor support; each provincial team is supported by a different donor. To date, seven teams have been deployed. They are based at the regional research stations but have a provincial mandate. Each team is headed by a Provincial Coordinator, who is responsible for the administration and supervision of the program. On average, a team consists of four scientists and three Trials Assistants. The Trials Assistants are technicians who are seconded from extension to work in the Target Areas where ARPT trials are being conducted.

Figure 1. Structure of the Department of Agriculture in Zambia's Ministry of Agriculture



The objective of the ARPT program is to improve the relevance of new technologies for small-scale farmers by:

- collecting information on the different farming systems in Zambia;
- identifying the technical problems faced by farmers which are hampering development, and feeding this information to the appropriate commodity and specialist researchers;
- selecting components from previous technical research likely to be appropriate to the immediate needs and circumstances of the identified groups of farmers, and testing these under farmers' conditions;
- linking research closely to farmers and extension by drawing extension staff into the technology generation process;
- passing on relevant information to planners and agricultural service institutions.

To achieve this objective, the ARPT has placed high priority on developing more effective links between research and extension. To this end, it aims to incorporate a professional RELO, seconded full-time from the Extension Branch, into each provincial team.

The Extension Service

Extension activities in Zambia are the responsibility of the Extension Branch in the Department of Agriculture. This branch is headed by the Assistant Director of Agriculture (Extension), who is supported at national level by seven Chief and Senior Subject-Matter Specialists. At provincial level, Provincial Agricultural Officers are supported by subject-matter specialists and administrative personnel. The District Agricultural Officers are also supported by subject-matter specialists. Districts are divided into 'blocks', and then further subdivided into 'camps'. The District Agricultural Officer operates through Block Supervisors and Camp Extension Workers (these names were in use at the time the field work for this paper was undertaken, but the two positions are now known as Ward Extension Officers). Camp Extension Workers provide the day-to-day contact with farmers.

Of the 2400 staff in the Zambian extension service, about half are based at the block and camp level; all Block Supervisors and Camp Extension Workers are civil servants. The extension worker-farmer ratio ranges from 1: 200 to 1: 1500, reflecting varying population densities, farming systems, and agricultural potential. The overall average is 1: 600.

The objectives of the Zambian extension service are: to encourage the farming community, particularly small-scale farmers, to adopt improved agricultural practices in order to achieve optimum production levels; to promote the efficient and widespread use of various inputs; and to bring farmers' needs to the attention of researchers in order to identify possible solutions. Specific extension activities depend upon the level at which they are carried out. In general, the activities include:

- advising different categories of farmers on input requirements, production techniques, marketing, and storage;
- providing training for extension workers, farmers, and agricultural institutions;

- providing feedback on farmers' production constraints to appropriate institutions, including the Research Branch;
- collecting and compiling information on input supply, agricultural production, and marketing.

Since 1978, most provinces have used a modified Training and Visit system in which the core features are regular planned visits to groups of farmers and periodic training of extension workers (Benor and Baxter, 1984). The Training and Visit system has been only partially implemented because of insufficient funding.

At both the national and provincial levels, the Extension Branch currently has enough subject-matter specialists, with appropriate academic qualifications, to undertake the type of activities specified above. However, they have been recruited directly from the university and thus have only limited field experience in planning and implementing on-farm trials and demonstrations. In some instances, this has led not only to a lack of confidence in performing designated tasks but also to a lack of initiative in creating new activities which would have strengthened the links between research and extension.

Apart from a few provincial programs which are funded by donors, the Zambian extension service is seriously constrained by a lack of resources. This has had an adverse impact on the effectiveness of operations, conditions of service, and staff morale.

Research-Extension Links

The Department of Agriculture has long recognized the importance of establishing effective links between research and extension, as illustrated by the explicit inclusion of linkage activities in the objectives of the Extension Branch and by the job descriptions of the subject-matter specialists. Additional measures aimed at developing such links have included:

- visits to farms in various provinces by senior researchers and managers, accompanied by provincial subject-matter specialists and local extension workers, and followed up by Provincial Experimental Committee meetings;
- attendance at research station field days by researchers and extension staff;
- invitations to all subject-matter specialists to attend Commodity Research Meetings and special training workshops;
- the location of the two Assistant Directors (Research and Extension) in adjacent offices at the department's headquarters.

