

PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE <b>Zambia Agricultural Development, Research and Extension (ZAMARE)</b>			2. PROJECT NUMBER 611-0201	3. MISSION/AID/W OFFICE USAID/Zambia
6. KEY PROJECT IMPLEMENTATION DATES			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) <b>611-86-00</b>	
A. First PRO-AG or Equivalent FY <b>80</b>	B. Final Obligation Expected FY <b>84</b>	C. Final Input Delivery FY <b>86</b>	5. <input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
6. ESTIMATED PROJECT FUNDING			7. PERIOD COVERED BY EVALUATION	
A. Total \$ <b>16,770,000</b>			From (month/yr.) <b>August 1982</b>	
B. U.S. \$ <b>12,515,000</b>			To (month/yr.) <b>May 1986</b>	
			Date of Evaluation Review <b>June 1986</b>	

B. 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., program, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED																								
<p>Recommendations, responsible officers and action dates are listed in the Recommendation Section of the attached Evaluation Document (pages i-iii).</p> <p>The Evaluation Document responds to Items 13-23 which are required as part of this summary.</p> <table border="1"> <thead> <tr> <th>ITEM</th> <th>PAGES</th> </tr> </thead> <tbody> <tr><td>13. Summary</td><td>iii-vi</td></tr> <tr><td>14. Methodology</td><td>6</td></tr> <tr><td>15. External Factors: Financial</td><td>47</td></tr> <tr><td>16. Inputs</td><td>6-28</td></tr> <tr><td>17. Outputs</td><td>6-28</td></tr> <tr><td>18. Purpose</td><td>1</td></tr> <tr><td>19. Goal</td><td>1</td></tr> <tr><td>20. Beneficiaries</td><td>33-36</td></tr> <tr><td>21. Unplanned Effects</td><td>--</td></tr> <tr><td>22. Lessons Learned</td><td>50</td></tr> <tr><td>23. Special Comments</td><td>Evaluation Document attached</td></tr> </tbody> </table>	ITEM	PAGES	13. Summary	iii-vi	14. Methodology	6	15. External Factors: Financial	47	16. Inputs	6-28	17. Outputs	6-28	18. Purpose	1	19. Goal	1	20. Beneficiaries	33-36	21. Unplanned Effects	--	22. Lessons Learned	50	23. Special Comments	Evaluation Document attached		
ITEM	PAGES																									
13. Summary	iii-vi																									
14. Methodology	6																									
15. External Factors: Financial	47																									
16. Inputs	6-28																									
17. Outputs	6-28																									
18. Purpose	1																									
19. Goal	1																									
20. Beneficiaries	33-36																									
21. Unplanned Effects	--																									
22. Lessons Learned	50																									
23. Special Comments	Evaluation Document attached																									

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) <b>UIUC Contract</b>	A. <input type="checkbox"/> Continue Project Without Change	
<input checked="" type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify)	B. <input checked="" type="checkbox"/> Change Project Design and/or	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C		<input checked="" type="checkbox"/> Change Implementation Plan	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)			12. Mission/AID/W Office Director Approval	
Jim Dempsey - PDO, REDSO/ESA Robert Mccolaugh - ADO, REDSO/ESA Peter Little - Sociologist, Institute for Development Anthropology			Signature <i>Leslie A. Dean</i>	
			Typed Name <b>Leslie Dean</b>	
			Date <b>June 23, 1986</b>	

ZAMBIA AGRICULTURAL DEVELOPMENT,  
RESEARCH AND EXTENSION PROJECT EVALUATION  
REPORT

TABLE OF CONTENTS

	Page
PES FACESHEET	
TABLE OF CONTENTS	i
EXECUTIVE SUMMARY	iii
I. <u>BACKGROUND TO PROJECT EVALUATION</u>	1
A. Project Objectives and History	1
B. Program and Policy Context	4
C. Previous Evaluations	5
D. Scope of Work for Present Evaluation	6
II. <u>PROJECT ACTIVITIES AND COMPONENTS</u>	6
A. Comparison of Project Achievements with Logical Framework Matrix	6
B. Technical Assistance	7
1. General Observations	7
2. Adaptive Research Planning Teams	8
3. Commodity Research Teams	15
4. Soil Microbiology	20
C. Training	22
1. Out-of Country Long and Short Term Training	22
2. Local In-Service and Farmer Training	25
D. Special Studies	26
1. UNZA Special Studies	26
2. U.S. Research Associate Studies	27
E. Socio-Economic Impact of Project Activities	28

2

	Page
IV. <u>PROJECT MANAGEMENT</u>	41
A. Team Leader Role	41
B. University Support	43
C. Project Support Unit	44
D. AID Project Monitoring	46
V. <u>FINANCIAL MANAGEMENT AND CONTROL</u>	47
A. AID Financial Records	47
B. GRZ Contributions	47
VI. <u>RECOMMENDATIONS AND LESSONS LEARNED</u>	48
A. Recommendations	48
B. Lessons Learned	50
C. ZAMARE II	51

ANNEXES

- A. Evaluation Scope of Work
- B. Summary of ZAMARE Project Evaluations
- C. Training
- D. Financial Reports
- E. Action Agenda for Remainder of Phase I
- F. List of Reports Consulted
- G. Individuals Contacted

## EXECUTIVE SUMMARY

### A. Summary

The May 1986 evaluation found that the project was being well implemented and that its assistance was contributing to strengthening the agricultural research and extension capacity of the Department of Agriculture (DOA). The restructuring of agricultural research and extension which established the Commodity Research Teams (CRTs - multi-disciplinary commodity adaptive research teams) and Adaptive Research Planning Teams (ARPTs - field research planning groups using a farming systems approach) has been accepted and implemented successfully through its early stages. There is a high level of GRZ commitment to this new approach and strategy.

The maize, soybean and sunflower CRTs, which are supported by ZAMARE, have produced research results and recommendations relevant to the small scale farmer. The research methods have been good and the process of on-the-job training strong. The CRT component of the project is an unqualified success.

Three scientists were assigned to the Central Province to assist in the development of the ARPT, the first one established. The research/extension liaison officer (RELO) undertook much training while the team's agronomist completed a substantial number of trials and demonstrations in conjunction with the other team members. No formal recommendations have yet come from the ARPT because of the long, and needed, process of verification of research results. However, ZAMARE-validated components of various improved packages are in use by farmers in the target areas. Not all of the background research needed to identify farming systems was completed as required to ensure that the right economic and agronomic research is undertaken. The process of institutionalizing the methods, systems, and capacity to analyze farming systems in order to generate appropriate technology has not progressed satisfactorily in the Central Province. A new group of scientists have now replaced the original group and their main task is to establish on-farm research systems and ensure their use so that a trained cadre of Zambian scientists is left behind. In recruitment, the contractor should have sought individuals with substantial operational and field experience in farming systems research.

The Ministry rates the U.S. training component of the project to be highly successful. Approximately 130 individuals will be sent to the U.S. for training, including 50 for long term degree training. A critical mass of trained scientist in the

research and extension services is being established. More in-service and in-country training of technicians and field extension workers is required. Looking to the future, financing of PhD and U.S. BSc degrees should be done only on an exceptional basis. Additionally, more cost effective alternatives to U.S. short term training should be explored.

The evaluation recommended continuation of the project into a second phase and a no cost extension of Phase I to December 1987 to allow time for the planning of Phase II. CRT support should continue into the new project, but the emphasis of the project, especially in its last years, should be on extension development. Local currency generations from USAID/Zambia programs should be programmed in conjunction with the project's foreign exchange to assist in needed construction and operational support for field extension workers.

Overall, the evaluation showed ZAMARE to be a successful project which is helping the GRZ to strengthen the agricultural research and extension capacity of the DOA and is beginning to increase the effectiveness of the extension service to transfer relevant agricultural technologies to small scale producers.

#### B. Recommendations

Major recommendations resulting from this evaluation are presented below. Following each recommendation is the responsible officer/office for action and a time frame for completion of the recommendation. Other recommendations, more specific or operational in nature, are presented in the text of the evaluation. Annex E contains an agenda for action covering these specific and other recommendations proposed for the remainder of the project.

1. Because of the success of the project as well as the large continuing need in agricultural research and extension, a five-year second phase of the project is recommended. USAID/Zambia and the PID Design Team will submit a PID to AID/W by the end of June.
2. To allow for an orderly transition into Phase II, the present project should be extended until December 1987. Adequate funds appear to remain in the project for a no-cost extension. USAID/Zambia will prepare a PP supplement to extend the project before the end of August.

5

3. Support for project field staff should be increased immediately to enable them to undertake their contracted tasks. The evaluation proposes local currency financing for field administrative staff, additional trail assistants, enumerators, extension worker allowances, the procurement of bicycles and other staff support. The ADO at the Mission will work with the contractor and MAWD to develop the necessary plans and mechanisms to be implemented before the end of August.
4. There is an immediate need to build operational systems and analytical capacity (i.e., computer) to do FSR in the Central Province. Most importantly, additional FSR study tours and training as well as close supervision and guidance is required for the ZAMARE ARPT members. A list of more specific recommendations to achieve this end appears in the ARPT section of the evaluation. The Mission ADO and Team Leader are responsible for the completion of these tasks as soon as possible.
5. Using the recent financial audit report and project financial records, the ADO, the Mission Financial Analyst and RFMC should develop accurate accounts set out by the PP budget categories. This needs to be completed immediately in order to set out a budget revision for a project extension.
6. Administrative arrangements need to be restructured to ensure more field support. Contractor home office support should be reviewed to see what could be transferred to the field or eliminated to free funds for the extension of field activity. Similarly, the Team Leader's Office in Lusaka needs to move as much operational support as possible to Kabwe and Magoye. ZAMARE should drop out of the Project Support Unit (PSU), thus allowing it to handle all of its own in-country administration. The ADO and Team Leader have the prime responsibility for completing these actions as part of the pending contract modification.
7. A training plan and strategy for ZAMARE has not been set out formally. Long term training in direct support of project components has been less than desirable. Although little money remains for training, a plan and strategy showing how the

remaining training contributes to ZAMARE-supported activities and objectives should be prepared by the DOA and the contractor as soon as possible. The short term training program should include much more training at IARC and long term training should be provided in rural sociology.

8. ZAMARE/UNZA linkages need to be strengthened. An aggressive strategy to use Special Study funds earmarked for UNZA should be initiated. UIUC is responsible for completing this action within the next month.
9. A basic soil testing capacity must be developed immediately. The ZAMARE project should provide technical assistance and, if possible, financing for equipment. UIUC and the ADO are responsible for resolving this serious problem as soon as possible.

## I. BACKGROUND TO PROJECT EVALUATION

### A. Project Objectives and History

The Zambia Agricultural Development, Research and Extension (ZAMARE) Project is part of A.I.D.'s response to a critical need for increasing crop production and incomes in rural areas of Zambia as part of a general restructuring of the rural economy. The project is contributing to the goal of improving the welfare of small farmers and increasing national food production through the development and adaptation of relevant technologies. The purpose and principal focus of the project is to assist the GRZ to strengthen the agricultural research capacity of the Ministry of Agriculture and Water Development (MAWD) and to increase the effectiveness of the extension service in transferring relevant agricultural technology, with special emphasis on small farmers.

The project is providing the resources required to increase the small farmer production of oilseed crops (sunflower and soybeans) and maize, as well as improving the understanding and knowledge base of small farmers by focusing research and extension activities on small farmers' needs.

The grant agreement for the project, planned as a five year activity, was signed in September of 1980. However, the technical assistance and most of the training did not begin until August 1982. To give the selected contractor, the University of Illinois at Urbana/Campaign (UIUC) in consortium with Southern Illinois University (SIU) and the University of Maryland-Eastern Shore (UMES), time to achieve the project objectives, the PACD was extended to December 31, 1986.

