

PD-AAN-807

ISN: 33299

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

App 12A-1, Chp 12, HB 5
(TM 3:43) 9-30-82

Report Symbol U-447

1. PROJECT TITLE Agricultural Development Research and Extension Project Zambia (ZAMARE)			2. PROJECT NUMBER 611-0201	3. MISSION/AID/W OFFICE Zambia
			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>611-83-01</u>	
			<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATE PROJECT FUNDING (000)	
A. First PRO-AG or Equivalent FY <u>80</u>	B. Final Obligation Expected FY <u>84</u>	C. Final Input Delivery FY <u>85</u>	A. Total \$ <u>16,771</u>	B. U.S. \$ <u>12,515</u>
			7. PERIOD COVERED BY EVALUATION	
			From (month/yr.) <u>Jan 1982</u>	
			To (month/yr.) <u>Sep 1983</u>	
			Date of Evaluation Review <u>Sep 1983</u>	

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., sirgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Identify areas of friction and explore means to improve communications so that areas of responsibility and accountability are clear.	W. Chibasa Dep. Dir. Research E. Gibson, ADO J. Ragin, T/Leader, ZAMARE J. Patterson AID/Zambia Representative	Immediate
2. Provide consultant services to GRZ to assist in further developing the soybean breeding strategy.	J. Ragin	June, 1984
3. Search for ways to increase the number of GRZ personnel receiving long time training.	E. Gibson J. Ragin W. Chibasa	Immediate
4. Explore possibilities of providing funds from outside the project to the extension service in Central Province for the purpose of relieving resource constraints.	E. Gibson J. Patterson	September, 1984
5. Continue efforts to define the RELO role and job description with respect to ARPT and research-extension linkage.	J. Ragin W. Chibasa S. Kean ARPT National Coordinator	Immediate

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) <u>Project Work Plan</u>	A. <input checked="" type="checkbox"/> Continue Project Without Change	
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> P/O/T		B. <input type="checkbox"/> Change Project Design and/or	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> P/O/C	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Change Implementation Plan	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> P/O/P		C. <input type="checkbox"/> Discontinue Project	

11. PROJECT OFFICER AND HOST COUNTRY OF OTHER BANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
E. F. Gibson, Project Officer and Ag. Development Officer AID/Zambia		Signature 	
W. Chibasa, Deputy Director of Ag. (Research) MAWD		Typed Name <u>John A. Patterson</u>	
J.F. Ragin, Team Leader, ZAMARE		Date <u>November 23, 1983</u>	

EVALUATION OF AGRICULTURAL DEVELOPMENT: RESEARCH
AND EXTENSION PROJECT (611-0201) ZAMBIA

INTRODUCTION

This evaluation is made after only one year of operation of the contract team on a project designed for five years. It is, in a sense, a start-up evaluation with the purpose of providing counsel to the USAID Mission on project design, general project direction, and any modification in design and project management that needs to be considered at this point in project history.

The report was prepared by a three member team of Randy Benoit of the Planning Division of the Ministry of Agriculture and Water Development (MAWD), Bantayehu Gelaw of CIMMYT, East African Maize Program, and Kenneth McDermott of the University of Florida Farming Systems Support Program. This group was assisted by USAID Officers, E.F. Gibson, and F.B. Nyirenda and by Contractor Team Leader James Ragin. Francis Mwansa, MAWD Planning Division, who shared duties with Benoit, reviewed drafts of the project and participated in revision. E. Ellis, of the University of Maryland Eastern Shore joined the evaluation group in an ex-officio status after the initial draft was written and participated in the review and revision.

The evaluation followed the scope of work contained in cable Lusaka 02419. Paragraphs C,D, and E were combined into two. In addition an Executive Summary has been prepared along with an evaluation face sheet indicating actions recommended by the evaluation group and approved by the AID/Zambia office.

The methodology used was to review the Project Paper and many of the project documents produced during the year's operation - work plans, quarterly reports, consultant reports, and others. These were read before interviewing began. The team then interviewed team members, counterparts, program leaders in MAWD Research Branch and Extension Branch, and Senior Administrators in MAWD. The intent was to be thorough in questioning as well as to encourage respondents to introduce items they deemed important to the project. We express our appreciation to those who interrupted their work, often at our convenience more than at theirs. A list of those with whom we talked is appended.

EXECUTIVE SUMMARY

1. This is a well-designed project off to a better than average start. Delays encountered in start-up were used for certain tasks in preparation for the team's arrival, thus reducing the impacts of the delay. This period was also used to select participant trainees and start their training, also gaining valuable time for a critical activity. Some non-recurring errors have been made and some problems in management and procurement have been allowed to persist. They have not had undue adverse impact on the project but do need attention.

2. The project was designed to fill some critical gaps in three commodity programs -- maize, soybeans, and sunflower. The latter two are crops relatively new to Zambia and have made dramatic progress in the last decade. Maize is the major crop.

The project was also designed to support a farming systems research effort which adds a new dimension to the research program. This program is developmental, and the concept of gap analysis is not relevant.

The design is considered to be excellent.

3. Implementation within the first year has been worthy of the design. Leadership of the GRZ research branch, accustomed to working with expatriates from a diverse background, has done an exceptional job in integrating the human resources into its own program. The combination of design and implementation results in a situation in which project integrity and national program integrity have been maintained and even enhanced.

The presence of a few problems earlier or some that may still exist does not detract significantly from overall achievements.

4. During delay in start-up, three major tasks were accomplished. One was the preparation of housing so that was ready when the team arrived. This often does not happen. Commodities were also available. Some have since been found inappropriate. However, there was no wait for other critical items, such as vehicles. The initiation of training also was accomplished.

5. The farming system research component is new. It follows the CIMMYT format which was largely developed in East Africa. But there is still much developmental work to be done. This component of the project will be expected to contribute to the development of the process and structure of FSR as well as to provide new technology to the producer.

6. The project addresses research-extension linkage. It aims to institutionalize the Research-Extension Liaison Officer. According to GRZ development strategy the post will be in the Extension Branch. The newness of the RELO concept, its association with the new FSR concept, and severe resource constraints in Extension need to be taken into account in developing expectations for short-run achievements in this area.

7. The promptness in selecting participant trainees and initiating training is a definite positive aspect. However, it does not leave resources for other candidates identified by team members as worthy of the training investment. To the extent feasible, project management needs to seek resources for training beyond project design provisions. Investment in the human resource is relatively safe and usually gives good returns.

It is especially critical for Zambia which currently depends heavily on expatriates in its research program. GRZ is extremely happy with this part of the project and considers it a model for other donor projects.

8. There has been numerous "problem incidents" with regard to commodity and budget management. In addition there is a fairly common image that USAID/Zambia participates too much in day-by-day management. The Project Support Unit comes under particular criticism. This paper does not explain these problem incidents. Nor does it evaluate PSU. It concludes that two significant problems do exist. One is inadequate de facto delegation of authority to the contractor and acceptance of responsibility by the contractor. The second is inadequate direct communication between USAID/Zambia and GRZ on certain issues that need to be treated directly.

The paper is silent on the PSU and administrative assistant issues.

GENERAL COMMENTS

Before addressing the specific items given in the Scope of Work, some general observations are necessary.

One of these concerns project design. The project provides significant assistance to the Research Branch of the Ministry of Agriculture and Water Development in the two areas of work around which the Research Branch is organized. These areas can be described as conventional research and farming systems research. The Research Branch deals with conventional research through Commodity Research Teams (Scientists or Technologists of several disciplines) and Special Services Teams organized around problems or needs that cut across commodities. Their responsibilities are nation-wide. Such a structure has difficulty adapting to various ecologies of the country and to small-farm agriculture. In response to this situation the Research Branch is in the process of developing Adaptive Research and Planning Teams who will be organized by area. They will work with commodities and special services as the needs of the areas dictate. This forms a grid type of organization with CRT's along one axis and ARPT's on the other.