Despite these efforts, the large gulf between researchers and extension workers in Zambia persisted. There were three main reasons for this. Firstly, effective communication between researchers and extension workers was hampered by insufficient resources being allocated to extension; this restricted their ability to travel and to participate in research activities. Differences in technical jargon used by the two groups have also hampered communication.

Secondly, extension workers considered that much of the research being conducted at the research stations was not relevant to the conditions of the small-scale farmers with whom they were working.

Table 1. Level of ARPT Interaction with Extension Workers¹

Level	Participation in ARPT activities			Involvement in planning ARPT programs	Feedback to ARPT of extension comments on trials and farmer problems	Feedback of results from ARPT	ARPT involvement in planning extension demonstrations	ARPT involvement in extension training
	Surveys	Trials	On-farm tests ²					
National	—	—	—	—	—	—	—	—
Provincial	*	—	*	***	**	***	***	***
District	*	—	*	**	**	**	***	**
Block	*	*	**	*	***	**	*	**
Camp ³	**	**	**	*	***	**	*	**

Notes:

- No interaction
- *
- ** Moderately good interaction
- *** Good interaction

There is no example of very good interaction

- 1 The information contained in this table is based on an assessment using interviews with 27 extension workers in Central, Eastern, and Luapula Provinces and reports from other provinces. The assessment excludes the direct involvement of RELOs and Trials Assistants themselves but includes them as facilitators of interaction.
- 2 On-farm tests have been conducted only in Central, Eastern, Luapula, and Western Provinces.
- 3 At camp level, the interaction relates to that with local extension workers within the ARPT Target Areas.

Source: Kean and Singogo, 1988

On the other hand, researchers tended to blame extension workers for the failure of these farmers to adopt research recommendations and generally considered that there was little to be learned from extension workers.

Thirdly, there were very few formal occasions at which researchers and extension workers could meet and communicate effectively. Although some researchers and provincial extension staff met during the annual research tours and at Provincial Experimental Committee meetings, these were far from adequate mechanisms for jointly identifying small-scale farmers' technical problems.

Against this background, in 1978 the Minister of Agriculture placed high priority on finding ways of improving research-extension coordination in order to facilitate the transfer of research results to the farming community (GRZ MAWD, 1978). The key element in this initiative was the establishment of the ARPT in 1980 and the subsequent creation of a number of mechanisms aimed at improving research-extension links through the ARPT (Kean and Singogo, 1988). The principal linkage mechanisms are:

- extension workers take part in many ARPT activities, such as formal and informal surveys and ARPT field days;
- RELOs and Trials Assistants are seconded full-time from extension to work with the ARPT;
- Camp Extension Workers, under the supervision of RELOs, monitor technology adoption;
- Provincial Research and Extension Committee meetings give research and extension staff the opportunity to plan provincial research programs together, to discuss the content of extension messages to be included in demonstrations, and to suggest changes in research recommendations;
- the head of each ARPT team, the Provincial Coordinator, attends the Provincial Agricultural Officer's regular staff meetings.

The findings of the study on the organization and management of the ARPT, conducted in 1986, indicate that the ARPT has made moderately good progress in developing effective links with extension workers, particularly in the ARPT Target Areas (Kean and Singogo, 1988). As shown in Table 1, the level of interaction varies with the different levels of extension workers. Camp Extension Workers have been directly involved in such ARPT activities as surveys, trials, and on-farm tests, and they and the Block Supervisors have provided useful feedback to the ARPT on trials and farmers' problems. At provincial and, to a lesser extent, district levels, the subject-matter specialists have had good opportunities to participate in planning ARPT programs, and ARPT staff have been involved in planning extension demonstrations, training extension workers, and producing newsletters, particularly when a RELO has been on the ARPT team. At national level, however, there has been very little interaction between the ARPT and the Chief and Senior Subject-Matter Specialists. Greater interaction at this level would have increased understanding and support for ARPT activities.