AID inputs under the UIUC contract consist of eight long-term technical assistance positions, seven of which are for five years. These research and extension professionals generally function as advisors although when counterparts have been on long term training, they have taken on line function responsibilities. In accord with the PP plan, a Microbiologist (the eighth TA) functioned as an operational expert (OPEX) replacing a Zambian technician for approximately two and a half years. The UIUC contract calls for 60 person/months of short term consultancy assistance of which to date the consortium has provided approximately 45 person/months.

Thirty-four Zambian scientists were slotted for long term training at the Ph.D, M.S. and B.S. levels. The figure has been revised upward to 50 individuals who will receive long term training. To date, 19 have completed their training while

8

another 19 are in schools in the US and twelve are expected to begin training in the fall term. The contractor is providing out-of-country short term training (70 technicians to date), in-service training, farmer training and limited commodity and support services. In addition, the project includes a special studies program, the procurement of vehicles and research station equipment, operational support to MAWD and financing for construction and renovation of staff housing.

The GRZ agreed to contribute the equivalent of \$4,256,000 (25.38% of total project costs) in the form of professional staff, training support expenses, land, offices, and operating costs, bringing the total cost of the project to \$16,771,000.

The key to project success is support and implementation of structural changes that will foster extension/research linkages that ensure the production and extension of new technologies and practices relevant to small scale farming systems. The GRZ has established Commodity Research Teams (CRTs) and Adaptive Research Planning Teams (ARPTs) as key elements in the new structure. Crucial to this new structure, the DOA adopted a Farming Systems Research (FSR) approach at the ARPT level to identifying farming innovations and technologies relevant to small scale producers.

At the time of project authorization, FSR was a new concept in Zambia and, for that matter, in Eastern and Southern Africa. Although the Department of Agriculture was quick to adopt the approach, there was some confusion and resistance to FSR, both within MAWD and AID. However, in the intervening years, the concept and practice of FSR has become an accepted approach supported by a body of scientific study and practical experience.

By 1984, the DOA had fully embraced the concept and clearly identified FSR objectives, strategy and operational procedures and practices in its Agricultural Strategy, published in November 1984. The Strategy for Agricultural Research states:

The focal point for applied research under the new structure will be the coordinated commodity teams (CRTs). (As used here, "applied" research encompasses the combination of problem identification and on-farm test and adaptation of technology within a farming systems context.) Crops research is to be organized into several national multi-disciplinary research teams, one for each major crop or groups of similar crops.... Coordination in research is not something imposed on associates. It means directing and integrating research, on a commodity or a problem, in a way that ensures a balanced focus on the production problems faced by farmers.

The work of the CRT's centers on such areas as varietal improvement, cropping patterns, tillage practices, use and timing of agricultural inputs, and harvesting and storage methods. A ZAMARE maize breeder is a member of the Cereal Grains CRT, which is working to breed and introduce varieties of maize adapted for small-scale farmer usage. As part of the Oilseeds CRT, a ZAMARE sunflower agronomist is seeking new agronomic practices and the development of disease-resistant and high-oil content sunflowers. Also part of the Oilseeds CRT, a ZAMARE soybean breeder is working to develop new varieties tailored to the needs of Zambian small-scale farmers. The teams are also conducting research needed to identify varieties best suited for the types of soils and the agro-climatic areas of Zambia.

In relation to the ARPTs, the Research Strategy states:

The focal point for adaptive research under the new structure will be the Adaptive Research Planning Teams, under the guidance of the Adaptive Research Coordinator. The function of the ARPTs is to look at the farming system as a whole, rather than single commodities in isolation and, in the process, to identify the key problems in the system and decide where the most significant improvements can be made in the system, commensurate with farmers' objectives and resource constraints. Problems thus identified on which component research needs to be done by Commodity Research Teams are described and discussed with the relevant CRT and National Research Coordinator so that they can develop on-station research to solve the problems. The overall objective is to produce recommendations that are relevant to the needs of the majority of farmers in each of the provinces, especially the traditional and emergent producers.

Technical assistance provided to establish and develop the ARPT for the Central Province consists of an agronomist, economist and a research/extension liaison officer (RELO), essentially the professional core of the team. Adaptive research by the ARPT will complement and interact with commodity research by the CRT's.

AID's assistance objective for the ARPT is the "institutional development" of the new research and extension system for the transfer of technology appropriate to small scale producers. The ARPT in the Central Province has influenced the choice of CRT research priorities and has established the beginnings of the FSR approach. The training discussed previously, costing approximately \$2.7 million, supports these institutional development efforts.

The End of Project Status (EOPS) presented in the PP logical framework are as follows:

- functioning Commodity Research Teams in oilseeds and cereal grains working on the needs of small farmers;
- functioning Adaptive Research Planning Team capable of referring small farmer production constraints to the CRT's; and
- functioning extension staff in Central Province that is working collaboratively with the ARPT and disseminating relevant technologies.

B. Program and Policy Context

The USAID/Zambia program is focused on agriculture with the twin goals of increased food production and increased small farmer income. The program consists largely of balance of payments support directed at improving the macro and micro economic and policy environment faced by the private sector, particularly in agriculture. The intent of the dialogue is to affect policy changes which will improve the incentives for the agricultural sector. The precept under which the strategy was developed is that the policy environment and incentive structure must be correct before the agricultural sector will increase output.

In the main, the program has been quite successful. Within the past 6-7 years, major policy changes have occurred which have materially improved the incentives within the agricultural sector. Specifically, producer prices for all major agricultural commodities have been increased to or near border price equivalents, income taxes for agricultural producers were reduced, depreciation allowances were accelerated and duties and tariffs on agricultural inputs were eliminated. Consumer price controls on virtually all products were also eliminated which materially increased the flow of goods to the rural areas. In addition, the GRZ has announced a major market liberalization effort directed toward allowing private trading in all agricultural commodities, including maize and fertilizer. On the macro side, the most significant change was the introduction of the foreign exchange auction system and the elimination of import license controls. Agricultural producers now have economic incentives to produce for the export market and have the access to the necessary FX with which to purchase spare parts so badly needed. As a result, and with good weather, agricultural production has expanded during the past two years and the agricultural situation is significantly improved under the present policy structure.

11

The Zambia Agricultural Development, Research and Extension Project (ZAMARE, 611-0201) was developed with the understanding that agricultural technology generation and dissemination is an on-going and generally slow process. Therefore, if AID is to help affect an increase in food output and income in the small scale farming sector, technology that is directly applicable to the small producer environment is needed. To delay the development of needed technology until the policy environment was "correct" would (1) slow the impact of the policy changes on increased output for Zambia as a whole, (2) limit the opportunity for small scale farmers to take advantage of the improved policy to increase their incomes, (3) further widen the disparity between the commercial farmers and the emergent and traditional farmers. The response to the above objectives is the ZAMARE Project which improves the GRZ institutional capabilities to conduct agricultural research and to disseminate the results of that research to producers. The improved technologies resulting from this research enable the emergent and traditional farmers to take full advantage of the improved policy environment. ZAMARE, then, is an integral part of the Mission's goals of increased food production and increased small farmer income.

### C. Previous Evaluations

There have been two evaluations of the project, one in September 1983 and the other in June 1985. Also, an audit was completed in October 1985 by AID's Regional Inspector General, Nairobi. These documents along with the GRZ's own reviews of its Department of Agriculture have been useful background to this evaluation.

The first evaluation was conducted a year into implementation of the project and provided a review of the design and guidance for implementation. It basically reinforced the concept and direction of the project.

The mid-term evaluation of October 1985 was conducted by a group of experts from Title XII institutions. The team included the Associate Director of International Programs at UIUC and the Director of International Programs from UMES. The propriety of having these two administrators of the project contractors on the team is questioned by this evaluation team. All future evaluations should be conducted by individuals that are independent and uninvolved in the implementation of the project.

The mid-term evaluation provides much useful information on the project and contributed significantly to the present evaluation.

12

The conclusions of both evaluations and the audit are quite favorable. A summary of the results and recommendations are attached as Annex B.

#### D. Scope of Work for Present Evaluation

To prepare for the design of ZAMARE - Phase II, the Mission requested assistance from AID's regional office in Nairobi (REDSO/ESA) to complete a project evaluation for ZAMARE. From REDSO/ESA, a Project Development Officer and a Regional Agricultural Development Officer along with a Sociologist under contract completed the evaluation and then developed a Project Identification Document (PID) for ZAMARE II. In line with the scope of work, this evaluation presents lessons learned relevant to Phase II as well as specific conclusions and recommendations for Phase I activities. The complete scope of work is attached as Annex A.

## II. PROJECT ACTIVITIES AND COMPONENTS

### A. Comparison of Project Achievements with Logical Framework Matrix

Quantifiable project outputs and benchmarks identified in the ZAMARE PP are few. Although the project design was generally strong, this lack of quantifiable objectives and benchmarks makes project evaluation difficult. The PP should have included some targets for farmer recommendations and new packages extended in relation to the project as well as in-country and in-service training by level, type and location. Specific benchmarks on FSR surveys (or other diagnostic activities), farming system identification, trials and demonstrations are also needed. For the CRTs, some quantifiable measures of research should have been established.

On the other hand, it must be noted that it is difficult to predict the nature and type of recommendations that will result from a research project. The success of the research is based not just on the project inputs, but also the related activity at a series of institution and levels from the IARC right down to the field extension worker. Notwithstanding this difficulty in attributing research and technology transfer success, the evaluation team has tried to set out quantifiable outputs for the project components as measures of achievement while, at the same time, present qualitative assessments of project performance.

In accord with AID project evaluation procedures, the design team did compare the project outputs and inputs as listed in the PP with achievements to date. This comparison is made in

Tables 1 and 2. The following sections provide the evaluation team's qualitative assessment based on quantification of project achievements.

## B. Technical Assistance

### 1. General Observations

Technical assistance is the largest component in the project with approximately 40 person years of long term and 60 person months of short term assistance planned. Table 3 provides a list of the scientists financed under the project by name, position location and term, while Table 4 lists the short term advisors to date.

The measure of success for the technical assistance rests on an evaluation of the performance of the ZAMARE-assisted CRTs and Central Province ARPT (CP/ARPT). The primary ZAMARE task is to strengthen and build these research and extension teams to undertake relevant small scale producers research. A review of the performance and impact of the CRTs and CP/ARPT appears in the following sections.

Several general observations are, however, useful. First the scientists were brought out as advisors, but actually functioned both as advisors and line officers, the latter when counterparts were away at training or unavoidable counterpart vacancies existed. The GRZ has a great number of operational expert (OPEX) positions supported by other donors. Generally, the GRZ views expatriate experts as "members of the team" working for the government. Much potential for friction existed over the status of the ZAMARE experts. However, the team members were generally able to sort out their positions in a way that both supported the GRZ programs and provided training to the Zambian staff so they could take over the positions themselves.

There were, however, some gaps in the provision of counterparts/colleagues to the teams. For the three scientists working in the CRTs, the team concept was important and training of all Zambian members on the team was the accepted goal. For maize and sunflower, there was always a colleague, usually several, that benefited from the on-the-job training provided by the AID scientists. Because of the small size of the soybean team (an agronomist and breeder), the long term training in the US of one scientist and the departure of another has left the breeder now in the position of having no professional counterpart on the team. On the other hand he has provided much training previously and has substantially increased the skills of senior technicians.