It is our judgement that the fit of the project to this two-dimensional structure is quite good. It is also our judgement that the Research Branch structure is correct. The project emphasizes oil seed crops much heavier than it does maize, even though maize is far more important in Zambia's economy. While this may seem to be a distortion from the project point of view, it does not appear so from the Research Branch point of view. Needs in the maize program were specific but not as great as were those of the oil seeds program. The project appears to us to be a good fit into the Research Branch conventional research structure.

Needs of the farming systems component of the Research's Branch have to be viewed in different terms. This is not only a new component to Zambia, it is also a component that is new to the world with much to be done in developing structure, relationships, and procedures. The structure into which the project was to fit was much more tentative than the structure of the conventional research component within the Research Branch. Thus, fit may not be the correct terminology, but the ARPT component of the project is very important, perhaps essential. A project of this nature provides some resources directly and has access to many more. Zambia needs access to these resources and should expect them from this type of project.

A third aspect of this project is also highly significant and fits some of Zambia's most serious needs. Zambia currently is highly dependent on expatriate personnel filling line positions in the Research Branch. No criticism can be made of these persons and their contribution. However, there is no way of being assured that the expatriate personnel will be made available indefinitely. This project invests heavily in the Zambian human resource, and this fits a need also.

This closeness of fit is, of course, due to the project design. Few research development projects in the A.I.D. are as well designed. It not only filled important gaps, where gap analysis is relevant, it also provided resources in a highly significant development area. In addition to the design GRZ leadership has been very effective in the measures it has taken to integrate the project into the Research Branch in such a way that the integrity of both have been maintained and even enhanced.

EVALUATION

A. " Review project progress and accomplishments on the planning and implementation of the work programs for the following components of the project: Commodity Research Team (CRT), Adaptive Research Planning Team (ARPT), and Extension program in designated project area. Provide recommendations as appropriate."

In this section we report only on the CRT components. In this way we can consolidate in one place under item B, our views regarding the ARPT. We address Extension in that section of the report as well as in Section C.

Four of the UIUC team members are working in the CRT's - or to be more exact, they are in CRT's and one is in special teams. In the late 1970's the Research Branch was re-organized from divisions by subject matter discipline into Commodity Research Teams, each made up of several disciplines. Each CRT actually deals with several commodities. There is a

- CRT for each of cereal crops, oil seeds, fibers, animal husbandry and pastures, roots and tubers, vegetables, tree crops, grain legumes, and tobacco. In all but one of these several crops are included. In oil seeds CRT, for example, there are three major crops - soybeans, sunflower,
- and groundnuts. The ZAMARE project has personnel working in soybeans and sunflower. The project has a maize breeder in the CRT for cereals which also includes wheat and rice. The Research Branch has special teams, somewhat parallel to the CRT's in plant protection, soil fertility, food storage and preservation, cropping systems, irrigation, and farm machinery and tillage. ZAMARE has a soil microbiologist in the soil fertility special team, although he works mainly with the oilseeds CRT which deals with two nitrogen-fixing legumes, soybeans and groundnuts.

The soil microbiologist is provided to the UIUC team via sub-contract with the University of Hawaii which has a major research project in biological nitrogen fixation. He was the last to arrive in Zambia and has not been here during the growing season. He will work with the soybean group to evaluate the efficiency of nodules on primiscous varieties. He will also seek information on most effective rhizobium strains for Zambian varieties in Zambian soils and ecologies. We have not enough performance to report.

The team member assigned to the maize program has had quite a positive impact. This is due in part to his own competence and attitude and in part to the structure into which he moved. With the additional human resource provided by ZAMARE, the Research Branch has been able to complete its maize strategy. It has also benefited from technical assistance from CIMMYT over a considerable period. The team has been impressed with both the ZAMARE performance and the manner in which the Research Branch has been able to take advantage of it.

The most widely seeded maize variety in Zambia is SR 52, a hybrid developed in Zimbabwe. For the areas in which it is adapted, it is an unbeatable hybrid. Over the years in Zambia this hybrid has suffered some genetic contamination. That contamination has been removed the last few years. That clean up accounts for some 25 percent increase in yield which this year was worth an estimated K15 million. It is characteristic of maize that varieties are quite site specific. There are several areas that have no hybrid ideally adapted to them.

Further, in Zambia small farmers typically produce their own seed, and for them open-pollinated maize has more utility than hybrids.

The Research Branch has been working with hybrids for several years, but with a scarcity of resources have been able to do little work with open pollinated lines. The ZAMARE corn breeder has enabled them to address this area of work. The two lines of breeding are not completely separate, however. Improvements in the open-pollinated genetic lines have real utility for those farmers using hybrids.

CIMMYT over its history has made major accomplishments in improving open-pollinated genetic lines grouped by certain characteristics, an important one of which is date of maturity. With the ZAMARE breeder the Research Branch now has the resources to take advantage of the CIMMYT material in meeting both open-pollinated and hybrid variety needs.

Much the same is true of the ZAMARE participation in the soybean and sunflower programs, but with some differences. Neither of these individual oils seeds crops are of near the importance to Zambia as is maize. Yet progress in both has been dramatic. A decade ago there was virtually no production of either commodity. In 1982, it was reported that more than 60,000 hectares were seeded to sunflower, and soybean growers produced some 55,000 metric tons of soybeans. Although the production history of the two crops have been similar, there are some interesting contrasts. Soybeans have largely been taken up by the large farmer, sunflower by the small-scale operator. Sunflower is an "easy crop". It can be planted later than other crops, requires almost no attention while growing, and can be harvested at the convenience of the farmer, with no rush. Yields are low, 500 to 600 pounds per acre, but production costs also are low.

Soybeans are, under conventional technology, a difficult crop. They must be inoculated when seeded. They need to be protected from weeds. And they must be harvested promptly after maturity because of their tendency to shatter. Yields are higher, but so are production costs. They are a typical highly commercialized crop. Another interesting contrast in their history is peculiar to Zambia. Although both the success of each is due largely to the efforts and persistence of one man, the sunflower proponent was a breeder and needed an agronomist, while the soybean proponent was an agronomist and needed a breeder. The project provided in each case what was specifically needed.

Soybeans are not only a highly commercial crop but also an industrial crop. The soybean proponent has been active with industry and has succeeded in getting national food processors to include soybean in commercial food products. In one case five percent of the wheat flour is replaced with wholebean soybean flour.

The soybean strategy currently is to make soybean into an "easy crop". Such was made possible by the discovery of a promiscuous variety. Whereas conventionally soybeans need a specific strain of rhizobium in order to produce nodules which fix nitrogen from the atmosphere, a variety was identified in Zambia not long ago that would produce nodules with a wide array of rhizobia strains, many naturally available in most Zambian soils. This has led to a line of research in IITA as well as here. Claims are made that promiscuity was discovered years ago, but the fact is that conventional wisdom held for years that specific rhizobia were necessary to soybean production. So strong was this conventional wisdom that it took some time before the experts would accept the possibility of promiscuous nodulation and start to work on it.

The soybean breeding strategy now aims to breed varieties that are highly promiscuous and resist shattering. Small scale farmers need a variety that will stand for 30 days after maturity before shattering. Of course these traits have to be bred into lines that are good yielders. There is also some concern for a plant type that competes more effectively against weeds than do current varieties with acceptable yields. The first two goals must be met through breeding. Improved competition with weeds may be achieved in part through agronomic practices.

We have no problem with the goals of the soybean strategy. We do not feel ourselves competent to evaluate the strategy. We do note, however, that the soybean team does not have access to the technical resources, either from within the team or from an IARC, in developing its strategy as did the maize team. It does have access to a broad genetic pool.