Chapter 1

RESEARCH-EXTENSION LIAISON OFFICERS

When the structure of the ARPT was discussed and agreed upon in 1980, the need for the ARPT to work closely with the extension service was referred to only in general terms. Some months after the ARPT had been established, a Project Identification mission organized by the United States Agency for International Development (USAID) proposed that a RELO should be seconded to each provincial ARPT. The idea was included in the Project Paper for USAID's Zambia Agricultural Research and Extension Project, which subsequently supported the Central Province ARPT. It was not a totally new idea. A few years earlier, the Department of Agriculture had recruited three RELOs to promote the research findings emanating from the food storage, oilseeds, and irrigation research teams.

The proposal met with divided reaction within the Department of Agriculture. Some people considered that the functions outlined for RELOs were already contained in the job descriptions of the Extension Training Officers and Crop Husbandry Officers. Others thought that these subject-matter specialists had made little headway in effectively bridging the gap between research and extension. However, although in some aspects subject-matter specialists might have made more headway had they been given the necessary resources, their job descriptions did not cover all the functions envisaged for the RELO position.

The final decision to establish the RELO position was taken by the Assistant Director of Agriculture (Extension). He was a strong advocate of the ARPT and had been actively involved in the ministerial committee appointed to evaluate the farming systems approach and design the ARPT program. He agreed that the Extension Branch would create nine positions for RELOs to work as full-time members of the ARPT. The RELOs would report administratively to extension but technically to research (Kean and Singogo, 1988).

Objectives

The objective of creating the RELO position was to enhance the use of research results. The USAID Project Paper (USAID, 1980) suggested that this would be achieved by:

- reducing the length of time taken for new agricultural technologies to reach small-scale farmers;
- increasing the volume of relevant research output being channeled through the system;
- raising the quality and quantity of research products through on-farm trials and tests.

Although the overall objective remains the same, there have been changes in areas of emphasis. RELOs are now brought into the research process earlier, during the technology design and testing stages. A more recent change is that they are now working not only with the provincial ARPT but with all researchers in the province.

Implementation

The recruitment and posting of RELOs between 1986 and 1989 is outlined in Table 2. Although the decision to recruit RELOs had been taken in 1980, the first RELO was not appointed until late 1982, when an expatriate was recruited to join the Central Province ARPT as part of USAID's Zambia Agricultural Research and Extension Project.

Table 2. Recruitment of Research-Extension Liaison Officers, 1986-89*

Province		1986	1987	1988	1989
Central (1981)**					
	Zambian	1	1	—	—
	Expatriate	1	1	—	—
Eastern (1982)					
	Zambian	***	***	—	—
	Expatriate	—	—	—	—
Luapula (1982)					
	Zambian	***	***	***	***
	Expatriate	1	1	1	1
Lusaka (1981)					
	Zambian	—	—	1	1
	Expatriate	—	—	—	—
Northern (1985)					
	Zambian	—	—	1	1
	Expatriate	1	1	1	1
North Western (1984)					
	Zambian	1	1	1	1
	Expatriate	1	2	2	2
Western (1981)					
	Zambian	—	—	1	1
	Expatriate	—	1	1	—
Total RELOs					
	Zambian	2	2	4	4
	Expatriate	4	5	5	4
ARPT Professionals					
	Zambian	20	17	21	23
	Expatriate	18	17	19	13
Total	38	42	40	36	
Percent RELOs					
		16	20	23	22

Note:

- * Although the first RELO was appointed in 1982, and the second in late 1985, this table does not start until 1986 because for the preceding three years there was, in effect, only one RELO, the 1982 appointee; the 1985 appointee lasted only a few months.
- ** Date the provincial ARPT was established.
- *** RELO stayed in the post for a short period, usually only a few months.

The first Zambian RELO was appointed at the end of 1985, and he too was posted to the Central Province ARPT. Since the departure of the expatriate RELO in 1987, no Zambian RELO has been appointed in Central Province. The ARPT in Eastern Province was established in 1982 but the RELOs stayed in the post for only a short period. Since 1986, Zambian and expatriate RELOs have been recruited in Luapula, Northern, and North Western Provinces. However, a number of the Zambian recruits worked for only a short time before they were sent for long-term training. A Zambian RELO was appointed to the Lusaka Province ARPT in 1988 but resigned after 18 months.