124

Table 1

ZAMARE PROJECT OUTPUTS (MAY, 1986)

<u>NARRATIVE SUMMARY</u> <u>SUMMARY: OUTPUTS</u>	<u>OBJECTIVELY VERIFIABLE INDICATORS</u>	<u>ACHIEVEMENTS TO DATE</u>
1. The strengthening of the MAWD Commodity Research Teams on Oilseeds and Cereal Grains	2. Establishment of two functional multi-disciplinary research teams e.g. Oilseeds CRT and Cereal Grains CRT.	1. The maize, the sunflower and the soybean teams are operational within their umbrella CRTs (Cereals and Oilseeds). Proof of their successful functioning is the successful breeding and agronomic work completed that has resulted in new seed and planting recommendations.
2. The effective operation of MAWD's first Adaptive Research Planning Team (ARPT) in Central Province	<p>2a. ARP Teams conducting diagnostic, design, and testing research in established recommendation domains</p> <p>b. Teams of research liaison extension officers (RELO's) working with Recommendation Domains of ARPT to disseminate improved technologies to small farmers.</p> <p>c. Identification of small farmer production constraints by research/extension links.</p> <p>d. Small farmer production constraints referred to proper CRT's.</p>	2. The Central Province ARPT is operational and has completed most of the steps set out in the DOA farming system's research methodology. However farmer recommendations, from the FSR method, have not been validated for dissemination, although the Central Province has set out several farmer trials for verification. Small farmer production constraints have been identified and referred to relevant CRT. The RELO has conducted trial demonstrations and completed a comprehensive training program.
The enhancement of the capacity of the extension service to diffuse useable agricultural technology to small farmers through improved research/extension linkages and communications		
3. The upgrading of the professional and technical skills in agricultural research and extension within MAWD through selected academic and practical training in Zambia, in the US, in other African countries and at international institutions.	<p>3a. Approximately 19 research/extension professionals trained to Ph.D and M.S. levels and approximately 15 participants trained to the B.S. level in agricultural sciences.</p> <p>b. Approximately 162 person months of in-service training.</p> <p>c. In-country research and extension training at at provincial and national level amounting to to 3750 person days.</p> <p>d. In-country training for small farmers amounting to 4160 person days.</p>	<p>3a. 19 people have been trained. (0 Ph.D, 6 Msc and 13 BSc) and 19 more are out.</p> <p>b. No record available.</p> <p>c. In-country training totals 10,000 person/days.</p> <p>d. No record available.</p>

ZAMARE PROJECT  
INPUTS (MAY 1986)

<u>Narrative Summary</u> <u>USAID Inputs (LOP)</u>	<u>Actual</u> <u>Inputs to Date</u>
<p>1. <u>Technical Assistance</u></p> <ul style="list-style-type: none"> <li>- 1 Team Leader/Agricultural Economist (5py)</li> <li>- 1 Soybean Breeder (5py)</li> <li>- 1 Sunflower Agronomist</li> <li>- 1 Maize Breeder (5 py)</li> <li>- 1 Farm System Economist (Agricultural Production/Farm Management Economist) (5 py)</li> <li>- 1 Agronomist (5 py)</li> <li>- 1 Research Liaison Extension Officer (Extension Agronomist) (5 py)</li> <li>- Specialized Short-term Consultants (50 p/m)</li> <li>- 1 Microbiologist - OPEX (2 1/2 py)</li> </ul>	<p>1. <u>Technical Assistance</u></p> <ul style="list-style-type: none"> <li>- Team Leader/Ag Education Specialist (3yr 10 mo.)</li> <li>- Soybean Breeder (3yr 10 mo.)</li> <li>- Sunflower Agronomist (2yr + 2yr)</li> <li>- Maize Breeder (3yr 10 mo.)</li> <li>- Economists (2yr 6 mo. + 8 mo.)</li> <li>- Agronomist (3yr 4 mo. + 3 mo.)</li> <li>- RELO (3yr 3 mo. + 3 mo.)</li> <li>- Microbiologist (2yr 6 mo.)</li> <li>- Short term TA (45 pm)</li> </ul>
<p>2. <u>Training</u></p> <p>Long-term academic training in agricultural sciences in the US, short-term practical training in third countries and local in-service training.</p>	<p>2. <u>Training</u></p> <p>See Table 1, Outputs</p>
<p>3. <u>Commodities</u></p> <ul style="list-style-type: none"> <li>- Laboratory and farm equipment</li> <li>- 3 screenhouses</li> <li>- Library books and journals</li> <li>- Vehicles and motorcycles</li> <li>- 6 houses for US technicians</li> </ul>	<p>3. <u>Commodities</u></p> <ul style="list-style-type: none"> <li>- Laboratory and farm equipment purchased</li> <li>- No construction</li> <li>- Library books and journals</li> <li>- 11 vehicles; 30 motorcycles</li> <li>- Houses renovated</li> </ul>
<p>4. <u>Special Studies</u></p> <ul style="list-style-type: none"> <li>a. UNZA</li> <li>b. Research Associate</li> </ul>	<p>4. <u>Special Studies</u></p> <ul style="list-style-type: none"> <li>a. One study by UNZA</li> <li>b. 5</li> </ul>
<p>5. <u>Operational Recurrent</u> Costs</p> <ul style="list-style-type: none"> <li>- \$405,000</li> </ul>	<p>5. <u>Operational Recurrent</u> Costs</p>

Table 3.

## ZAMARE LONG TERM TECHNICAL ASSISTANCE

Term	Position	Name	Location
1. Team Leader	James Ragin	MAWD Lusaka	August 1982 -
2. Maize Breeder	Paul Gibson	Mount Makulu Research Station	August 1982 -
3. Soybean Breeder	Jagmohan Joshi	Magoye Research Station	August 1982 -
4. Sunflower Agronomist	William Roath	Mount Makulu Research Station	August 1982 - July 1984
	Val Eylands	Mount Makulu Research Station	June 1984 -
5. ARPT Agronomist	Robert Hudgens	Kabwe Research Station	August 1982 - December 1985
	Farrel Olson	Kabwe Research Station	January 1986 -
6. ARPT Economist	Alfred Harms	Kabwe Research Station	August 1982 - January 1985
	Mesfin Bezuneh	Kabwe Research Station	October 1985 -
7. Research/Extension Liaison Officer	Ronald Dedert	Kabwe Research Station	October 1982 - November 1985
	George Swallow	Kabwe Research Station	February 1986
8. Microbiologist (OPEX)	Seydou Sanogho	Mount Makulu Research Station	March 1983 - September 1985

TABLE 4

SHORT TERM TDY/CONSULTANCY  
TITLE XII TECHNICAL ASSISTANCE

<u>NAME</u>	<u>POSITION</u>	<u>TYPE OF CONSULTANCY</u>	<u>LENGTH</u>
Edward V. Ellis	Vice Chancellor UMES	Administrative	30 days
Thomas A McCowen	Assistant Director UIUC	Administrative	48 days
Oval Myers	Maize Breeder SIUC	Maize Breeding	72 days
Farrel J. Olsen	Agronomist SIUC	FSR	30 days
Jessie Smith	Librarian UMES	Library Services Training	90 days
William N. Thompson	Director UIUC	Administrative	30 days
John K. Bouseman	Entomologist UIUC	Entomology (ARPT) Plus Training	31 days
Donald Kuhlman	Entomologist UIUC	Entomology (ARPT) Plus Training	31 days
John B. Claar	Director INTERPAKS	Workshop (ARPT) Effective Teaching and FSR	10 days 4 days
Delbert T. Dall	Head, Agricultural Communications - UIUC	Workshop (ARPT) Effective Teaching	10 days
Violet Malone	Professor/State Leader - UIUC	Workshop (ARPT) Effective Teaching	10 days
Robert Dadson	Plant Breeder UMES	Workshop Agricultural Research Management Breeder Consultant	40 days 29 days
George Shorter	Agricultural Engineer - UMES	Workshop Agricultural Research Management	40 days
H.E. Kauffman	Director - INTSOY UIUC	Soybean Training Consultancy Utilization	9 days
A.I. Nelson	Professor- INTSOY UIUC	Training Consultant	6 days
Greg Noel	Nematologist UIUC	Nematodes Training Consultant Identifying Nematodes and their damage.	15 days

Continued

18

TABLE #4 cont'd

<u>NAME</u>	<u>POSITION</u>	<u>TYPE OF CONSULTANCY</u>	<u>LENGTH</u>
Earl D. Kellogg	Associate Director UIUC	Technical FSR Administrative Workshop FSR	49 days 1 days
Sam H. Johnson	Associate Professor UIUC	Workshop FSR	4 days
James C. Jones	Associate Director University of Florida	Workshop FSR	4 days
Vickie Sigma	Agricultural Dev. Specialist University of Hawaii	Workshop FSR	4 days
John Woods	INTERPAKS UIUC	Workshop FSR	4 days
Carolyn M Pribble	Agricultural Dev. Specialist - UIUC	Administrative Secretarial/Clerical	30 days
Joseph W Rourke	Technician - Rhizobium Production Univ. of Hawaii	Innoculum Production	270 days
James B Sinclair	Plant Pathologist UIUC	Soybean Pathology Consultant Training	48 days
Paul Singleton	Agronomist Microbiology - Univ. of Hawaii	Microbiology Consultant/Training	31 days
Immanuel Acquah	Agricultural Economist UMES	Workshop Agricultural Research Management	39 days
Andrew Sofranko	Professor/Rural Sociology - UIUC	Sociology Special Studies	5 days

**BEST AVAILABLE DOCUMENT**

More serious counterpart problems have existed for the members of the CP/ARPT. In this case, with three expatriates working with the same team, effective use of their on-the-job training requires counterparts for each, that is a full Zambian ARPT. Since the arrival of the three ZAMARE team members in August 1982, a Zambian counterpart RELO was in Kabwe for less than a year, and a period of two months passed without an economist counterpart. These gaps seriously affected the development of a self-sustaining ARPT (discussed in detail in the following section). The RELO did pass some knowledge on to his counterpart and was able to work with, and train, the Provincial Extension Training Officer. Presently, the CP/ARPT has a local economist who is Officer-In-Charge (OIC) of the Kabwe Station as well as a member of the ARPT. A RELO, identified and recruited by the UIUC team, joined the CP/ARPT in September 1985. The Zambian agronomist slated to join the team will return from long term training in December 1987. Table 5 summarizes the present status of the key staff of the ZAMARE-assisted CRTs and the CP/ARPT. Individuals presently out on training under ZAMARE funding who are expected to return to positions in the CRTs and CP/ARPT are also listed.

A positive factor in the effectiveness of the TA has been the long stay on the part of the original seven scientists. Three of the seven are still working on the project and the average length of stay is over three years. The university consortium has recruited most of the candidates from within its own ranks and all three member institutions are well represented on the team. Southern Illinois University has a rotational team approach such that when one scientist returns to the US another of the same discipline replaces him in Zambia. University support has been good and the working relationships within the consortium strong. The Team Leader has provided satisfactory in-country administrative back-up and strong liaison with both senior management and operational personnel within MAWD.