From an institutional viewpoint it is interesting to note the overwhelming role that expatriates play in Zambian agricultural research. These are not short terms of up to four years but for terms of up to 25 years. In one program, the leader, an expatriate himself, is dealing with five nationalities. It is remarkable the integrity that has been developed and maintained with such heterogeneity of backgrounds of personnel. Incumbents of

the two top positions in the research system are Zambians. The training component of ZAMARE becomes very important. No one knows how long the expatriate era will continue. Almost all enjoy topped off salaries. This situation also poses a formidable task in human resource development. Formal training of young Zambians, even through the Ph.D. will only partly compensate for the expatriate that will eventually be lost either by retirement or resignation.

In summary, performance of ZAMARE in the CRT's is satisfactory whether from the point of project design, personnel selection or organization and management to utilize the resource on the part of the Research Branch.

RECOMMENDATION

We recommend that consideration be given to bringing in consultants from INTSOY and/or elsewhere, perhaps, IITA, to assist the Research Branch in developing its soybean breeding strategy, much in the manner in which CIMMYT assisted in maize breeding strategy. This in no way implies any lack of confidence in the soybean team. It simply means the team deserves the best resources the project can provide.

B. "Assess accomplishments to date of ARPT in identifying agricultural production constraints of small farmers in the Mkushi and Serenje Districts and how these identified farmer production constraints are being fed into the CRT research program. Provide recommendations for improving future ARPT work in the two districts as appropriate."

This component of the project could turn out to have very great significance with profound effects on the entire technology innovation system of Zambia. Such is in no way assured. Unlike in the maize program, this group does not have a structured approach and set of procedures tested over time by which to guide its work. Such structure and methodologies are just now being developed, and the ZAMARE ARPT group should be expected to contribute to that development. So over time the project needs to be evaluated on its contribution in the institutional development area as much or more than its direct impact on provincial agriculture.

CIMMYT has had a great impact on Zambia's ARPT program. CIMMYT itself conducted the first on-farm surveys in Zambia in the Serenje District in the Central Province, a district in which the ZAMARE group is now working. The CIMMYT concept is also the orientation for the organization of Zambia's national system. Within the year the ZAMARE team has been in place, CIMMYT has put on three national training sessions - dealing with informal surveys, formal surveys, and on-farm research. These were sited in the Central Province but were national in scope and attended by all teams active in Zambia. The ZAMARE team reported the training to be very useful in its work. GRZ Research Branch leadership is committed to the general CIMMYT approach and is grateful for the assistance. At the same time GRZ recognizes that FSR is in a developmental stage, as does CIMMYT itself.

Donor interest is propelling GRZ at a rate somewhat more rapid than was originally planned. Teams were planned originally in Central, Western and Luapula Provinces in order to master the ARPT process. There will soon be five teams operating with the addition of teams in Lusaka and Eastern Provinces.

The FSR concept has been carefully thought through by the leadership of the Research Branch and fitted in to the total organization and adapted to national policy on an analysis of the general agricultural situation. This national policy concerns among other items the small-scale farmers. The FSR concept adapted to Zambia as the ARPT is being applied with a firm sense of direction, a determination to move the project, and a strong discipline to maintain direction. With the wide array of expatriate help and donor interest in separated areas, such firmness in direction and discipline is considered essential to maintain ARPT integrity. While there is an expatriate program leader for ARPT, the Assistant Director of the Department of Agriculture for Research is completely committed to the concept and participates personally when such participation seems necessary.

There is perhaps some potential conflict between the goal of firm project direction and the need for developmental work on the FSR process. However, the development need is well appreciated and well stated by S.A. Kean and W.M. Chibasa in a statement entitled "Institutionalizing Farming Systems Research in Zambia." (date uncertain). They state: "Farming Systems research is a totally new approach for agricultural research in Zambia and, because of this, a very flexible approach is required, which is capable of adopting any ideas which improve the effectiveness and relevance of the work undertaken by A.R.P.T. Changes have already been made in the structure and methodology to make them more effective and at present several issues are under study, including; the appropriate size and nature of a sociological input into ARPT, the use that ARPT can make of quantitative nutritional data, the need for quantitative farm management data from frequent visit surveys, the conduct of on-farm trials and the need for unit farms. On all of these subjects and, indeed, on the structure as a whole critical analysis is required and any information from experiences in other countries is most welcome."

Project implementation and management must support Zambia in this effort and not interpret the PP so rigidly that even the spirit of the PP itself is denied.

Related to the Farming Systems Research concept is one called Farming Systems Infrastructure and Policy (FSIP). It is based on the concept that the external factors such as institutions, infrastructure, and policy need to reflect the needs of the farming system and be based on a knowledge of that system. The Research Branch anticipates negotiations with other entities as it turns up information relative to their areas of responsibility.

Below we make some comments that may be useful in the developmental work. Before we do we provide some assumptions and conceptualizations that underlie the comments.

1. The total technology innovation process can be conceptualized or visualized in various ways. Here we present one way, which breaks the process down into stages. In general they are sequential, from left to right but not necessarily so.

Scientific	Technology	Technology	Technology	Dissemination	Adoption
Research	Development	Testing	Adaptation	and Diffusion	

2. In most countries of the world, responsibility for implementing the process is divided between two organizations, known generally as Extension and Research. Even though the responsibility is divided, it is still necessary to maintain the integrity of the total technology innovation process.

3. Research operates at the left end of the model and extension at the right. Research is associated with laboratories and experiment stations. Extension is associated very strongly with the local field agent. In practice, and this is almost universally true, research stops too soon in the process, perhaps halfway through the testing phase and extension starts too late, with dissemination, although with great difficulty. The neglect of the center portion of the process has long plagued technology innovation efforts.

4. The so-called Farming Systems Research is developing currently as a means that can be very useful in filling this gap. It operates in that part of the technology innovation process in which both research and extension type of activities are legitimate but which both have tended to stay out of, creating a sort of no man's land.

5. Because of the great need to fill this gap and to restore and maintain the integrity of the technology innovation process, it is highly likely that FSR will eventually be evaluated (by society and program managers) as much or more on its impact on the total technology innovation system than its own research output.

6. There are two essential elements of FSR. One is to understand the farming system as a means of designing research activities. The second is that innovations or technologies being considered for recommendation be tested in the system in which it is expected to perform and by criteria of that system.

7. FSR can be made into a critical linkage mechanism - linking the Research entity, the producer, and Extension in such a manner as to serve the small-scale producer. FSR in the Zambian system is placed in the Research Branch. It must integrate itself into the Research System and serve that system by facilitating linkage with the farmer and with extension. We do not think of linkage between ARPT and CRT. We hold there must be integration rather than linkage.

With these concepts regarding FSR in general we make these observations. We intend them to be observations and not definitive statements. They can be useful to project management as well as to implementing personnel in their development of the structure and procedures by which FSR concepts are translated into operations in Zambia. The observations have limited, if any, value in evaluating team performance.

1. From the written reports we have seen and from other reports, we question the extent to which the ARPT has gotten to basic problems of farmers or turned up significant information regarding constraints that was not already known. We report two examples. In one report, late planting was reported a problem. In one sense, late planting may not be so much the real problem as it is a symptom of an underlying problem. Why do farmers plant late? What is constraining them? Another example is a report we heard that some of the ARP teams reported to the cereal CRT that two major problems in maize production were late maturity and streak virus. These are almost classical problems in this part of the world.

2. We are somewhat concerned with the time reported to prepare a survey report. FSR surveys are not meant to yield reports, although some sort of report is probably needed.

It may be easy to place too great a reliance on the survey as a means of understanding the system. There are alternatives. One of these is the CRT's. Many conventional research personnel may have considerable insight into systems and systems problems. Another is the farmer crop monitoring recommended by Dr. Olson in his consultant report, in the project files. Perhaps the most overlooked means of understanding specific farming systems is individual interaction with the farmer - a technique that is probably not possible to formalize or quantify. Understanding a system requires insight more than representativeness. On farm trials, present an excellent opportunity for this interaction if researchers aren't too busy to use it.

The survey is particularly useful to introduce researchers to a farming system. It may not be adequate for deeper understanding.