The general pattern has been characterized by considerable delays in the recruitment of both Zambian and expatriate RELOs, excessive turnover of Zambian RELOs, and a tendency to recruit Zambian RELOs only for those provincial teams where there is already an expatriate RELO. The RELO position has tended to be the last to be Zambianized and there are currently no Zambian RELOs working without the assistance of expatriates. It is clear that much of the reason for these problems lies at the national level, at which there is high staff turnover and fluctuating commitment to the RELO idea. Similar constraints affect much of Zambia's extension service, and are not peculiar to the RELO position.

Activities

RELOs have participated in all aspects of the ARPT program. Their activities fall into two main categories: those which have facilitated the flow of information from researchers to extension workers; and those which have provided researchers with more feedback from extension workers (*see Table 3 overleaf*).

It should be stressed that, because of their very general job description, individual RELOs have had considerable discretion in deciding which activities they would emphasize. In one province, the Provincial Agricultural Officer commented that it appeared that the function of a donor-funded RELO was to help the Department of Agriculture carry out those extension activities which, for one reason or another, the department could not undertake.

The 1989 work program of the RELO in Northern Province serves as an illustration of the kind of activities RELOs are currently undertaking (GRZ MACO, 1989). These activities include:

- participating in all major ARPT activities;
- participating in the on-farm test program;
- planning on-farm demonstrations with extension staff;
- producing training aids to accompany demonstrations;
- producing a newsletter for research and extension staff in the province;
- organizing field days at trial and on-farm test sites;
- conducting surveys to identify farmers' technical problems;
- assisting in the establishment of a communications center ;
- revising crop recommendations for maize, soyabeans, and groundnuts.

Table 3. Main Categories of RELO Activities

Activities which facilitate the flow of information from research to extension	Activities which increase the feedback from extension to research
Organizing on-farm tests and planning demonstrations Incorporating a farming systems perspective into extension activities Preparing extension materials and producing extension newsletters Revising crop recommendations	Participating in extension field days at research sites Participating in extension training activities Undertaking technology adoption studies Conducting surveys to obtain extension workers' views about farmers' technical problems

It will be noted that the work program excludes monitoring technology adoption. Although this activity is regarded as a RELO function, as shown in Table 3, only in Eastern Province has it been carried out by a RELO. Elsewhere, there has been a tendency for this activity to be undertaken by Farm Management Officers appointed as part of the Training and Visit system.

Chapter 2

ASSESSMENT OF THE PERFORMANCE OF RESEARCH-EXTENSION LIAISON OFFICERS

Achievements

In the four provinces which had full-time RELOs by 1987, it was clear that these officers had played an important role in explaining ARPT activities to extension workers. About half of the subject-matter specialists interviewed in the OFCOR study considered that the RELOs had contributed significantly to an improvement in the level of interaction between the ARPT and extension, as well as generally helping to bridge the gap between research and extension. In the other provinces, there was increasing pressure to recruit full-time RELOs (Kean and Singogo, 1988).

Similarly, the ARPT scientists considered that the RELOs had played an important role in improving interaction between the ARPT and extension. In those provinces without RELOs, the ARPT staff had had to allocate time for interaction with extension, and most agreed that the amount of time allocated was insufficient. In Luapula Province, which had no full-time RELO until mid-1986, the ARPT staff had noticed an improvement in interaction levels within six months of the RELO's arrival (Kean and Singogo, 1988).

The RELOs have achieved most in the following areas:

- revision of crop recommendations;
- organization of on-farm tests;
- organization of provincial extension demonstrations;
- production of newsletters;
- increased extension influence on the direction of on-farm research;
- expansion of RELO responsibilities towards all research teams.

Revision of crop recommendations

The RELOs in Luapula, Northern, and North Western Province have taken a leading role in the revision of crop recommendations for their provinces. This has usually been achieved by bringing researchers and extension workers together to resolve contentious issues, and by incorporating information from researchers, farmers, and extension workers into provincial crop recommendations, using a farming systems perspective. Previously, crop recommendations were released by researchers at the central research station near Lusaka. They reflected only minimal extension worker involvement and did not take sufficient account of the particular agroecological conditions of each province. The achievement is even greater considering the limited research base which existed in these three provinces.