## 2. Adaptive Research Planning Teams

### a) Background

The Government of Zambia in late 1975 and early 1976 undertook several evaluations of the Research Branch of the Ministry of Agriculture and Water Development. Their conclusions were that the research structure, at that time, could not adequately reach the small scale producers, representing about 85% of the rural population. Four main problem areas were identified during the evaluation process: ineffective research program formulation, single crop or activity approach, neglect of social and economic factors, and insufficient on-farm trials. In 1979, having recognized these problems MAWD responded favorably to a request of CIMMYT's East African Economics

20

## TITLE XII AND GRZ TEAM COMPOSITIONS

ARPT COMPONENT

## Title

1. Farming Systems Agronomist	(Z) K. Chanda
Farming Systems Agr/Technician	(Z) M. Bwalya
Farming Systems Agr/Technician	(Z) G. Simwanza
Sr. Farming Systems Agronomist	(E) F. Olsen
Sr. Farming Systems Agronomist	(Z) G. Mitti, in training**
2. Farming Systems Economist	(Z) Jacob Muwamba
Farming Systems Economist	(E) Bezuneh
Farming Systems Economist	(Z) C. Chabala, in training**
3. Research Extension Liaison	(Z) E. Shingalili
Research Extension Liaison	(E) G. Swallow

MAIZE CRT

1. Sr. Maize Breeder	(Z) Ms. C. Mungoma, in training**
Sr. Maize Breeder	(E) P. Gibson
Maize Breeder	(Z) C. Mwambula
Maize Agronomist	(Z) M. Gumbo
Maize Agronomist	(E) Requested
2. Sr. Maize Section Breeder	(Z) W. Mwale*
3. Maize Pathologist	(Z) G. Mulenga
4. Maize Entomologist	(Z) M. Chumuwa
Maize Pathologist	(E) FAO, Dr. K.N. Rao
5. Maize Section Coordinator	
/Breeder	(E) SIDA, DR. D. RISTANORIC
Maize Seed Production Assistant	(E) SIDA
Maize Breeder	(Z) Open

SOYABEAN CRT

1. Sr. Soyabean Breeder	(Z) J. Mulila, in training**
2. Sr. Soyabean Breeder	(E) J.M. Joshi
3. Soyabean Agronomist	(E) F. Javaheri
Soyabean Agronomist	(Z) Open
4. Soyabean Pathologist/Entomologist/ Breeder	(E) Requested
5. Soyabean Utilization/Extension	(E) Requested
6. Soyabean Technician	(Z) F. Sichone
7. Soyabean Technician	(Z) L. Lulamba

Continued...

81

SUNFLOWER CRT

1. Sunflower Breeder	(Z) M. Mwala, in training**
Sunflower Breeder	(Z) B. Habowa - L.
2. Sunflower Agronomist	(E) V. Eylands
Sunflower Agronomist	(Z) B. Chimbwe*
Sunflower Agronomist	(Z) A. Noliya
3. Sunflower Extension/Agronomist	(E) Requested
4. Sunflower Breeder	(E) P. Le Point, Belgium AID

SOILS - INOCULUM PRODUCTION

1. Microbiology	(E) J. Rourke - TDY
Microbiology	(Z) R. Nyemba in training**
Microbiology	(Z) M. Sakala in training**
2. Lab Technician	(Z) C. Zulu
Lab Technician	(Z) G. Musenge

Notes: \* Zamare Long Term trained

\*\* AID long term funding

22

Program to demonstrate an On-Farm Research with a Farming Systems Perspective (OFR/FSP) methodology for formulating a responsive national research program.

As a result of this CIMMYT initiative and the MAWD steering committee's recommendations, the GRZ decided to make on-farm research, or farming systems research, a key component of the research strategy of the Department of Agriculture. This adaptive research element would link national commodity applied research teams (CRTs) to field extension activities. The objectives and functions of the Adaptive Research Planning Teams (ARPTs) at the provincial levels were to help the Research Branch produce recommendations which are relevant to the needs of the majority of Zambia's farmers, especially the traditional and small scale producers. The main functions of an ARPT are as follows:

- Collect and analyze information on the different farming systems in the province;
- Select components from previous technical research likely to be appropriate to the immediate needs and circumstances of the specific groups of farmers identified and test these under farmer conditions;
- Feed unresolved technical problems, identified as important for local farmers' development, to the appropriate CRT;
- Link research closely to both farmers and extension by drawing extension staff into the technology generation process;
- Pass on information to planners and agricultural service institutions, e.g., extension, credit, marketing, etc., to assist in removing institutional and infrastructural problems hindering farmers from adopting MAWD recommendations.

In addition to using the ARPT FSR concept as their major linkage mechanism, the DOA accepted the CIMMYT OFR/FSP approach as the national standard for ARPT field and team operations. At present the DOA is using a slightly modified, "whole farm", version of the CIMMYT scheme that allows greater flexibility with mixed crop and animal systems.

#### b) Implementation

It was into this new and rather major MAWD reorganization, that ZAMARE began operations in 1982. The core of an ARPT, provided by ZAMARE in the Central Province, is made up of an economist,

an agronomist, and a research/extension liaison officer (RELO). Field work had started in Central Province under a CIMMYT/GRZ pilot project in 1978, thus much of the preliminary data was available for the ZAMARE technicians upon their arrival.

The first group of three contract team members remained on station for 30-40 months. All had left Zambia by the time of this evaluation. Their replacements are now in Kabwe Research Station, headquarters for the Central Province, undertaking field work.

The evaluation team sought measurements towards: (1) success in institutionalizing an effective MAWD/ARPT methodology in the three traditional recommendation domains (TRDs), pre-selected by the DOA; (2) progress in the preparation of Zambian technicians to replace ARPT Title XII employees, and (3) improved systems recommendations for each of the three ZAMARE TRDs. The review took into consideration the fact that the logistic constraints of carrying out research in Kabwe far exceeds conditions at Mt. Makulu.

It is not apparent that the first Title XII team had success in making operational FSR methods and systems. It appears that the team did not act in a multi-disciplinary manner either with their U.S. or Zambian colleagues. That good, sound, agronomic and extension work was done in Central Province is not disputed. For example, it was reported at the National ARPT Office that the trial program of the CP/ARPT agronomist has been used in training workshops, both in Zambia and, in one case, in Zimbabwe at a CIMMYT regional workshop. The evaluation team does not feel, however, that the ARPT approach and methodology was carried out effectively by the contractor, that proper survey work and/or analysis of data completed in a timely manner or that much institutionalization of the MAWD FSR methodology took place. For what was completed, CIMMYT deserves much of the credit for the work.

Several steps of the ARPT approach seem to have been performed in a cursory manner in order to get on with on-farm trials; that these investigations are valid may be more the result of CIMMYT research or intuition on the part of the agronomist than a product of an FSR process. It was this process that the Title XII team was asked to refine and turn over to trained national technicians during the life of the project. It does not seem that the first team was masters of the genre. Little information or data remains at Kabwe from the first years of efforts. A summary of the FSR steps and the specific work of the CP/ARPT appears in Chart 1. Additionally, the National ARPT Coordinator prepared a summary of measures of usefulness of the adaptive research in the six provinces where ARPTs operate (presented in Chart 2).

24

Chart 1

## GRZ/ZAMARE ARPT ACTIVITIES IN CENTRAL PROVINCE

PROVINCE	INFORMAL SURVEY	ZONING	FORMAL SURVEY & RESEARCH PRIORITIZING	ON FARM RESEARCH (VARIFICATION)	ON FARM TRIALS & DEMONSTRATIONS (VALIDATION)	FARMER APPROVED RECOMMENDATIONS
Serenje TRD 2	1978 CIMMYT/GRZ	79 CIMMYT delineated 8 Zones	78 CIMMYT Survey identified and prioritized prob- lems. No other socio/economic studies conducted	80-81 GRZ 82-86 Zamare	83 some trials based on CIMMYT & survey data. 84-85 major effort with source of 78 survey data. 85 super imposed dieldrin trials	None
Mkushi TRD3	1982 GRZ/Zamare	1979 CIMMYT work	1982-84 labor survey process, not yet analysed Mid 1984 formal survey, tabulation completed, but not analysed.	1982 starts made based on 1978 data	1985 some trials started on ARPT work, others on CRT, Lima and FAO	None
Kabwe TRD5	March 1983 CIMMYT in training exercise	1979 CIMMYT work	June 1983 CIMMYT training exercise	1984-85 Farmer selection, Client profiles questioned	1985 started, may be more crop of than OFR/FJR	None
GRZ Time frames for ARPT activities	3-6 months	3-6 months	3-9 months	24 months	12 - 24 months	Evaluator's Note: Systems Recommendations could begin as soon as 3 years after implementation, 4-5 years not uncommon.

EVIDENCE OF USEFULNESS OF SIX PROVINCIAL ARPTs USING EIGHT INTERMEDIATE MEASURES OF USEFULNESS

	1	2	3	4	5	6	7	8
Measure	Evidence of adoption	Farmer assessment of on-farm trials	New recommendations from on-farm trials	Thrusts for on-farm trials from surveys	Understanding why current recommendations not widely adopted	Areas for commodity research from surveys	Improved Research Extension Links	Improved links with agricultural services & planners
Province								
Central	-	**	**	**	*	**	**	-
Eastern	*	**	**	**	*	*	**	-
Luapula	-	**	-	**	*	**	**	*
Musaka	-	*	-	**	*	**	*	*
North Western	-	*	-	*	*	*	*	-
Western	-	*	-	*	*	*	*	*

Key:-  
 - No progress to date  
 \* Moderate progress  
 \*\* Good progress

*Handwritten mark*

Project efforts to up-grade Zambian technicians at Kabwe dealt with long term training for two technicians, some short term training activities and on site ARPT work. The present Zambian counterpart economist is new to the team as is the local RELO. There is no counterpart agronomist presently assigned to the CP/ARPT.

An agronomist and economist are on long term training and will return in early 1987. Three trial assistants were assigned to the ARPT team from the extension service and have worked at the field level with all ZAMARE on-farm trials. ARPT members felt that the period of the rotation of trial assistants seconded from extension is too short. The DOA feels that the assignment is good training for the extension staff and want to continue relatively short stays as means of training and to ensure that extension work is incorporated within GRZ system. Given the ARPT's considerable dependence on the work of trial assistants, we feel that replacement of current trial assistants prior to completion of Phase I would jeopardize the work of CP/ARPT.

It was difficult to determine how much in-service training or collaborative efforts were undertaken by the first team to prepare Zambian technicians in FSR practices and operations. Starting in March of 1983 CIMMYT did give an extensive in-country workshop in the Central Province and this as well as their earlier activities seems to have produced most of the FSR data available for the TRDs assigned to ZAMARE. It was difficult for the evaluation team to link the agronomic work accomplished by CP/ARPT directly to ZAMARE formal surveys; most seemed related to work done by CIMMYT as early as 1978/79, or from informal surveys. This is not accepted procedure for FSR.

No farmer recommendation packages from the CP/ARPT have been released to date. However, the process of final testing the recommendations is long (up to three years). Two CP/ARPT recommendations are likely to be approved for release within the next year. Additionally, ZAMARE-validated components of various improved packages are reported to be in use by farmers in several of the TRDs.

Both groups of ZAMARE CP/ARPT advisors have not had good working knowledge or field experience with FSR. Several have worked at the conceptual, but not the applied level. Considering the importance of FSR in this project, the university selection process for the ZAMARE technicians is questioned. When FSR backgrounds are weak, the contractor should have undertaken more comprehensive training with on-site visits to successful FSR programs throughout the world. Ministry concerns about the lack of cooperation and collaboration between the ZAMARE staff and local scientists, the weaknesses of field surveys and the lack of records and

computers at Kabwe cast serious doubt on contractor understanding about ARPT and project goals.

The normal FSR working tools were not in place at Kabwe, even after more than three years of operations. No project computer was available for analytical work, no bibliography of documents produced by the CP/ARPT, normal FSR mappings of domains were not available, area profiles were absent, recommendations to the planners on constraints not under the control of the farmer were not available and no documentation control or library system was in place. The evaluators were told that when the second group arrived there was not much data or information available from the first group of technicians, and what was available was located in Lusaka.

The new team was not aware of several of the evaluations that had been conducted previously or what recommendations they should be focusing on during the remainder of the project.

Transport for all team members, Title XII and HCNs, has been a problem as well as adequate delivery of research supplies. During the entire first quarter of 1986 when considerable survey and on-farm trial work was required, the CP/ARPT had only one 4-wheel drive vehicle for their use. The government's financial contributions have not been at the levels anticipated. This has resulted in serious operational problems for the APRT.