3. We collected some evidence that the ARP teams are not taking full advantage of the CRT's and Special Services Teams of the Research Branch. The ZAMARE group may well be doing better than most. It is our judgement that over the long run the success of the ARPT will not exceed that of the

CRTs. Since ARPT is the new comer to the Zambia Research System, it may need to make more effort in integrating with the conventional components than the older components would be expected to make.

The ARPT needs to concern itself somewhat with being useful to CRTs. Being useful does not mean subservience. It does require joint planning and collaboration.

Much of the agronomic work of ARPT's seems to be original type work rather than adaptive research, although that is a distinction difficult to make and even more difficult to interpret. This may be necessary. Some of it is aimed at problem identification rather than technology development. Some will be needed.

If the ARPT's do not take advantage of CRT work experience, and errors, and push on from there, they stand some risk of mounting parallel research programs.

4. We worry about the use of Extension personnel as de facto functionaries of the ARPT. Perhaps it is useful in the short run. Perhaps there is no alternative, but it should not be regarded as effective linkage with Extension. Effective linkage will not be established until the Extension service is collaborating with Research in its own interest as part of its program. Caution needs to be taken now that setting out a few AA's from their colleagues, even with minor perquisites, does not cause envy or dissension in extension ranks. Caution also needs to be taken that cutting in at the agricultural assistant level does not by pass the higher echelons. If they are by passed their interest in FSR will not be great and their support is not likely to be very strong. Given the extremely low resources of the Extension Branch we do not know how much it could collaborate even in its own interest. Unfortunately, few FSR programs have as yet established effective links with Extension, so this phase of the FSR program is less developed than the concept in general.

5. ARPT's may be expected to show results more quickly than is expected of conventional research, which has long claimed protection under the "long-term" shield. In Guatemala the FSR teams were called "Production Teams", although they were expected to do much the same kind of work that is expected of the ARPT's. There are also some few examples of successful production projects that used some of the FSR approaches.

RECOMMENDATIONS

We have no specific recommendation.

C. "Review the methodologies and techniques being utilized by the Extension Service in transferring relevant technology to farmers in project areas. (From item 2-D in Scope of Work) Specific attention should be directed toward the Extension Service Program for training farmers in the use of relevant technologies being recommended by the CRT's and the ARPT's".

The Head of the Extension Branch is in the United States pursuing short-term training.

We had no direct contact with the Head of Extension or Extension field agents, but had access to bits and pieces of information from which we have been able to compose some sort of a picture of Extension. We understand that Extension methodologies were completely inappropriate for the traditional and small scale commercial farmer and that Extension is so starved for resources and so discouraged in its job environment that even if training is offered some external supplier of funds must provide travel and subsistence resources. On the other hand, an analysis done by the project extensionist (see project files) found (a) a sense of dedication on the part of some Extension personnel especially at the local levels and (b) a good relationship between the field agent and the farmer.

At Magoye we were informed of an EEC cotton program which indicated that if Extension had a minimum of technical and logistic support it would respond in a productive manner. The growth of soybeans in Zambia has been largely in the large farm commercial area. However, within the last few years we understand that Extension in the Eastern Province has taken the initiative in bringing in Research branch expertise to promote the production of soybeans among small farmers. We understand further that Extension participation in the Researcher's efforts have been quite good and quite fruitful in recruiting growers (some 400) for trials and demonstrations. Given that number, it almost has to be true that Extension helped with the on-farm plots. It was further reported that Extension requested a training program in soybeans and received the training well and with a good deal of interest.

From these pieces we form the image of the Extension Service as well supplied with numbers of people. However, (a) they have very little technical support, (b) they have completely inadequate logistic support (educational equipment and demonstration materials as well as transport), (c) there are too few technical support personnel (such as crops husbandry officer) in relation to field personnel. We understand field agents are faced with duties other than the delivery of technology. It is to be expected that many agents would not be enthusiastic about technology delivery. It is also to be expected that a certain number would be and would feel a responsibility to serve the farmer. Further, if there were a going program with good technical substance and some sort of support, many more agents would develop a positive attitude.

To sum up, Extension has people and structure. It may be almost analogous to an electric power generation system waiting to be energized. A few cases (cotton in Southern Province and Soybean in Eastern) of energizing has shown the system to work. Early project efforts to energize the system via a monthly newsletter have not worked. Copies in sufficient numbers for all Extension personnel are delivered to the

District Agricultural Officer. From there they can be mailed free of postage or distributed to personnel with salary. After only a few months experience few Extension personnel below the District Office have received copies. Perhaps if the transmission system analogy is accurate, it takes more power to energize the system.

The ARPT's have not generated any recommendations. The CRT's have produced the lima program. We understand that field agents rely on direct farmer contact as the chief extension methodology. In the Central Province there are remnants of an earlier World Bank T and V Project, and we understand that some agents use contact farmers to call together small groups for discussion. This seems to be a fragmentary activity. Some agents have demonstration plots but make almost no use of them as extension teaching methods.

Outside the Extension Branch, the Research Branch now has a Research Extension Liaison Officer who is producing radio and television programs. One radio program we heard about turned up requests for at least some seeds. The Research Branch has also produced the Crop sheets in the Lima Program. We heard varying reports on the extent to which they are used and their effectiveness. We have reports that some extension agents do not know how to use them, although many do. There is evidence that some of the Integrated Rural Development Programs are using the Lima crop sheets to energize the Extension system (probably along with logistic support), but we know of no results.

The project extensionist has initiated a newsletter and is planning a series of training courses for extension personnel. This will be helpful. Training is one of the essential elements of a viable extension service, but a temporary approach will have little impact. We are not able to see the path by which the project can have a significant institutional impact on the Extension Branch, (i.e. a lasting effect the system itself will sustain). The RELO at the province level could be institutionalized either in the Research Branch or the Extension Branch. There will over time likely be enough work for two, so it could be both. Currently, however, the GRZ intent is to institutionalize it in Extension.

RECOMMENDATIONS

We recommend that USAID/Zambia explore possibilities of providing funds from outside this project to Extension in the Central Province for the purpose of relieving resource constraints but anticipating institutional improvement to the extent feasible.

D. We have recombined the following two scope of work items.

"Review and Examine Methodologies utilized to implement the long-term, short-term and in-country training programs. Specific attention should be directed toward the Extension Service Program for training farmers in the use of relevant technologies being recommended by the CRT's and ARPT's".
"Assess efforts effected by the contract team in providing training to national scientists of the CRT's and ARPT's".

In this section scientists training will be discussed. Extension will be discussed in item E.

According to the report we have, 33 persons have been selected and scheduled for long-term training. The PP provides for 34 long-term trainees. Of these, 21 began training in 1982-83, ten will leave for training in 1983-84, and two will start training 1984-85. If the one student who will study for two degrees before returning is counted twice, the 34 PP positions are used up. The plan of work shows three unidentified vacancies for which participants are still to be selected to begin training in 1983-84. As we understand, these three were posted in anticipation of fall-outs from the original selections. We also understand that project savings will be considered for reprogramming.

We consider the promptness with which participants were selected and given training to be a positive measure of performance. At the same time we recognize that the selection was made without team member participation and that other candidates worthy of a training investment will be identified. We think that reasonable efforts should be made to accommodate those identified later. They could be accommodated by re-programmed savings, by substituting for dropouts, by obligation of additional funds to the project, or by seeking training opportunities from other donors.

We also note that continuation of one candidate's program for the second degree. This is seldom a wise course, chiefly because the candidate is away from Zambia, Zambian agriculture, and the Research Branch for so long that re-entry problems are exacerbated. We understand this to be a special case and not a precedent.

Human resource development is one of the important components of institution building and merits attention and investment. The project had done well. The GRZ is grateful and exceptionally well-pleased.