Organization of on-farm tests

In Northern, Central, and Luapula provinces, the success of on-farm test programs has been largely because of RELO involvement. In these programs, technologies which have performed well in on-farm trials are tested on a large number of farms to assess farmer reaction prior to release as recommendations. The work is carried out by Camp Extension Workers, under the supervision of the RELOs. To date, most of the on-farm tests have emanated from the ARPT but some have come from other research teams and are located in the same Target Areas in which on-farm trials were conducted.

The on-farm test program in the 1987-88 season in Northern Province provides an example of RELO involvement in this activity. Under the supervision of the RELO, the tests were laid out by extension staff and managed by farmers. They were simple, two-plot designs (comparing farmer technologies with improved technologies). During the season, the RELO supervised 130 on-farm tests; these were mainly on finger millet, beans, and hybrid and open-pollinated maize.

Organization of provincial extension demonstrations

RELOs have become increasingly involved in planning the annual program of provincial extension demonstrations and have made a significant contribution towards developing the coherent demonstration programs which now exist in many provinces. In the past, demonstrations were organized in a rather haphazard manner and Extension Training Officers rarely succeeded in presenting coherent provincial programs. Some demonstrations were planned at national level and then conducted by provincial staff using resources provided by headquarters. There was also a tendency for different organizations within the same province (such as the Lint Company of Zambia, the Food and Agriculture Organization Food Legumes Program, Global 2000, and the Lima Program) to conduct their own demonstrations.

Largely as a result of RELO involvement, the ideas for these provincial extension demonstrations now originate from several sources. These sources include Camp Extension Workers (based on their discussions with farmers), commodity research scientists located in the provinces, and the ARPT (based on the results of their on-farm trials). The ideas from Camp Extension Workers are forwarded through district staff to the provincial extension workers, who meet with researchers to screen the farmer problems identified and to discuss potential solutions to be included in the demonstrations. The RELOs have played an important role in coordinating the flow of information between the different participants in this process, particularly between researchers and extension workers. By supplying information on farming conditions, they have also helped to incorporate a farming systems perspective into the demonstrations.

Again, the Northern Province in the 1987-88 season provides an example of RELO involvement in extension demonstrations. During the season, the RELO organized 40 on-farm demonstrations, most of which were on recommended hybrid maize varieties and accompanying agronomic practices. For each demonstration, the RELO prepared training aids, such as charts and illustrations, and distributed them to extension workers. He followed this up by training extension workers in how to use training aids during farmer field days.

In Luapula Province, the RELO has been instrumental in bringing together many parties involved in demonstrations. Prior to the meeting of the Provincial Research and Extension Committee, which

makes the final decision on which demonstrations are to be conducted, the RELO gathers ideas from extension workers and researchers, as well as from staff in relevant parastatals and international agencies represented in the province. With the assistance of subject-matter specialists, these suggestions are compiled into a list which is circulated for comment before being discussed by the committee.

Production of newsletters

In four provinces, RELOs have undertaken responsibility for producing extension newsletters for the Department of Agriculture. The newsletters have greatly facilitated the flow of information from research to extension by enabling the most recent research advice to be disseminated to all extension workers. To some extent, the newsletters have also been used by Camp Extension Workers to air their views about current research recommendations and farmers' technical problems.

An example of one of these newsletters is *Agri-Link*, produced quarterly by the Northern Province RELO. He obtains articles from subject-matter specialists, commodity researchers, ARPT scientists, agricultural development organizations, and field-level extension staff. At a meeting of the editorial board, chaired by the RELO, the decision as to which articles to include is made. The RELO oversees the printing, and the Extension Branch is responsible for distributing the newsletter to extension field staff.

Extension influence on the direction of on-farm research

The improvement in extension feedback on farmer problems as a result of RELO involvement has helped refine the design of the ARPT trials program. In two provinces, for example, the RELOs distributed questionnaires to extension workers throughout the province in order to obtain information on problems requiring research attention. Several suggestions arising from these questionnaires were subsequently incorporated into the ARPT trials program.

The RELOs have also helped channel comments from farmers and extension workers to the ARPT about technologies being tested on-farm. To facilitate this flow of information, RELOs have organized separate field days for farmers and extension workers at ARPT on-farm trial sites and, in some provinces, have held end-of-season meetings.