The idea that ARPT members must drive to Lusaka to have typing done by the Project Support Unit (PSU - discussed in detail in the Management Section of the evaluation) is ludicrous, considering the small cost of a computer and a local person to do typing. Project support and resources must be provided to the field staff, not just for administration in Lusaka.

Achievements of the ZAMARE and other ARPTs in general are shown on Chart 2, prepared by the national coordinators office; in addition a summarization of CP/ARPT progress is included as Chart 1. Again it should be pointed out that the achievements of the scientists at Kabwe were somewhat tangential to the institution building objectives of the ARPT. As a group, they did not adequately contribute to the establishment of an adaptive research planning system.

The agronomist did, however, conduct much useful on-farm research and identified two new crop production techniques. With further on-farm testing, they are likely to be released as new recommendations. Again on a positive note, the first ZAMARE RELO (a replacement recently arrived) did do much training of local extension workers and other MAWD officials from the start. His efforts at improving communications

28

between the extension and research branches were substantial. But the RELO should have devoted the majority of his time to the on-farm trials and test stages of experiments and then as the FSR process progresses, plan and undertake training and demonstrations of new techniques. Because of the nature of the work completed by the UIUC RELO, his work is discussed in the Extension Section of this evaluation.

Finally, the work of the first economist must be described as poor. The evaluation team had much difficulty identifying the contributions and work completed by this advisor. It suffices to say that his contributions to the development of new technologies and the institutionalization of ARPT were minimum. A more detailed discussion of his work is presented in the Socio-economic Section of this evaluation.

Despite the efforts at CP/ARPT by the ZAMARE team, a great deal remains to be accomplished before the project completion. The first team did not, or could not, operate in a multi-disciplinary mode. Some of the work undertaken was not within the bounds of the MAWD FSR approach. Much of the agronomic work was of excellent quality as was the extension training accomplished by the RELO. Little information could be gathered about the work completed by the economist or what part he played in the FSR on-farm trials. (See discussion on socio-economic impact.)

#### c) Conclusion and Recommendation

Continued in-service training is needed for the present Title XII team as well as the Zambian staff assigned to CP/ARPT. The evaluators were concerned that no short term training funds were used to support counterpart FSR training at the CIMMYT Zimbabwe regional training sessions. There is also some question of using FSSP for in-country training exercises when CIMMYT now has an AID contract to perform these services, upon request, in East and Southern Africa. Serious attention should be given to the preparation of self teaching units/kits for field assistants, extension workers, and research personnel covering FSR methodology, field practices, and extension techniques. These units could save much time in training in these areas.

It is recommended that the present team be afforded every opportunity to learn more about FSR during the LOP. They must work closely with the National ARPT Coordinator so that FSR methodology at the CP/ARPT becomes institutionalized.

The Team Leader should spend at least one day a week at Kabwe providing orientation and guidance on the ARPT process, until the university team becomes more familiar with what has to be done and how this is to be accomplished. The Team Leader

29

should review the support needs at the various project locations and hire or reallocate staff to provide the necessary support to the field. Clerical staff must be provided at Kabwe.

Job descriptions, scopes of work, goals, obligations, responsibilities, and methodologies should be completely understood by all members of the team, U.S. as well as Zambian. This task falls heavily upon the Team Leader and the National ARPT Coordinator. Consulting assistance, most likely from the CIMMYT Economics Program, should be sought immediately to help in these tasks.

More effort should go into providing long term and short term training to the local staff attached to the CP/ARPT. Special attention and priority should be given to sending the subject matter specialists working with ZAMARE staff to the IARCS for short courses in specific crop production courses. MAWD formats for all phases of the FSR processes should be used and forwarded as requested under the operational guidelines sent down from the national headquarters. Title XII members should be encouraged to work with a multi-disciplinary team approach that includes nationals as well as U.S. technicians.

UIUC should equip this team with computers and needed operators; at present the only computers available are those personally owned by the ZAMARE technicians. Adequate transport and radio communication should be provided for the entire team. Soil testing facilities must be provided.

Operational support provided by the GRZ is a problem throughout the project, but is particularly serious in Kabwe. The evaluation team recommends that more field support be provided through local currency generations. The joint ZAMARE/GRZ account could be used, provided procedures are streamlined. A financial and operational plan should be developed immediately to include:

- 1) equipment repair and operational support at the Kabwe Research Station;
- 2) motorcycle repair and operation;
- 3) the recruitment and financing of enumerators for data collection;
- 4) expanded and new allowances for field staff in target areas; and
- 5) administrative staff for the field office to enter data and maintain records.

30

Annex E contains an Agenda For Action for the remainder of the project which includes additional specific recommendations.

### 3. Commodity Research Teams

#### a. Maize CRT

A full time maize breeder was posted with the Maize CRT. He will soon be completing his tour and will be replaced by another Title XII technician. ZAMARE has participated heavily in this CRT through technical assistance, short and long term training, equipment and machinery purchases, transport, research materials and short term experts.

Major achievements of the entire CRT (10 scientists) have been the development of seven new hybrids and two open-pollinated varieties and the number of trial sites has been increased from six to over thirty. Additionally, there has been an increase in the numbers and types of experiments, better ARPT linkages by implementation of on-farm research, strengthening interaction of research and extension, production of crop client profiles, and completion of maize research workshops. There has also been improved cooperation with ZAMSEED (Zambia Seed Company) and the Seed Control and Certification Institute.

ZAMARE has made a major impact on the maize CRT which can be quantified in several of the following areas of work.

- Long term training: One candidate has returned from training and another is now in the U.S. doing graduate studies.
- Study tours: Two MAWD technicians visited CIMMYT, in Mexico, and ICTA, in Guatemala.
- In-country training: A nine day workshop on maize research techniques was given to over 35 participants
- Scientific: The breeder participated actively in the purification of several hybrid lines and their field testing by ARPTs throughout Zambia. Two varieties, MMV 400 with a potential of some 60,000 ha of use, and mmv 600 that is suited for over 50,000 ha. have been developed and released.
- Institutional Development: The ZAMARE breeder re-established the national maize variety trials program.

No major problems were reported by the ZAMARE technician or his supervisor. Normal problems related to working conditions and relationships encountered in many developing countries occurred, as would be expected, in the maize CRT. It was felt that more weight should be given in the selection process to long term candidates nominated by ZAMARE technicians. The assistance of an agronomist would have been an asset during the tour of the breeder. Farming Systems Research and the success of the ARPT outputs at Central Province were not as high on the list of priorities, as perhaps they should have been, of the maize CRT.

All indications are that the technician assigned to this position did an outstanding job. He fulfilled his obligations and completed his scope of work, and trained nationals are at work or in training from this section. An excellent framework has been set out but there remains much breeding and agronomic work to complete on open-pollinated and hybrid maize. It is recommended that AID and the DOA place more importance on the nominations made by ZAMARE team members for training activities. AID should supply a computer and the GRZ an operator for its use.

#### b. Oilseeds

The GRZ policy on oilseed crops calls for self-sufficiency in edible oils, a continuous supply of raw materials to oilseed processing plants, and improved income for small-scale farmers as a result of increased oil seed production. The ZAMARE project supports research on two oilseed crops, sunflower and soybean.

##### (1) Sunflower

The ZAMARE project was asked to provide an agronomist for the sunflower team as the crop had proved popular with small farmers, yet yields were poor and very little agronomic work had been done in Zambia on sunflower production. In series two agronomists have been on post and a number of important achievements have been made. Agronomic trials were conducted across the country and included studies on plant populations, planting methods, planting dates, fertilizer rates, liming, weeding methods, timing of weeding, rotation with other crops, inter-cropping, variety trials, and seed purification. Excellent linkages were developed with ARPTs and more than 100 on-farm trials were conducted last season. These demonstration/trials had not previously existed before ZAMARE.

In addition to cropping recommendations for sunflower production by small producers ZAMARE has impacted other working areas within the CRT, research and extension. Several of these

activities would include:

- a large increase in the exposure of the sunflower CRT team at field days and extension training sessions,
- workshop for research station technicians,
- production of a film strip for training farmers and technicians,
- sunflower publications, and
- long term training as well as special short term courses.

ZAMARE has contributed considerable financial support to the breeding program as well the purchase of most of the currently functioning lab and field equipment for the CRT. This includes oil content testing equipment that has greatly facilitated the breeding program, balances, moisture tester, air conditioners for seed storage, tractor, and many pieces of field equipment.

No major problems or constraints were noted. The technician was concerned about what activities would follow-on his present undertakings. His suggestions for the future were an increased extension effort to make the farmers more aware of the potential that sunflower offers for a cash crop or oil source for household use.

It was also noted that USAID/Zambia should know more about the small oilmills in operation around the country and what an increase of these might mean for further sunflower production as a cash crop. The issue of payment on an oil content basis and not just for seed weight was also raised and warrants further studies.

The evaluation team felt that this ZAMARE CRT had been very successful and that the agronomists have done a good job in producing recommendations as well as in his in-service training activities. Two exceptional achievements by the second agronomist are noted: the interaction he has had with UNZA and the systems approach used with on-farm trials established with the APRTs.

It is recommended that AID and ZAMARE follow-up on the suggestions about the need for increased extension activities and the studies on small oil mills. Continued efforts on the pricing by oil content of sunflower is also an area that AID should pursue.

## (2) Soybean

The ZAMARE project provides a soybean breeder who works with the soybean CRT unit at Magoye Regional Research Station. This team consists only of a breeder and an agronomist. The project has also furnished, on a part time basis, the services of a

breeder/extensionist who is a long time MAWD collaborator. Project participation in the Soybean CRT has provided technical assistance, training opportunities, equipment, transport, research materials, and leadership in initiation of national variety development procedures.

Major accomplishments have been the training of professional and field staff in soybean screening, identification of promiscuous soybean varieties, plant selection methodologies developed for special conditions of the small producer, identification of disease resistances. During the last several seasons this ZAMARE supported research has put more emphasis on the varieties for selection of promising material in future testing. Specific activities in Zambia are:

- Promiscuous soybean variety trials; some eight identified cultivars are in this set of experiments.
- International promiscuous soybean variety trial; some 15 entries comprise this activity.
- Efficiency of soybean nodulation with indigenous rhizobia; sixteen promiscuous lines make up this small farmer oriented test.
- Variety tolerance to Phyrenochaeta; field trials covering a wide range of entries have been conducted for this extremely serious disease problem. (Encouraging results were obtained this season with several lines showing resistance or tolerance characteristics.)
- Tolerance to purple seed stain; a student-run project which identified several tolerant cultivars.
- Variety responsiveness to high cultural management.

This last set of research activities includes the National Soybean Variety Trials, Advanced Soybean Trials and the first step of Preliminary Soybean Trials. This systematic approach to the eventual release of plant materials for all producers has been a major achievement for the breeder and ZAMARE.

The project has made excellent strides to meet the national objectives in soybean research. The location of this CRT at Magoye should be studied to see if this location best meets the needs of Zambia. The crucial needs of the nation in terms of cooking oils and high protein feeds make this an important component of the ZAMARE efforts. The danger of Pyrenochaeta for Zambia as well as her sister states had been addressed in the project and should continue to receive support. The questions of proper soybean meal processing plants, modern machinery needs, and requested technical assistance on utilization problems remain to be sorted out but generally are beyond the bounds of this project. Short term TA might be provided under the project.

The evaluation team recommends that AID support the addition of an agronomist and pathologist in Phase II of the project to follow on from the breeding work and to take on the disease problems. Some short term assistance in these areas may be helpful during the remainder of ZAMARE I.

c. CRTs - Overall Evaluation

The evaluation team was impressed with the progress made to date in each of the ZAMARE CRTs. The technicians know their jobs and are striving to fulfill their obligations and meet the DOA goals as set forth under the new organizational strategy. Although not mentioned by the Title XII technicians assigned to the CRTs it was apparent that in many cases they did not have full support of the GRZ as described in the project agreement, or active support from the ZAMARE Project for items they felt were priorities. The team recommends that further USAID/Zambia support be given to the CRT concept in any future research or extension project.