In short-term training, we count some 33 already selected and programmed with an unspecified number of others to be scheduled. We have little comment. It is obvious that this is an important resource. However, it stands two risks. One risk is that because of lack of attention, the resource is not applied effectively to project needs. The second risk is that an international trip be awarded as reward but without adequate attention to project needs. Both motives are important and can be accomplished. We note that most are slated for attendance at scheduled courses. Per se this is neither positive nor negative. Many of these are relevant and quite good. There may be short-term training needs, however, not reflected in scheduled courses. With three major universities involved in the contract, the team should expect some home campus support in specialized training opportunities, such as apprentice training or a semester of course work that doesn't lead to a degree.

In addition to participant training, association with contract team members offers opportunity for Zambians to improve their competence. This is an individual by individual opportunity, and we have no way of knowing how effectively these associations are being used. There is however, one staff improvement opportunity almost always neglected. This is the opportunity to develop a seminar program or even courses during the dry season when field work is reduced. It is even possible that courses could be given in Zambia for credit in one of the contracting institutions.

RECOMMENDATIONS

1. We recommend that long-term training be one of the priority components for the utilization of savings from elsewhere in the project.
2. We recommend that the project maintain a continued review of short-term and in-country training needs and resources and the opportunities.
3. Specifically, we recommend that the team and GRZ explore possibilities of developing seminars and formal courses for GRZ personnel in Zambia.
4. We recommend the ZAMARE team take the initiative in requesting home campus support in meeting specific short run training needs.

E. "Examine Working relationship between Ministry of Agriculture and Water Development and UIUC contract team as well as performance of contract team and provide recommendations for improving institutional relationships."

Performance of the contract team seems to us to vary from good to excellent. Under A and B above we discuss performance in greater detail.

When a new group joins an organization, such as the contract team joining the Research Branch, there is always a period of adjustment and accommodation. If we were to record any impression at all we would record that this phase was negotiated quite promptly for the most part and energetically.

While the GRZ-UIUC team relationships are, in general, all that could be expected, and in some cases more, we do recognize a problem of difference of opinion on the job description of the RELO.

Here is our understanding of the differences in points of view regarding the job description of the RELO. The Research branch, as articulated by the ARPT Coordinator, wants the RELO to concentrate on training extension workers in farming systems concepts. The objective of this training would be to develop an understanding that farmers use different systems and thus face different problems. These problems will differ among small-scale farmers as well as between small and large scale farmers. Further, problems vary from year to year even for the same system. This training would involve distinguishing between systems in an extension workers areas and a written report on the systems and problems of farmers. From this report

the extension agent would plan his program of work. It is recognized that currently no farming system-specific recommendations are available. The aim is to condition workers to the concept and prepare them for the time when recommendations are being produced. Such training may also lead to greater extension participation with research in the total program.

The point of view of the RELO regarding his job description is more conventional. He notes the very serious lack of in-service training and is confident that training can make a difference. He holds that farmers have to farm this year, before ARPT recommendations, and that extension agents have to continue their work even without ARPT support.

There seems to be more than the differences in points of view per se. Each recognizes the extreme variation in their backgrounds. We think there is a tendency on the part of both to think these differences are so great that they are irreconcilable and that it is not worthwhile to expend further effort at reconciliation.

We recognize the diversity of background but hold that some reconciliation may well be possible. Even though U.S. agriculture is more sophisticated and more prosperous, U.S. extension does deal with systems and is to a large extent people oriented. There is something in that experience that could have value for the Zambia ARPT program.

In several parts of this evaluation we have emphasized the developmental nature of farming systems research. That means experimentation is needed. We see the possibility of accomplishing some conventional training objectives while seeking the ARPT coordinator objectives. We also doubt that unless a training effort is sustained and supported by materials it will have significant impact.

We see some alternatives.

1. One is continued discussion. The only suggestion we make to justify resuming discussion where discussion has not been fruitful before is for each one to attempt to identify the assumptions and conceptualizations that underlie his point of view. This will take effort, but it will have some value beyond this immediate issue. This self analysis would precede discussion. At first the discussion would focus on these assumptions, experience, and conceptualizations. Understanding where both are coming from may help.
2. A second alternative would be to use the Provincial ARTP Committee to help define the job. If the committee were utilized it would need to be in a seminar format with genuine participation by all committee members. Such a seminar would also involve extension and help improve collaboration. It would also help extension develop a deeper understanding of the FSR concept. This is probably the preferred alternative because of the by-products.

3. A third alternative would be to develop a job description that includes both concepts. There may not be as much difference in practice as appears on the surface.

RECOMMENDATIONS

1. We recommend that efforts be continued to define the RELO role and job description with respect to ARPT and research-extension linkage and that two factors be kept in mind.

- a. ARPT is in a developmental stage and innovation is required, not simply transfer of conventional methodologies.
- b. No matter the merits of the case, the burden to integrate with the national systems falls on the expatriate.

F. "Review participation and impact of UIUC Research Associate and UNZA Special Studies component of the Project."

Experience in these two components has not been adequate for a significant evaluation. Still we have some impressions. One impression is that the concept behind these components is sound. They yield two products, one of which is the output of the efforts of the recipients. The other is human resource development. Either product may be worth the cost.

Two research associates have been approved and are scheduled to arrive by the end of 1983. No work has yet been done.

Five proposed UNZA Special Studies are reported in the plan of work. These studies are in the social science field. We question the limitation to social science given the fact that UNZA is expected to provide the nation's agricultural graduates. Although very small, this component of the project could help a bit in strengthening UNZA. It may help considerably in building good relations and linkages between UNZA and the Research Branch. Building these linkages are important to institutional development. A second impression is that the topics proposed seem to be marginally relevant to the objectives either of the project or of the Research and Extension Branches.

We also see the possibility of coordinating a research associate grant and a special studies grant. One way would be for a research associate and an undergraduate working on a thesis to work together. Another way would involve a grant to a UNZA Professor to collaborate with the research associate. The value of any specific collaboration would have to be judged on its merits.

RECOMMENDATIONS

1. We recommend that the project maintain a continual review of these components for the purpose of taking full advantage of them in support of the objectives of the project. This "continual review" need not be complicated and time-consuming.

G. "Review procedures and utilization of project and contractor provided commodities, budget and library support."

We encountered no problem with utilization of commodities and budget support worth of note, except the case of commodities for a couple of research stations which now seem to be inappropriate, because of differences of opinion between the implementation team and the design team. However, since it is not likely to happen again, we have given it little attention. Ways do need to be sought to salvage what can be salvaged from those resources.

Procedures is another matter, along with general project management. We heard reports of numerous "problem incidents". We call them "problem incidents" because they are not so much problem in themselves as they are reflections of some more nearly fundamental problems. We also found that the incidents were viewed differently from different points of view. We made little attempt to explain these incidents, incident by incident. That would have taken far more time than has been allocated to the task. It would have required passing judgement and perhaps even assessing blame. We see no benefit in explaining incidents if there are underlying problems and if the underlying problems continue. We also see nothing to be gained by assessing blame. That would have required testimony of one party against another and could well exacerbate the problems rather than alleviate them. Our analysis indicates there are two significant problems underlying the incidents.

1. One is that there is not a de facto delegation of authority to the contractor and a corresponding acceptance or responsibility and accountability by the contractor adequate for orderly project management.

In this case again, we have not done the investigation to explain why. It could be that inadequate authority has been granted. It could be a hesitancy to accept responsibility. It could be some of both.

There is no doubt, however, in our judgement, that this project is characterized by a diffuse decision making structure in which it is very difficult (a) to hold any one accountable and (b) to get a decision in reasonable time.

We also have no doubt that the image held by ZAMARE team members and MAWD officials is that USAID/Zambia interferes "too much" in project management. We discuss this more thoroughly under the second problem.

From the types of incidents we heard about, it is our judgement that most of the differences can be reconciled and that the remainder can be accommodated and further that this can be accomplished without undue effort.

2. The second underlying problem is that appropriate channels of communication among the parties have not been fully established and regularly utilized.