Expansion of RELO responsibilities to all research teams

Initially, it was intended that RELOs would work principally with the ARPT. However, most RELOs have interpreted their responsibilities more widely than this and it is clear that their work has benefited the Research Branch as a whole. They now serve all research teams operating within the same province.

An example of this is provided by the bambara nuts research now being carried out largely as a result of work undertaken by the Luapula Province RELO. The RELO had designed and distributed questionnaires to extension workers, asking them to identify what they thought needed to be researched in the province. The RELO analyzed the completed questionnaires, with the help of ARPT

agronomists and economists. Several questionnaires highlighted the need for research on bambara nuts, on which no research had been done previously. These nuts are an important part of the diet in the province, but the varieties grown tend to be low-yielding and prone to disease. The RELO helped collect different varieties, which were sent to the appropriate commodity research team. He also helped compile information on the way the nuts are processed for home consumption. Research is now being carried out on producing higher-yielding, disease-resistant varieties.

Organizational and Managerial Issues

Although RELOs have demonstrated their usefulness in strengthening links between research and extension, there have been some implementation problems.

Responsibility and accountability

One of the main implementation problems has been that RELOs report to two bosses. Most Zambian RELOs are administratively responsible to the Assistant Director of Agriculture (Extension), through the Provincial Agricultural Officer, but technically responsible to the Chief Agricultural Research Officer, through the Provincial ARPT Coordinator.

This arrangement of straddling two branches, albeit of the same department, has led to problems in recruitment, posting, and training, particularly for the Zambian RELOs. National extension managers are responsible for recruiting, posting, and training RELOs, but frequent delays in decision-making have led some Zambian subject-matter specialists to question the value of applying for RELO positions. Furthermore, lack of consultation with the Chief Agricultural Research Officer about the RELO positions has made it difficult to plan provincial ARPT programs. Although the commitment and support for the RELO position is strong within both the Research and Extension Branches, particularly at provincial level, the commitment at the national extension level has been erratic and key decisions have often been neglected.

The ARPT has addressed the problems arising from straddling two departments by taking more responsibility for the RELOs. It now identifies potential candidates in extension and makes requests directly to Provincial Agricultural Officers to assign them to the RELO positions. In other cases, it has recruited Zambian RELOs directly against established positions in the Research Branch. The ARPT has also taken a more active role in organizing training opportunities for RELOs. Research managers prefer to have RELOs seconded, but recognize that this can be successful only if national extension managers are committed as well.

Recruitment

The delays in recruiting RELOs, both Zambian and expatriate, have been a major problem and have reduced the level of research-extension activities undertaken. As a result of recruitment delays in Luapula Province, for example, crop recommendations were not revised until 1988, six years after the ARPT team had been established there. There have also been instances where projects have had to be discontinued because of recruitment delays.

The reasons for delays in recruiting expatriate RELOs vary between provinces. Initially, one of the main reasons was that research and extension managers, as well as donors, considered that a RELO's main function was to transfer technologies produced by the ARPT. RELOs were brought into donor projects only when such technologies were available, several years after the inception of on-farm trials. However, this view gradually changed. By 1983-84, the National ARPT Coordinator and some extension managers had seen the need to incorporate a farming systems perspective into extension activities from an early stage. In addition, the value of RELOs was becoming apparent to ARPT staff and provincial extension managers. As a result, expatriate RELOs began to be recruited when new provincial ARPTs were being established. It is now recognized that it is essential that all RELOs, both expatriate and Zambian, should be recruited at the inception of ARPT teams.

Similar problems have led to delays in the recruitment of Zambians. These have been exacerbated by a lack of continuity in interest and support for the RELO position by national extension managers. This problem stems partly from staff changes at national extension level and partly from the fact that, although the Assistant Director of Agriculture (Extension) strongly supported the establishment of the nine RELO positions, the Personnel Division of the Cabinet Office has never endorsed the creation of these positions. In an attempt to overcome this, the National ARPT Coordinator and provincial ARPT staff enlisted the support of provincial extension managers in exerting pressure on national extension managers to recruit Zambian RELOs. National extension managers have also sometimes passed the responsibility for RELO recruitment to provincial extension managers.