The need for operational support was identified as a problem in each CRT. Complementary to the ARPT local currency program, similar support should be arranged for each of the research stations.

(1) Strengthen Linkages to ARPTs

There were many cases where the linkages between the ZAMARE CRTs and ARPTs were quite apparent. As AID Evaluators we would have liked to see a stronger linkage to the CP/ARPT and some measurement of CRTs success based upon developed and proven farmer technology packages released for dissemination in the Central Province. We feel that had the Team Leader been an active scientific member of the ARPT effort there would have been more integration and the development of a team approach to the ARPT concept and objectives. From a national research standpoint the interaction of ZAMARE CRTs is exemplary. Maize, soybean, and sunflower research and demonstration plots seemed to be everywhere.

(2) Better links with extension

CRT team members spent part of their time in linkage activities with extension officers and agents throughout Zambia. A number of extension specialists were sent for long and short term training. It may also be to the benefit to the project to strengthen interaction with subject matter specialists during the remaining term of the program. If the linkages between researchers and extension agents are to be developed and institutionalized, as the MAWD strategy demands, then these SMS positions and the linkage role they will play must be critical

to the success of the DOA re-orientation. Clear channels of communication from the CRTs, through the ARPT and thus with the SMS, should be further identified and intensified during the LOP. We recommend that the team leader make this a priority task under his new set of obligations during the next two years.

### (3) Need for soil analysis capacity

Although not covered as a separate issue the question of a soils testing laboratory or analytical soil facilities for the remaining ZAMARE work begs to be answered. No serious research, such as outlined for the remainder of the project, can take place without sound soils testing results. The evaluation team did not feel that the the recent soils laboratory report added much to solving the immediate problem, though it did point out what might be done in a second phase. That the project could have come this far and not resolved this serious constraint also could not be explained.

### (4) Other

The contractor did not provide short term training at International Agricultural Research Centers for Zambian technicians as clearly instructed in the Project Paper and other AID documents and evaluations, an error AID hopes will not be repeated.

## 4. Soil Microbiology

The ZAMARE project supported for a 30 month period a soil-microbiologist attached to the soil microbiology unit of the Soil Research and Productivity Team stationed at Mt. Makulu research station. He worked as an Operational Expert through September 1985. This activity is under a special sub-contract with the NifTAL project. ZAMARE has supported both long and short term technicians, purchases of equipment and machinery, operational costs, long term training, and in-service instruction for four laboratory staff members. The construction for the microbiology lab has been completed and all equipment is in place and operating. The up-graded facility coupled with the availability of local peat have enabled Zambia to become completely self-sufficient in rhizobium for soybean inoculation. With the utilization of indigenous peat as a carrier, a high quality rhizobium inoculum, equal to that of any country, has been produced and handed over to distributors. In addition there were the following accomplishments:

- Identification of two new local strains which may be more effective than commercial lines.

- Field testing of free-nodulating soybean varieties with the soybean CRT.
- Investigation of the use of N-15 to quantify fixed nitrogen by soybeans.

The general feeling is that this activity should not be supported after the close of this project, but is one that should be given over to the "private sector". It is felt that sufficient resources should be allocated during the remaining LOP to provide for the short term assistance of NIFTAL and to help the two degree candidates, upon their return, keep the lab going until it can be transferred to another organization.

## C. Training

### 1. Out-of-Country Long and Short Term Training

Fifty Zambian scientists will receive long term degree training under the project. To date, in degree programs the project has trained 19 Zambian scientist who have returned to various posts in the Department of Agriculture. Another 19 are presently in the US while 12 are slated to leave prior to the 1986/1987 school year. In line with the project paper recommendations about half will be from the research branch and half from the extension service. Four researchers are being trained to the PhD level while 22 individuals will receive MSc degrees and 24 will be awarded BSc degrees. Of the 19 who have returned, all have remained in the DOA.

For short term training, ZAMARE has sent 70 individuals to the U.S. or third countries in a wide range of subjects. A list of all those trained by name, position, training course content and duration, and training location, as well as a list of nominations for the coming year, are presented in Annex C. Of the 70 individuals who have received training, thirty hold only diplomas or certificates while the research/extension mix has been 40/30 which is close to the project target of 50% each.

The selection procedures (also presented in Annex C) for both long and short term training start with the participants being identified by ZAMARE team members or senior officials of the DOA. The nominations are reviewed by a committee which includes the participation of the Deputy Directors of Research and Extension, the Chief Training Officer and the ZAMARE Team Leader. There are no formal selection criteria but three factors are recognized as important: (1) the individual has worked for at least 2 years with the DOA; (2) there is a recognized commitment on the part of the candidate to the Department; and (3) the individual will be returning to a slot in the DOA.

Professionals in other departments or sections of the Ministry have not been given training under this project. This is true for both long and short term training. The evaluation team endorses this policy, but in some exceptional cases, training could be provided to other sections of MAWD. For example, the Development Support Communications Section within the Rural Information Services could benefit from short term training or study tours to other extension material production units in the third world.

Without formal criteria for selection and a training plan and strategy specific to ZAMARE, the training, especially in the States, is open to criticism as a shotgun approach or as a

reward program. Now that long term training selection is nearly complete, the development of criteria is not a priority. For Phase II, criteria should be set out at the onset.

Review of the placement (planned or actual) of those trained or out on training shows that of the 19 that have been trained only two individuals have been assigned to the ZAMARE supported CRTs and ARPT. Seven of the long term participants presently in training are slated to be placed in project-related CRTs and the CP/ARPT. Table 5 presents the present composition of the ZAMARE related CRTs and ARPT and identifies the project funded long term training provided to the teams. Clearly the training of individuals who work in the DOA promotes the project goal of institutional development; however, priority should be given to those areas directly supported by the project. Both the Soybean and Maize Breeders as well as the previous CP/ARPT coordinator, the team's agronomist, expressed concern that highly motivated individuals within their respective teams were not selected.

A second area of concern is the project emphasis on short term out-of-country training, especially given its high cost. UICU budget figures show that approximately \$325,000 was spent on short term training, excluding international travel. This figure also does not include planning costs paid to UIUC in relation to training. If the travel costs paid by the project were \$2,350 per participant, then the average expense per trainee is nearly \$7000. This is high but, on the other hand, the average length of the training was approximately 7.5 weeks (529 person months of training provided to date) which is considerably longer than the average for most AID agriculture projects. The cost per person month of training is close to \$4000. A review of the course titles shows that the training was directly relevant to the project objectives and the nearly two month average stay should indicate more than an introduction to the subject.

The question does arise as to the cost effectiveness of the training compared to in-country training, especially since many of the participants attended the same course. For example, for the same or lower cost to the project, an expert could have been brought into Zambia to train 10-15 DOA staff members in research methods instead of sending 4 Zambians to the USDA Agricultural Research Methodology course. It is fair to note that CIMMYT did do much in-country training on farming systems research that was directly related to the ARPT objectives, but was not billed to the project. This fact, in part, explains the low level of in-country training. For commodity specific research it is fair to note that little in-country training was completed either by the project or other donors. For the remainder of the project, DOA training needs should be reviewed

to determine cost effective alternatives to U.S. training. In-country and in region training opportunities should be identified and reviewed. Attractive alternatives for long term as well as short term training are the International Agricultural Research Centers (IARC). To date only one individual under the project has been financed for training at an IARC (4 weeks at IITA in soil analysis). Both MAWD and the PP identified IARCs as excellent sources for professional training and its strategy statement placed high priority on the use of IARC training facilities. In the training Annex (Annex C), a list of MAWD-identified training opportunities at the IARC is presented. The Mission and UIUC must increase the use of these centers for training.

A third problem related to the above is that, generally, it is not considered cost effective to train at the BSc level in the U.S., especially for a country that is giving the degree locally. The University of Zambia (UNZA) has a school of agriculture that graduates 35-40 BSc per year. The range of subject matter specialties is wide and the quality of the graduates is good. At the time the PP was written, the number of agricultural graduates coming out of UNZA was only 12-16 per year, thus the design team opted for out-of-country training. However, more cost effective and relevant training at universities in Africa exists. Now that nearly all of the training is underway, it is not possible to review the alternatives to U.S. BSc training. However, for Phase II BSc training should be done in the U.S. only on an exceptional basis.

Now that a good start has been made to training a critical mass of scientists, the training of an individual should be tailored to the specific needs of the project or the DOA. Thus, the need for the fairly general BSc agricultural degree should be greatly reduced in Phase II.

There does appear to be some opportunity to expand or strengthen the School of Agriculture at UNZA. One promising area is to expand the number of GRZ or other workers who return to UNZA as "mature students". One obstacle to this is that graduates of the three year program at the Natural Resource Development College (NRDC) are allowed only one year of credit at UNZA, thus they take four years to complete their BSc. The same NRDC graduate who goes to a U.S. university is generally able to earn his BSc in two years. Phase II could provide assistance to expand the School to meet DOA needs. Local currency generations could be used for UNZA development.

HO

## 2. Local In-Service and Farmer Training

Records from the ZAMARE Team Leaders Office show that approximately 10,000 person/days of extension and other MAWD training have been recorded as a direct project output. No comprehensive record of training was kept during the first years of the project so the above figure may be an understatement of the formal training provided under the project. Records are now being kept and the training Annex (Annex C) contains the breakdown for CY 1985. Even with this incomplete data, the project, primarily through the RELO, has done much training.

A large number of in-service training activities have taken place during the first three plus years of the project. On a daily basis the project technicians work with colleagues on extension and research related tasks. This two-way learning process eventually will result in the refinement of the methodologies and the institutionalization of the systems that MAWD has selected and identified in their developmental strategy.

The adaptive research process of the ARPT method is itself an opportunity for training. Exercises that lend themselves to on-the-job staff training are:

- target grouping or zoning of producers with similar resources and farming systems,
- exploratory and verification surveys,
- on-farm experimentation and farmer trial demonstrations, and
- field days for MAWD staff and/or for small producers.

Members of the ZAMARE staff have participated in all of these activities on an informal basis as well as formally as leaders. This series of field research and extension steps at the ARPT level is the most important in-service technician training in the project. With the vast turnover of Ministry personnel and tight schedules of the ZAMARE team, some form of auto-tutorial units need to be developed for each set of "task assignments" for all personnel working in the CRTs and ARPTs. These tools, in addition to training calendars, short term technical assistance, annual work plans and formal in-service courses will help accomplish institutionalization of the ARPT and CRT systems by the end of the project.

One area that needs to be explored for possible inclusion in Phase II is the use of the University of Zambia (UNZA) for in-service training. The School of Agriculture has a large, well trained staff on campus even during the vacation period as well as adequate facilities for training. The GRZ in its

H1

strategy statements on research and extension development has identified the need for stronger linkages between the public sector agricultural agencies and UNZA. In discussions with the Deputy Vice Chancellor and the Dean of Agriculture at UNZA, they expressed a similar willingness to cooperate. UNZA does offer a unique opportunity to provide in-service training during the months when students are off campus. AID and UNZA should explore the possibility of tapping UNZA's resources in order to start a formal in-service training program for public sector MAWD employees.

Farmer training has taken place throughout the project. On-farm research (verification) and demonstrations (validation) trails have been conducted in three of the TRDs in Central Province; through this method farmers, extension agents, and researchers have learned together. The RELO carried on specific farmer training courses thorough the local extension agents as well as conducting farmer field days and community demonstrations. For farmer training, the project files do not contain a good record of the type of training and the number of participants.