There are three major actors in this project and many issues. Some of these are between AID/Zambia and its contractor. Others concern GRZ and the contractor. Still others involve AID/Zambia and GRZ. Finally some concern all three.

The image of this project held by GRZ is that AID/Zambia is the de facto project manager and that the team is working for AID/Zambia. The view of GRZ is that the PSU is a decision making body with power to overrule GRZ/Contractor decisions with respect to commodities, personnel, fund disbursement, and accounting.

We emphasize that this is the image we detect of AID/Zambia within GRZ. Our information from AID/Zambia is that it does not view itself in the same way.

We recognize that the three parties to the project operate from different premises and that certain differences will persist. GRZ, especially in the Research Branch, is accustomed to expatriates being assigned to it and completely under its direction. Many expatriate personnel are assigned this way, and GRZ Research Branch has made exceptionally good use of them. It feels up to the task. Still, this is not the AID style of operation anywhere in the world, especially on institution building projects. The contracting Universities also have a point of view. They want a certain autonomy from AID/Zambia for operations, but they also want support from the Mission on certain items. They also want to have some participation in the supervision of personnel. We also recognize that in the history of the project there were some political problems that justified more AID/Zambia participation in project implementation than normal. In some instances that participation probably helped gain time in the project.

The problem is lack of communication, correctly structured. We note that apparently most communications between AID/Zambia and GRZ is through the contractor team leader. This is one responsibility AID/Zambia cannot expect the contractor to assume. This is not the proper structure, and messages through a third party always lose something. We also note that monthly meetings among the three parties have been discontinued, further diminishing communications.

The PSU is a special issue of contention. We are in sympathy with

arguments and points of view for and against. Since this is under surveillance by AID/Zambia and UIUC, we have little to contribute. To GRZ, it seems to us, the PSU may be a symbol of AID/Zambia dominance in project management. It may also be the same sort of symbol to the contract team. We doubt that it is a major problem per se separate from the two major problems identified. In other words if the two major problems are addressed, the PSU problem will either diminish or the project will be in much better position to resolve it.

These problem incidents do not seem to have hindered seriously the work of the project, although it is not known what might have been without them. Nor, can it be predicted what will be the impact in the future if they are not resolved. We did observe that there is far more contact at least between AID/Zambia and contract personnel on the problem incidents than on the more positive aspects of the project, of which there are many. Project team members would value attention on substantive and program issues not only from AID/Zambia but also from executive personnel of the other parties involved.

We are somewhat perplexed by the role the Project Paper plays in the management of this project. We have seen several copies of thoroughly worn copies of the paper and have heard innumerable references to it. We have read the paper and consider it a good project paper, considerably better than the average. We also recognize that on certain issues it must prevail. However, there is so much more and up to date information available to project management than was available to the PP authors that it cannot be regarded as a blueprint. We are sometimes inclined to believe that the project paper is being used to some extent as a substitute for project management.

RECOMMENDATIONS

1. We recommend that AID/Zambia delegate substantially more authority for project management than currently exists in practice and that the contractor assume responsibility commensurate with the authority. This will facilitate decision making and the establishment of accountability, both of which are essential to good management. It will also decrease substantially USAID/Zambia-Contractor contacts on daily issues and save considerable time, part of which can be utilized in implementing other recommendations.
2. We recommend that channels of communication be established among the three parties in the project appropriate to the types of issues involved and that the volume of direct communication between USAID/Zambia and GRZ on project issues be both increased and made more regular. This will reduce reliance on the team leader as an intermediary. If, as we expect, the number of problems, diminish, the regularity of contact should still be maintained, giving attention to such positive issues as Research Branch

development strategy, Extension Branch development strategy, and activities subsequent to this project.

3. We recommend that the Project Paper be interpreted more liberally than now appears to be the case, according to the paper's spirit and intent and project need rather than the letter of the PP. The work plans which have been developed can serve in part the guidance role of the PP. They should be up-dated each year.

4. We make no specific recommendation with respect to the PSU and the issue of an administrative assistant, holding that implementation of the first three recommendations will greatly facilitate resolution of these two issues.

H. "Assess the Goal and Purpose of the project as stated in the project paper and provide recommendations, if necessary."

We find the statements a bit awkward and would have probably stated them differently. At this point, however, we have no evidence that these statements in any way hinder project implementation, or that a change would help. It is our view that so much knowledge is gained so quickly after implementation begins - knowledge that the PP team simply could not have had -- that the PP must be interpreted in its intent and spirit and not in its letter if the project is to function effectively.

We have no recommendation in this area.

I. "Review current working mechanism developed between MAWD, Contractor, and the international agricultural research centers (IARC's), for networking purposes, and provide recommendations for improvement as required."

We find these mechanisms, relations, and procedures to be excellent. The Research Branch of MAWD has developed the capacity and the practice of taking almost full advantage of the international stock of agricultural science and technology, at least in those areas in which the project deals.

CIMMYT is the most important of the IARC's for Zambia. Maize is the most important crop in the Zambia small scale farm sector, and all our evidence is that the relationships between Zambia and CIMMYT's maize program are both cordial and productive. ZAMARE resources will likely enable Zambia to increase the value of this collaboration to an extent greater than the additional resource, as is explained above.

CIMMYT is having a major impact on the ARPT program. The Zambian ARPT is a prototype of the CIMMYT farming systems model and may be the first or most advanced. However, we do not know that. The project is taking full advantage of that resource. CIMMYT is also establishing collaboration

with the University of Florida Farming Systems Support Project, another international resource provided by AID.

The soybean program is collaborating with the International Soybean Program at the University of Illinois (INTSOY) as well as with the International Institute for Tropical Agriculture (IITA) in Nigeria and the Asia Vegetable Research and Development Centre (AVRDC) in Asia. These activities do not have the field support mechanism that CIMMYT has, but Zambia is taking advantage of what is available.

IITA collaborates with CIMMYT in developing streak resistant maize varieties and with INTSOY in soybean breeding. We also noted CIMMYT collaboration in wheat and International Potato Center Collaboration.

It is also significant, in our view, that there is a considerable horizontal networking between Zambia and other national systems particularly Tanzania, Zimbabwe, and Malawi. Such is encouraged by CIMMYT both in its maize and Farming Systems Research programs, but we get the impression that some is by country initiative and note collaboration in other crops. In the long run the horizontal networking among national systems could have significant value in improving both the efficiency and effectiveness of national research efforts.

Finally, the soil microbiologist is here under a sub-contract with the University of Hawaii which has close to a decade of research in nitrogen fixation supported by central AID and through which he has access to the world's knowledge in the field as well as to the world's stock of rhizobium strains.

We have no recommendation in this area.

J. "Assess Professional and Financial Support being provided by the Government of Zambia."

Although support is not adequate, there is not much chance for significant improvement in the short run. There may be a better outlook in the longer run, but the chance for a substantial increased support is not great. There are two main causes.

One explanation lies in the rather intense donor activity. The number of donor projects competing for Government of Zambia support and contribution is such that it is always difficult for the Government to provide adequate support to them all, even under the best circumstances.

The second explanation is that during this project's history the Government has not enjoyed the best of circumstances. Throughout the public sector budgets have been in a downtrend during the last several years. The

budget making machinery seems to operate effectively, perhaps a bit cumbersome, and the Parliament recognizes needs. However, if funds are not available to the Ministry of Finance, the support cannot be forthcoming.

We have no evidence that this project fares any different from other donor projects as far as financial support is concerned. We do have some evidence that the Government is attempting to meet its obligations to specific donor project activities ahead of its own regular needs. We found, for example, that the Cereals Crops Team Coordinator does not have an assigned vehicle, although he carried on a research program in addition to his coordination responsibilities.

Regarding professional-technical support, it is quite good. There is a severe scarcity of Zambian personnel, yet most ZAMARE personnel have counter-part personnel. In the area of program leadership to make good use of ZAMARE resources, Government support has been outstanding in most cases.