Staff turnover

Most RELOs, particularly Zambians, remain in the post for only a short time, usually no more than 2 years, and frequently much less. Inevitably, this has affected the continuity of RELO work programs. In Central Province, for example, the expatriate RELO identified himself closely with extension and his program emphasized extension training. His successor, however, spent more time working with ARPT staff and gave greater attention to on-farm demonstrations.

Turnover among expatriate RELOs is accounted for mainly by the short duration of their contracts. In the case of Zambian RELOs, however, the problem has arisen mainly because national extension managers have devoted little time to manpower planning. In some cases, they have taken decisions concerning RELO positions without consulting the Research Branch. This has caused considerable disruption. For example, RELOs have been sent on long-term training courses at very short notice, and several of them, on their return from training, have been given new postings, preventing them from continuing with RELO duties.

To overcome the problem of staff turnover among Zambian RELOs, the ARPT in two provinces has taken over responsibility for RELO training. This arrangement enables the ARPT to ensure that RELOs have sufficient experience in the field before going for training, that Zambian RELOs have enough overlap with expatriate RELOs to ensure continuity, and that, after training, Zambian RELOs will return to the ARPT.

Promotion

Whereas the promotion of the agronomists and economists in the ARPT is handled by the Research Branch, the promotion of RELOs is handled by the Extension Branch. However, because RELOs are

seconded to the ARPT in the Research Branch and devote most of their time to RELO activities, there has been a tendency in the Extension Branch to overlook them when assigning more high-profile tasks. This has had an adverse effect on their promotion prospects. A possible solution to this problem is for senior extension managers to view RELO activities as an integral part of provincial extension work and to assess and promote RELOs on the basis of their performance of these activities.

Job description

The RELO job description was written in rather general terms, which has made it difficult to effectively monitor and evaluate work carried out by RELOs. It has also led to ambiguity and task duplication. RELOs have sometimes undertaken activities which other subject-matter specialists, particularly Extension Training Officers and Crop Husbandry Officers, considered to be their responsibility. Such activities include demonstrations, extension training, and feedback of farmers' problems to research. Subject-matter specialists have raised the issue of overlapping responsibilities at a number of workshops. The problem has arisen not because the subject-matter specialists are incapable of performing these activities, but because, unlike the RELOs, they have not had the resources to undertake them. Although the RELO job description has been revised several times, in general terms, and meetings have been held to discuss the problem of overlapping responsibilities, the issue has still not been resolved. It is likely that it will continue to cause difficulties until a more specific job description is written.

Despite some areas of ambiguity, it is clear that RELOs perform activities which are not included in the job descriptions of subject-matter specialists but which have contributed significantly to improving research-extension interaction. These activities include:

- conducting systematic on-farm tests and technology adoption studies;
- revising crop recommendations at provincial level;
- incorporating a farming systems perspective into extension training;
- involving extension workers in the research process;
- producing extension newsletters.

Location

In most provinces, RELOs have been based at the regional research stations, with the ARPT professional staff. This arrangement has worked well, mainly because it has enabled RELOs to participate fully in all stages of the technology generation process. However, in a few cases, RELOs have had to operate from two offices, one at the research station and the other at the Provincial Agricultural Officer's headquarters. This has reduced effectiveness: interaction between the RELOs and other members of the ARPT has decreased, and Provincial Agricultural Officers have tended to assign general extension duties to RELOs, to the detriment of the RELOs' own work programs.

CONCLUSION

A number of important lessons emerge from this assessment of the RELO position in Zambia's research and extension services.

- **RELOs should be recruited early in the on-farm research process**

It is now recognized that it is essential to recruit RELOs at the same time as other ARPT staff. They play a critical role in involving extension workers in problem identification and in the trials program, incorporating a farming systems perspective into extension training, revising crop recommendations, and conducting on-farm tests.

- **Success requires the commitment of national research and extension managers**

To successfully implement the RELO position, there must be strong commitment from senior extension and research managers for the post, regardless of which branch is responsible for RELO recruitment, posting, and training. The level of support provided when the post was first established must be sustained.