An important training tool for farmers and extension officers alike is the newsletter, started by the RELO, which presently has a distribution of nearly 800. Another successful program of the extension service is mobile training units to take the message to the farmer. This is well proven educational tool and one that ZAMARE should continue to support in the future.

#### D. Special Studies

It was recognized, as part of the ZAMARE design, that some problem areas will arise that need research but don't fit within CRT or ARPT work plans. Nonetheless, the research is important and may be directly related to the project objectives. Thus, provision was made for two types of special studies that fall outside the CRT and ARPT mechanism: (1) University of Zambia (UNZA) Special Studies for research carried out by the University faculty and students, and (2) Research Associate Studies for research involving graduate students from U.S. universities. Three hundred thousand dollars was earmarked for the first program, including \$50,000 for a local sociologist, while \$250,000 was set aside for U.S. researchers.

##### 1. UNZA Special Studies

The program was established for "supplementary studies that fall beyond the purview of the CRT and ARPT". Another objective of the program is "to encourage the development of a demonstration effect on Zambian students of the advantage of a

42

career in agriculture." Although the ZAMARE Project has emphasized maize, soybean and sunflower research, the selected areas for study could relate to any aspect of the farming systems of small scale producers.

In the UNZA program to date there has been only one study involving four students and a contract sociologist in the ARPT national coordinating office. This study evaluated the interaction of small scale producers and extension agents in terms of the effectiveness of agents in delivering agricultural information. It was a small but useful study.

The very low level of use of this mechanism by UNZA, primarily the School of Agriculture, results from a lack of knowledge and understanding of the program at the University. For example, the evaluation team found that the new Dean of the School of Agriculture and the Deputy Vice Chancellor were unaware of the availability of funds for Special Studies. There is an obvious need for the the ZAMARE contractor to publicize the program at the University, making it clear that a wide range of studies could be eligible for support. More specific procedures need to be established to solicit proposals or expressions of interest in priority areas. Additionally, unsolicited proposals should be accepted if they meet established criteria.

At the same time, USAID, the GRZ and UIUC should explore the possibility of expanding the program to include participation by the faculty and students at the Natural Resource Development College. Greater participation of UNZA and, if appropriate, NRDC in proposal selection would foster cooperation and mutual understanding between the schools and DOA.

## 2. US Research Associate Studies

In October 1983, the first Research Associate, a Ph.D. candidate in the University of Illinois Department of Plant Pathology, began a study of Pyrenochaeta leaf spot and other diseases of soybean in Zambia. In some fields in Zambia, the Pyrenochaeta fungal pathogen has caused yield losses of 50 percent. The researcher quantified soybean yield losses caused by Pyrenochaeta glycines for several different soybean varieties and also screened nearly a 1000 soybean lines for resistance to Pyrenochaeta glycines. No resistant varieties were found.

The first Pyrenochaeta researcher departed in July 1984, and another UIUC Ph.D. student in plant pathology came to Zambia in December 1984 to continue the research. He began a more in-depth investigation into the overall characteristics and life activities of Pyrenochaeta and continued screening for disease resistance.

In December 1984, a Zambian Ph.D. candidate in soybean breeding at UIUC, began special studies research on drought-resistant soybeans at Magoye regional Research Station. She returned to UIUC in June 1985 to work on her Ph.D dissertation based on this research.

A Ph.D. candidate in the Department of Sociology and Anthropology at UIUC, began a study in early 1985 on the "Non-economic Factors Influencing Farmers' Decision Making." Two surveys were completed as part of this study: (1) Labor Mobilization and Utilization Strategies, and (2) Women's Life Cycles and Household Labor Supply Among the Lala of Serenje. The preliminary results of these two surveys were presented in local fora and in four reports on the research. His field work was completed in May 1986 and he will return to the U.S. to write up his dissertation on the research.

Finally, a Ph.D. student from the Nematology Research Division at UIUC is presently doing nematode research in Zambia aimed at (1) identification of the pathogenic potential of nematodes on soybean, maize and sunflower in Zambia, (2) increasing farmer awareness of potential nematode problems, providing training for identification of the problem, and collection of soil samples, and (3) surveying the nematode pathogenicity on a wide range of crops throughout Zambia including cotton, groundnuts and vegetables. Long term objectives include the preparation of a permanent reference collection of plant parasitic nematodes found in Zambia, the establishment of cultures of identified parasitic nematodes for future controlled experiments, and the screening of crop varieties for nematode resistance.

Overall, the US side of the program, by providing four associates, has been highly successful. The selection of research areas and associates has followed DOA priorities and been in line with assistance requirements. Thus, researchers have been openly accepted and strongly supported by the research establishment in Zambia. Important problem areas were addressed. UIUC has recruited highly qualified and motivated researchers and the research results have proven to be useful. Local support has been adequate with the grant funds financing essential costs.

#### E. Socio-Economic Impact of Project Activities

The socio-economic aspects of ZAMARE were addressed in considerable detail during the mid-term evaluation of 1985 (see Appendix 3 by Sutherland and Warren in the mid-term evaluation report). This work, which was based on a larger amount of field work than the current evaluation team was able to undertake, provides an important basis for this section. The

evaluation team sociologist used this document as a framework for his work, and attempted to follow-up as many of the recommendations listed in the document as possible. The information provided in this section is also based on a review of available literature on the project (listed in Appendix F, with references presented in parenthesis in the text), as well as field visits to Kabwe.

### 1. Research by CP/ARPT

The CP/ARPT team has operated since 1982 with virtually no sociological input to the project's research design and activities, other than that provided by the National ARPT Sociology Coordinator. The ZAMARE Project Paper indicated the likely importance of social factors in the ARPT's work and had earmarked \$50,000 to hire a local Zambian sociologist for the project. These funds were placed in the Special Studies allocation of UNZA, but no sociologist was hired. The ZAMARE Team Leader stated that the GRZ decided to use ODA funds to hire a sociologist to work at the national level, rather than with the CP/ARPT.

The work of the first economist was uneven: some facets of the program were strong (e.g., benefit/cost analysis of different trials) while others were weak (e.g., the collection of baseline data). He does not seem to have used a consistent methodology in his surveys or in the selection of contact farmers for on-farm trials. The CP/ARPT conducted informal and formal surveys only for TRD 3 (Mkushi District), since CIMMYT had done the work for TRD 2 (Serenje District) in 1978 and for TRD 5 (Kabwe Rural) in 1984 (see CIMMYT 1984). It is difficult to assess the research design for the Mkushi surveys, since the data have only been presented in summary form (see Harms 1983; 1984; ZAMARE 1984). What data have been analyzed are currently being used by the new CP/ARPT to design their program, and in this sense the Mkushi surveys have proved useful. The surveys, however, showed a disproportionate number of male-headed households (88%) in the sample, particularly disturbing since available data show that up to 30 percent of households in Central province are headed by females.

The economist conducted careful economic analysis of the different on-farm trials after they were completed. Benefit/cost analyses were provided for most of the trials showing, for example, the most profitable levels of fertilizer application for different maize varieties, the economics of zero tillage and herbicide application, and the economics of planting sunflowers in rows versus planting by broadcast (Harms 1984a). These analyses should help in the selection of future on-farm trials.

HS

A labor use survey, using the methodology developed by the Integrated Rural Development Project (IRDP) for Mpika and Serenje Districts, was conducted in TRD 3 (Mkushi District) for two agricultural seasons (1982-84). The research sample was limited to nine households, with a bias again toward male-headed households (89 percent of sample was male). Given the resources available to the CP/ARPT and the critical importance of labor constraints to the local farming systems, it is regrettable that the sample was so small. In the future, the CP/ARPT should try to hire local enumerators (i.e., secondary school leavers), train them, and then use them to collect data. The ZATPID Project is currently using 14 trained enumerators to collect flow data on labor, production, and consumption throughout the country, including in both Kabwe Rural and Mkushi Districts. To date, CP/ARPT has relied almost solely on the trial assistants to assist with farm-level data collection. Given the numerous tasks that the trial assistants already have, the project should explore other alternatives to using them.

The data collected during the labor use survey was taken back to the University of Illinois in January 1985 for analysis and final report preparation. The ZAMARE field staff and the DOA have still not received the final report of the survey.

In 1985 the agronomist completed a survey of 135 female-headed households in the three recommendation domains. He sought assistance from the National ARPT Sociology Coordinator in the design of the survey instrument. The topic of the research is a good one, and demonstrates that at least one member of the first CP/ARPT team was aware of the biases of the earlier surveys. The sampling frame was that used by the Central Statistics Office during the recent National Farm Management Survey. How this sampling frame relates to the one used by the CP/ARPT economist during the 1983 formal and informal surveys of the same district is unclear. The importance of this research is critical to the ARPT's goal of helping small-scale producers, of whom female-headed households make up a large proportion. Since women are generally not included in extension programs, credit programs, and market cooperatives, they are likely to be disadvantaged in any program that promotes increased use of modern inputs, unless corrective measures are applied probably requiring intervention at the policy level. The data on the female-headed household survey have not yet been published.

There are no indications that the work of the ARPT economist influenced the selection of "contact farmers" for on-farm trials and demonstrations. Criteria for the selection of contact farmers were never established during the first team's tenure. This resulted in farmers being selected for trials,

46

who often owned farms well above the average size for the area. The establishment of criteria for the selection of contact farmers is a part of the current team's plans for the 1986/87 season.

The trial program for 1985/86 was well prepared by the new CP/ARPT, with the assistance of the previous agronomist. It provides adequate justification and evaluation criteria for each experiment, indicating how each addresses a particular constraint(s) of the small-scale producer (see CP/ARPT 1985).

It has only been within the last three months that the CP/ARPT has developed a practical and coherent definition of a farmer decision making unit. This has been through the work of the new ARPT Coordinator and Economist who has recognized that gender, age and other factors often segment households into two or more separate decision-making units. This definition of farmer decision-making was used in the recent survey of TRD 2 (April 1986), which was the first socio-economic data collection in the area since the original CIMMYT survey in 1978.

With the encouragement of the National ARPT Coordinator, the new CP/ARPT is taking a very different approach to data collection and to the selection of on-farm trial sites, than the previous team took. They are experimenting with a "community" approach to the survey and trial program. This new approach to survey and trial work was used during the recent informal survey of TRD 2. The sampling unit was defined by political sections, which are clusters of 25 households under one Section Party chairman.

The other Provincial ARPTs in Zambia are also now using a community approach to organize their FSR programs, although we know of no others that are using political sections as definitions of community. While there are good reasons for such an approach (see CP/ARPT 1986), we would caution against accepting the political section as the unit in every domain without considering alternatives. Earlier evaluations criticized the CP/ARPT for selecting "contact farmers" who are among the more politically and economically prominent producers. To use the political section and the political party chairman in selecting farmers to participate in trials and demonstrations may politicize the project and discriminate against the smaller farmers even more than in the past. The degree to which sections form important economic and social units is also likely to vary among domains.

Another cautionary note on the new approach is that there seems to be a temptation to select sections in close proximity to

47

administrative centers, in order to allow trial assistants easy access to farmers. Yet these are areas that are often very atypical of the surrounding region in that non-farm employment is often more important, access to services and markets is greater, population densities are higher, and producers are often more commercially oriented.

Excellent sociological work outside of the CP/ARPT team was carried out by the University of Illinois Research Associate working in Serenje District. During his fifteen month tenure in Zambia, he collected considerable farm level data and produced a number of reports on his work (see N'diaye 1984;1985a;1985b;1986).

Among his most relevant findings for the CP/ARPT program are that the average farm size in the area is smaller than that listed in previous surveys because the wife's and husband's fields were not disaggregated, and that the management of hybrid maize farms suffer because husbands have difficulty mobilizing the labor of wife (s) and children, since the latter perceive benefits of the farm going only to the male household head.