We recommend that:

1. Project management continue much as it has, making do with the resources that are available. The project also could help out in matters of operational funds but with considerable care to distinguish between critical resource constraints and those constraints that cause inconvenience but do not seriously threaten project achievement. Other resources such as PL 480 funds may also be utilized here.

2. The project concern itself with a research support issue larger than the limited issue of support to his project. Some calculations presented to us show that the returns to investment in maize research could be exceptionally high with some technological improvements to be released within a few years. Returns already realized by the Zambian economy from research in sunflower and soybeans must also be very great. The project is concerned with the institutional development of the Research Branch. One of the essentials of institutional development is the development of linkages. One linkage that is essential for institution building is the so-called "enabling linkage", by which the institution acquires resources with which to operate.

It now appears that Zambia has in its Research Branch an institution capable of producing very big returns on money invested in it. If this is found to be correct, then the Government of Zambia cannot afford not to invest adequately in research even though funds come from other programs. Further if returns to research investment are high, it is the responsibility of research administrators to demonstrate this fact to those authorities who allocate funds. It must be emphasized that this is a management responsibility to Society. It is not self-seeking.

The contractor has the competence to help determine returns to research in Zambia, and the project has the resources. We recommend that

such an analysis be made.

K. "Develop preliminary scope of work and team composition for mid-term formative (2nd phase) evaluation team."

On the composition of the evaluation team we list the areas of competence needed. In many cases an individual will have adequate expertise in more than one field. An agronomist or an agricultural economist for example, could be experienced in extension specialist's work, farming system research, or research program coordination or research administration. The team should be about evenly divided between persons from largely a research program and those from largely an extension background.

The areas of competence that we feel are needed are these:

1. An agricultural economist trained and experienced in farm management or production economics.
2. An extension specialist experienced in dealing with both researchers and field agents and in putting programs together.
3. A crops agronomist
4. A soils specialist
5. A crop protection specialist
6. A person knowledgeable of farming systems research and extension programs in various parts of the world, experienced in a specific project if possible.
7. A person with credentials in one or more of these fields: Research and Extension organization, institutional development, and management.
8. A person experienced in coordinating the work of several persons working in research or extension or experienced in research or extension program management.

It will likely be feasible to hold the team to five or less, and the smaller the team the better. Zambia-based personnel who need to be on the team should be looked to supply some of the expertise needed.

We think this list needs to be reviewed by the three parties involved in project implementation. Care needs to be taken, however, not to let the team get too big.

The items listed below are ones that at this time will seem to need attention. They are not mutually exclusive, and some elements may be repeated under several headings. This redundancy should not be allowed to confuse the team, but should be resolved according to criteria that appear relevant at the time.

1. Examine the role and need for a strengthened economics component in the Research Branch. What functions need to be performed? Where should it be located? What is GRZ interest? What would be a feasible strategy?
2. What is the current status of collaboration between the Research and Extension Branches? What are the specific constraints to more effective linkages? What modifications can be made within current resource limits to increase effectiveness of linkage? What realistic program opportunities can be identified? What opportunities exist for collaborating with other donor programs in developing extension and extension-research linkage?
3. What accomplishments can be identified in the development of the ARPT structure and processes? To what extent are the ARPT's and CRT's integrated into a single research service? To what extent has there developed a productive division of labor between ARPT's and CRT's. What alternatives are there for improvement? What technology has been produced or modified by the ARPT's or what is likely to be available within the near future? Characterize the ARPT extension collaboration and suggest alternatives for increasing its effectiveness.
4. Analyze and comment on the institutional development status of the Research Branch. This should note these items:
 - a. Linkages, with extension, with UNZA; with Zamseed, Namboard, and other elements of GRZ important to the performance of the agricultural sector.

A second linkage issue deals with the linkage to those GRZ institutions that allocate resources. Note Research Branch activities in those areas. To what extent have returns to investment in research been calculated? If so how have these calculations been used in the competition for funds?
 - b. Personnel, looking at the Research Branch's ability to retain trained persons, academic training, need for training, providing of experience to the newly trained personnel, needs for expatriates, and utilization of expatriates in a strategy to develop expatriate replacement.
 - c. To what extent are the ARPT's covering the country? What is the expansion strategy to complete the coverage? Describe the Zambia Model of agricultural research organization when ARPT coverage is fairly complete.
 - d. If there are substantive areas in which either the Project or the Research Branch are critically weak, identify. Be fairly severe in defining what is really critical.
5. Anticipating the termination date of the project, what will be the program needs of research and/or extension that an AID project could address? Will a new project be needed or would it be better to modify and extend the current project? If the latter, what modifications seem to be needed?

APPENDIX 1

Note on Zamseed

We did not visit or study Zamseed and so know very little about its operations. Reason for this note is that we heard from almost every commodity group we contacted -- maize, sunflower, soybean, and cotton -- that Zamseed had difficulty maintaining genetic purity and producing adequate quality and quantity of seed. This is of concern to the Research Branch. Technology produced by plant breeding is embodied in the seed and can only be delivered in seed. A seed industry ranks with extension as a technology dissemination entity. Without care, inadequacies in Zamseed can seriously impair the impact of the Research Branch. USAID/Zambia may find it worthwhile to do a more thorough analysis of Zamseed.

APPENDIX 2

Persons Contacted

Mr. John A. Patterson - AID Representative, Zambia
Dr. James Snell - Agricultural Economist, AID/Zambia
Mr. Michael J. Ireland - Management Officer, AID/Zambia
Mr. Fred Perry - Capital Development Officer, AID/Zambia
Mr. N. Mumba - Director of Agriculture, MAWD
Mr. F. Mbewe - Director of Planning, MAWD
Mr. Winter M. Chibasa - Assistant Director of Agriculture (Research) MAWD
Dr. J.D. Naik - Chief Agricultural Research Officer, MAWD
Mr. Alex Prior - Cereals Research Coordinator
Mr. Stewart Kean - National Coordinator, ARPT
Dr. G.M. Ravagnan - Oil Seeds Research Coordinator, NODP
Dr. W. Javaheri - Soybeans Research Coordinator, FAO
Dr. Ristanovi - Maize Breeder/team leader, SIDA/Yugoslavia
Dr. Paul Gibson - Maize Breeder, ZAMARE
Miss Catherine Munga - Maize Breeder, Mount Makulu, MAWD
Mr. Samson Syakwilimba - Maize Breeder, Nanga, MAWD
Mr. Jan Flink - Assistant Maize Breeder, SIDA
Mr. W. Chita - Officer in Charge, Magoye Regional Research Station, MAWD
Dr. Jagmohan Joshi - Soybean Breeder, ZAMARE
Mr. S. Nkambula - Soybean Breeder, Magoye Regional Research Station, MAWD
Mr. J.F.C. Sikazwe - Officer in Charge, Kabwe Regional Agriculture Research Station, MAWD
Dr. Robert E. Hudgens - ARPT Agronomist, Kabwe, ZAMARE
Dr. Alfred G. Harms - ARPT Farming Systems Economist, Kabwe, ZAMARE
Dr. Ronald Dedert - ARPT Research Liaison Extension Officer, Kabwe, ZAMARE
Mr. Kefi Chanda - ARPT Agronomist, Kabwe Regional Agriculture Research Station, MAWD
Dr. S. Sanogho - Microbiologist, ZAMARE
Dr. W.A. Roath - Sunflower Agronomist, ZAMARE
Mr. Charles Chabala - ARPT Agronomist, Kabwe Regional Agriculture Research Station, MAWD

APPENDIX 3

Evaluation Team Participants

Dr. K. McDermott - University of Florida, Team Leader
Dr. B. Gelaw - CIMMYT/East Africa
Dr. R. Benoit - Planning Unit, MAWD
Mr. F. Mwansa - Planning Unit, MAWD
Dr. J. Ragin - Team Leader, ZAMARE
Mr. F.B. Nyirenda - AADO, AID/Zambia
Dr. E. Ellis, University of Maryland, Eastern Shore (Ex-officio member)
Mr. E.F. Gibson - ADO, AID/Zambia (Evaluation Team Coordinator)