- **Support from provincial extension managers is crucial**

The support of provincial extension managers is very important, especially in helping to resolve contentious issues between researchers and extension workers within the province. In Zambia, provincial extension managers have played a crucial role in exerting pressure on national managers to take certain administrative decisions concerning the RELO position.

- **Attention must be given to clarifying lines of responsibility**

The experience in Zambia, where the RELO has straddled two branches of the same department, indicates that unless the senior managers of the two branches are equally committed to the RELO position, the administrative and technical responsibility for RELOs should lie with only one branch; whether this branch is extension or research is not critical. The assumption of full responsibility by one branch would help ensure that there is a well-coordinated manpower training and development program and would provide a single line of responsibility for the recruitment, posting, and promotion of RELOs. Given the present situation in Zambia, emphasis should be placed on: the need for increased commitment by national extension managers to RELO recruitment; the need for more consultation about training and posting; and the need for extension managers to assess and promote RELOs on the basis of their performance of RELO duties.

- **Clear job descriptions for RELOs must be prepared**

It is important that the job description for RELOs be written in sufficient detail to ensure that there is no overlap between the responsibilities of RELOs and other subject-matter specialists and to

enable RELO work programs to be effectively monitored and evaluated. The job descriptions should make particular reference to those activities for which RELOs are solely responsible. These include conducting on-farm tests, revising crop recommendations, incorporating a farming systems perspective into extension training, and involving extension workers in research activities.

- **Organizational proximity of research and extension helps, but does not resolve ambiguity in reporting relationships**

Having both the Research and Extension Branches located in the same department had a positive effect on the RELO position at the time when the post was being established and continues to do so. However, this arrangement has not removed the problems created by the dual lines of responsibility for RELOs.

- **RELOs should be based within the research team**

Regardless of which branch is responsible for RELOs, the Zambian experience has shown that RELOs based at the research stations with scientists have been able to participate more fully in the technology generation process. It appears that it is easier for a RELO to interact with extension workers when based with scientists than it is for a RELO to influence scientists when based with extension workers. The location of RELOs at the research stations has also helped to increase the interaction not only between extension and the ARPTs but also between extension and all other scientists at the research station.

- **Coordination of RELOs at national level is not essential**

The position of national RELO, based at the central research station, was created in the early 1980s. However, the objectives and job description for this post focused on information dissemination and publicity for the Research Branch and did not relate to the activities of the provincial RELOs. This situation persists, despite several attempts by incumbents of the national RELO position and by senior research and extension managers to streamline the position and develop a connection between national and provincial RELOs. Although the activities of all subject-matter specialists are coordinated at national level by Senior or Chief Subject-Matter Specialists, it is felt within the ARPT that in the case of RELOs there is no need for such coordination. Indeed, ARPT staff fear that such a move would lead to the fragmentation of the ARPT along disciplinary lines.

- **To improve job satisfaction, RELOs need specific responsibilities**

In certain situations, liaison personnel who do not derive enough job satisfaction from concentrating only on liaison activities and managing the flow of information may attempt to create a clear set of activities for themselves. In Zambia, coordination and liaison activities have quite a high status and thus, in so far as RELOs have been involved in 'process activities', they have gained considerable satisfaction. Nevertheless, they have sought greater job satisfaction by

initiating several new research and extension activities, including revising crop recommendations, managing on-farm tests, and producing newsletters. These activities, while involving liaison, have specific outputs for which the RELOs are able to claim credit.

- **RELOs can improve extension workers' status**

Through their coordination activities, particularly those related to revising crop recommendations, RELOs have increased the level of interaction between researchers and extension workers. This has helped to increase the status of professional extension workers in the eyes of researchers.

Although there are still some problems to overcome, particularly with regard to recruitment and staff turnover, it is clear that the activities carried out by RELOs have made a positive contribution towards improving collaboration between researchers and extension workers in Zambia. By strengthening the flow of information from research to extension, they have helped speed up the process of technology testing and dissemination. By increasing the amount of feedback from extension workers and farmers to researchers, they have improved the relevance of the ARPT program. And by involving extension workers more fully in the research process, they have contributed to an increase in confidence among extension workers. The long-term prospects for the continued success of the RELO position are promising, but much will depend upon sustaining the commitment of senior extension managers.

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