APPENDIX 4

Scope of Work for Evaluation

VZCZCLSI *
 RR RUEHC RUEHNR
 DE RUEHLS #2419/01 155 **
 ZNR UUUUU ZZL
 R 040818Z JUN 83
 FM AMEMBASSY LUSAKA
 TO RUEHC / SECSTATE WASHDC 3058
 INFO RUEHNR / AMEMBASSY NAIROBI 2624
 BT
 UNCLAS LUSAKA 02419

EG
 9/8
 FILE EVALUATION
 CLASS: UNCLASSIFIED
 CHRGE: AID 6/2/83
 APPRV: AID:JPATTERSON
 DRFTD: AID:EGIBSON AND C
 TIN (REDSO/ESA):C
 CLEAR: NONE
 DISTR: AID-2 AMB DCM
 ECON. CHRON

AIDAC

AID/W FOR S&T/AG - W.MORSE
 NAIROBI FOR REDSO/ESA

E.O. 12356:N/A

SUBJECT: EVALUATION OF AGRICULTURAL DEVELOPMENT:
 RESEARCH AND EXTENSION PROJECT (611-0201)

REFERENCE: NAIROBI 13819 (NOTAL)

1. AID/ZAMBIA, WITH REDSO/ESA ASSISTANCE, INTENDS TO CONDUCT AN EVALUATION OF SUBJECT PROJECT DURING THE FIRST TWO WEEKS OF SEPTEMBER, 1983. THE EVALUATION TEAM WOULD CONSIST OF A SENIOR LEVEL FARMING SYSTEMS RESEARCH SCIENTIST AND A SENIOR LEVEL AGRONOMIST. THE AID/ZAMBIA AGRICULTURAL OFFICER WILL SERVE AS TEAM COORDINATOR AND AN EX-OFFICIO MEMBER FROM THE CONTRACTURAL INSTITUTION (UNIVERSITY OF ILLINOIS - CARBONDALE) WOULD JOIN THE TEAM DURING THE LAST WEEK OF THE EXERCISE.

2. TENTATIVE SCOPE OF WORK IS AS FOLLOWS:
 THE PURPOSE OF THIS EVALUATION OF THE RESEARCH AND EXTENSION PROJECT IS TO ASSESS THE EARLY IMPLEMENTATION ACTIONS CONCERNING INSTITUTIONAL DEVELOPMENT, ESPECIALLY THE MECHANISMS, FOR INTEGRATING THE WORK OF THE COMMODITY RESEARCH TEAMS, ADAPTIVE RESEARCH PLANNING TEAM AND THE EXTENSION PROGRAM. IT IS OF UTMOST IMPORTANCE TO REVIEW AND PROVIDE RECOMMENDATIONS ON THE INSTITUTIONAL BUILDING ASPECTS OF THE PROJECT. THE EVALUATION WILL BE CONDUCTED FOLLOWING THE AGENCY RECOMMENDED PROJECT EVALUATION SUMMARY (PES) FORMAT. THE SPECIFIC TASKS OF THE EVALUATION TEAM WILL BE THE FOLLOWING:

A. REVIEW PROJECT PROGRESS AND ACCOMPLISHMENTS ON THE PLANNING AND IMPLEMENTATION OF THE WORK PROGRAMS, FOR THE FOLLOWING COMPONENTS OF THE PROJECT: COMMODITY RESEARCH TEAM (CRT), ADAPTIVE RESEARCH PLANNING TEAM (ARPT) AND EXTENSION PROGRAM IN THE DESIGNATED PROJECT AREA. PROVIDE RECOMMENDATIONS AS APPROPRIATE.

B. ASSESS ACCOMPLISHMENTS TO DATE OF ARPT IN IDENTIFYING AGRICULTURAL PRODUCTION CONSTRAINTS OF SMALL FARMERS IN THE MUSHI AND SERENJE DISTRICTS AND HOW THESE IDENTIFIED FARMER PRODUCTION CONSTRAINTS ARE BEING FED INTO THE CRT RESEARCH PROGRAM. PROVIDE RECOMMENDATIONS

FOR IMPROVING FUTURE ARPT WORK IN THE TWO DISTRICTS, IF APPROPRIATE.

C. REVIEW THE METHODOLOGIES AND TECHNIQUES BEING UTILIZED BY THE EXTENSION SERVICE IN TRANSFERRING RELEVANT TECHNOLOGY TO FARMERS IN THE PROJECT AREAS.

D. REVIEW AND EXAMINE METHODOLOGIES UTILIZED TO IMPLEMENT THE LONG TERM, SHORT TERM AND IN-COUNTRY TRAINING PROGRAMS. SPECIFIC ATTENTION SHOULD BE DIRECTED TOWARD THE EXTENSION SERVICE PROGRAM FOR TRAINING FARMERS IN THE USE OF RELEVANT TECHNOLOGIES BEING RECOMMENDED BY THE CRT'S AND ARPT'S.

E. ASSESS EFFORTS EFFECTED BY THE CONTRACT TEAM IN PROVIDING TRAINING TO NATIONAL SCIENTISTS OF THE CRT'S AND ARPT'S.

F. EXAMINE WORKING RELATIONSHIPS BETWEEN MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT AND UIUC CONTRACT TEAM AS WELL AS PERFORMANCE OF CONTRACT TEAM AND PROVIDE RECOMMENDATIONS FOR IMPROVING INSTITUTIONAL RELATIONSHIP, IF APPROPRIATE.

G. REVIEW PARTICIPATION AND IMPACT OF UIUC RESEARCH ASSOCIATE AND UNZA SPECIAL STUDIES COMPONENTS OF THE PROJECT.

H. REVIEW PROCEDURES AND UTILIZATION OF PROJECT AND CONTRACTOR PROVIDED COMMODITIES, BUDGET AND LIBRARY SUPPORT.

I. ASSESS THE GOAL AND PURPOSE OF THE PROJECT AS STATED IN THE PROJECT PAPER AND PROVIDE RECOMMENDATIONS, IF NECESSARY.

J. REVIEW CURRENT WORKING MECHANISM DEVELOPED BETWEEN MAWD, CONTRACTOR AND THE INTERNATIONAL AGRICULTURAL RESEARCH CENTERS, FOR NETWORKING PURPOSES AND PROVIDE RECOMMENDATIONS FOR IMPROVEMENT, IF REQUIRED.

K. ASSESS PROFESSIONAL AND FINANCIAL SUPPORT BEING PROVIDED BY THE GOVERNMENT OF ZAMBIA AND PROVIDE RECOMMENDATIONS, AS REQUIRED.

1. DEVELOP PRELIMINARY SCOPE OF WORK AND TEAM COMPOSITION FOR MID-TERM FORMATIVE (2ND PHASE) EVALUATION TEAM.

3. CONTINGENT UPON HIS AVAILABILITY, C. MARTIN HAS INDICATED WILLINGNESS TO FILL THE AGRONOMIST POSITION. ANOTHER POSSIBILITY IS DR. H. EZUMAH, IITA, OR AN AGRICULTURAL OFFICER FROM REDSO/ESA.

4. AID/ZAMBIA WOULD LIKE DR. KEN MCDERMOTT, IADS TO ASSIST IN CONDUCTING THE EVALUATION. DR. MCDERMOTT WOULD SERVE AS THE FSR SCIENTIST. IF HE IS AVAILABLE AND AGREES, REQUEST THAT HIS SERVICES BE PROVIDED THROUGH THE CENTRALLY FUNDED "FARMING SYSTEMS SUPPORT PROJECT", COOPERATIVE AGREEMENT NO. DAN 4099-A-88-2083-00, PROJECT NO. 936-4099, AT NO COST TO AID/ZAMBIA.

5. PLEASE ADVISE. PUCHE

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