## 2. Research by CRTs

The Commodity Research Teams (CRT) at Mount Makulu also conducted farm-level surveys on labor use, fertilizer use, cropping patterns, crop yields, and sales. The most extensive survey seems to have been conducted by the sunflower agronomist involving more than 700 households (Eylands). His data show that: (1) most labor inputs to sunflower production are provided by females; (2) very few farmers use hybrid sunflower seeds (less than 5 percent of total); (3) most farmers broadcast the seed at planting and frequently do not weed at all; (4) income from sales is used to buy household necessities (including food), not to reinvest in sunflower production; and (5) the low official price for sunflower makes the use of high management inputs unprofitable. The CRT maize breeder recently participated in the CP/ARPT's informal survey of Serenje District.

Under the UNZA Special Studies Program of ZAMARE, a sociological study of farmer/extension worker relations in Kabwe Rural District was conducted by the National ARPT Sociology Coordinator, with the assistance of four students from UNZA (Sutherland 1984). Although the study was carried out only during the second year of the Research and Extension Liaison Officer's (RELO) program, it was able to conclude that "the link between extension and research in Central Province has clearly improved considerably since the inception of ARPT and the appointment of a RELO" (Sutherland 1984:37).

48

### 3. The Impact of ZAMARE on Small-Scale Producers

The lack of baseline data on farmer income, and the lack of any systematic monitoring of farmer behavior and cropping patterns during the first three years of the project makes an assessment of the project's impact on farmers very difficult. This section, therefore, can only make the most general conclusions based on available data. It is divided between the work of the CRTs, which was national in scope, and the CP/ARPT which was location specific.

#### a. Commodity Research Teams

**Oil Seeds (Sunflower and Soybean):** The production of sunflower in Zambia started in 1971 and reached a figure of 60,000 hectares by the mid-1980s. In contrast to other cash crops in Zambia, sunflower production is almost solely restricted to farmers cultivating less than ten hectares; low prices and poor support services discourage larger farmers from growing it. The advantages to the small farmer have been described as follows:

Sunflower is extremely useful as a diversification crop in the traditional farmer sub-sector, enabling farmers to expand their efforts over the planting season and use off-season labor for threshing. Sunflower can be planted after maize with minimal inputs and still produce enough seed, although of low yield/ha, to add to the family cash income (ZAMARE 1985:8).

Thus, in terms of ZAMARE's goals of increasing incomes and the production of small-scale producers, sunflower holds considerable potential.

In collaboration with the ARPTs, the ZAMARE sunflower agronomist has conducted several on-farm trials in the provinces, including trials on 16 farms in the Central Province during 1985/86. The experiments have been sensitive to the needs of the low resource farmer and have shown that increased yields can be obtained "by refined production practices such as earlier planting in rows (vs. broadcasting), adequate plant population, timely weeding, and use of lime fertilizer (ZAMARE 1985:9). During the period 1981-1984, total sunflower production in Zambia increased from 17,000 mt (20 percent of the country's cooking oil) to 45,000 mt (50 percent of cooking oil needs). Although not all of this gain can be associated with the ZAMARE effort, the work of the ZAMARE agronomist has played an important role. Most of the increased production has come from small-scale producers.

49

In the past two years, the sunflower work has been seriously affected by government price policies, lack of government services (especially extension), and strong competition from soybean production which is greatly supported by government. The low price paid for sunflower (50 Kwacha per 90 kg sack), the lack of seed availability, and the lack of understanding of sunflower husbandry by extension staff has resulted in a reduction of sunflower hectareage. Partly responsible has been the strong increase in soybean production in the past two years. Although sunflower has a higher oil content per hectare planted and requires less management inputs than soybean, the latter has been heavily supported by government. The growing of soybeans, which is supported by the extension and input services of the Lint Company of Zambia (LINTCO) and receives an official price of 110 K per sack, has increased considerably in Kabwe Rural and Serenje Districts during the past two years.

The sunflower program has developed several open-pollinated and hybrid varieties that are suitable for small farmer use. Under the present price structure, however, the farmer has no incentive to purchase needed inputs and improve management techniques.

A recent innovation outside of ZAMARE that will impact positively on sunflower growers, as well as on the project's sunflower program, is the introduction of small oil presses in the rural areas. This allows producers to make their own cooking oil for a nominal fee (usually 10 percent of marketed volume), rather than have to sell it to the oil seed marketing board. Estimates show that this increases returns to the farmer on the order of 50 percent, and may halt the recent downward trend in sunflower production. The ZAMARE sunflower agronomist has worked closely with programs promoting the oil presses, and already production increases have been noted in the vicinity of oil presses in Serenje District (CP/ARPT 1985:7).

The soybean program of ZAMARE has moved the emphasis from developing varieties strictly for use by large-scale commercial farmers to developing varieties and techniques suitable to small-scale producers. Prior to 1974 virtually all soybean production was grown on large farms. Small-scale producers have shown a recent interest in soybean production because (quoted from ZAMARE 1985:11):

- the later planting and earlier harvesting period does not compete directly for labor with maize and cotton;
- the present practice does not require spraying since insects and diseases have not become serious problems;

- the free-nodulating (promiscuous) varieties, which are being promoted, provide small profitable yields without seed inoculation;
- LINTCO provides farmer credit, seed inputs, production practice recommendations, extension service, and a guaranteed market.

Soybean production in Zambia has increased from approximately 500 MT in 1975 to over 20,000 MT in 1985. Generally, the work of LINTCO in the last three years in providing credit, effective extension, and guaranteed markets is responsible for the bulk of the increase.

The Zamare soybean breeder is developing varieties that hold more potential for the small scale producer. Among the characteristics he has been breeding for are capacity to withstand weed stress, tolerance to prevalent diseases, insects, and shattering (the latter will allow the farmer to extend the period of harvest); and lack of requiring inoculum. These characteristics are amenable to production by small-scale producers, although the dissemination of new varieties to this sector is only just now taking place.

In sum, the research of the CRT Oilseeds has been well directed to the needs of the small scale producer, as opposed to the large commercial farmer. However, as we indicated earlier the gains in soybean production, under current government incentives, are likely to outpace sunflower production.

Since household data disaggregated by gender are not available for the production of either crop, it is difficult to say which holds more potential benefits for women. It is likely, however, that because of the lower input requirements and its restriction to producers with cultivated areas under 10 hectares, that sunflower, rather than soybean production, is likely to have greater benefits for female-headed households. The results of the female farmer survey (1985) should give some indication of whether or not this is the case.

Cereal Grains (Maize): Maize is the dominant food staple in Zambia, being grown in every District of the country. The ZAMARE maize breeder has approached his work with the goal of increasing maize production among small-scale producers. Two open-pollinated varieties (MM 400 and MM 600) have been developed that have proved popular among farmers. In the 1985/86 growing season, it is estimated that 10,000 hectares were planted with these seeds. For the small-scale producer, the advantages of open-pollinated varieties over hybrids are that second generation seed can be planted without reduced

yields, required inputs are less, and, in the case of MM 400, the crop matures in a shorter period of time (90 days).

The maize breeder has also participated in CP/ARPT surveys and field days and reviewed survey instruments. The maize program has already shown very tangible results for the small-scale producer, and in rural areas that we visited the varieties developed by ZAMARE are well known and appreciated.

b. CP/ARPT

Since the CP/ARPT program has not yet released any technical packages to farmers, it is difficult to assess its impact on production and income. As we indicated above, the most recent trial program (1985/86) developed by the new CP/ARPT seems well suited to addressing the needs of both female and male farmers. A wide range of crops are being tested, including both local and exotic varieties of sorghum, millet, beans, maize, sunflower, and soybean. The new approach to dealing with farmer decision-making units, regardless of whether or not they include male household heads, is a welcome improvement and is likely to reveal a more realistic picture of farm production constraints. Despite the cautions about the "community approach" indicated above, it also has considerable potential for allowing the program to work closer with a group of farmers, especially in the extension area.

There have been at least two "spill over" effects of the on-farm trials and demonstrations that seem to have reached small-scale producers. The first is the recommendation of weeding maize at 20 cm height, rather than at the usual height of 60 cm, which has been shown to increase maize yields considerably when only one weeding is used. The second is the recommendation of a cereal/legume rotation that has been shown to maintain soil fertility and yields longer than the practice of monocropping an area until soil fertility is depleted.

The current CP/ARPT team is going to resurvey all "contact farmers" (more than 150) who have been used by the project. The purpose of this monitoring exercise is to determine to what extent: (1) the on-trial program and demonstrations have influenced farmer cultivation practices; (2) the farmers understood and appreciated the trials that were being conducted on their farms; and (3) neighboring farmers have observed and adopted techniques being used on trial farms. The results of the survey will be very important in determining the applicability of past trials to farmer needs, and in shaping the extension program of CP/ARPT for the remainder of Phase I.

52

### III. OTHER PROJECT AREAS

#### A. Extension

The extension service in Zambia, like many other African and third world countries, suffers from a lack of resource allocations both in terms of personnel and finance. In broad categories for all of Africa these problems have been identified and prioritized as follows:

- Extension personnel lack training in extension methods and communication skills.
- Essential teaching and communication equipment is not available to the service.
- Field-level extension personnel lack adequate transportation to reach farmers efficiently.
- There are few teaching aids, bulletins, demonstration materials. etc.,
- Extension personnel are assigned many other tasks besides extension work.
- Appropriate technology is not available to extend to farmers.
- A continuing two-way flow of information between the national extension organization and agricultural research institutions is lacking.
- Field-level extension personnel lack practical skills and training about improved agricultural technology.

Several extension activities were included in the project to encourage the participation of extension workers in the FSR process and to assist these change agents in the transfer and dissemination of research findings to their farmer clients. These efforts, for the most part programmed through the RELO, sought to treat several of the above problem areas.

On the ARPT, the RELO position is the only extension service slot; all of the others on the team and most technicians at the research station are part of the Research Branch. Although the first incumbent was without a counterpart for part of his tour, he did pass some skills on to his counterpart and worked closely with the Central Province Extension Training Officer (ETO) to train extension workers. The RELO began his work with a 6 month familiarization program during the 1982-83 season, visiting provincial and national agricultural training institutes and district officers, assisting with surveys and on-farm trials, and helping to organize field days to explain to extension personnel and farmers the ARPT on-farm research program. Provincial training work began in May 1983 with the production of a highly popular monthly newsletter which was distributed to camp extension workers (EWs). In October 1983, a series of one-day training meetings were held at the district

level throughout the province. These explained to field EWs the work of ARPT and showed them how to set up a demonstration which showed the benefits of using new technologies and inputs. This training exercise was followed by workshops to extend to district and block level staff crop husbandry recommendations. The workshop had a broad focus, covering soil classification, animal draft power, farming systems research/extension, and work planning.

The provincial ETO, with RELO assistance, has organized a series of workshop to provide in-service training for field EWs. The presentations at these workshops contained a mix of crop and farming systems material. This program of training continued into 1985, with provincial level officers training block supervisors and district level staff who, in turn, trained field EWs. The courses provided more of a farming systems focus by using the handbook, "Agricultural Extension for Small Scale Farming Families", and by giving training on animal husbandry recommendations. The newsletter has continued to be published to re-enforce the content of training programs and, hopefully, establish the farming systems perspective at the camp level.

Farmer surveys and on-farm research has also involved field EWs in the target areas. This involvement has been perhaps the most constructive in introducing an FSR perspective to EWs at the camp level. However, as it has involved only field EWs working in target areas in each domain, the majority working elsewhere still need to be reached through more formal training programs and by strengthening the FSR perspective in the monthly newsletter. Another kind of research-extension liaison that strengthens the extension service is the series of trials and demonstration used during the on-farm testing stage of FSR. These have been carried out in all target areas for the past three seasons.

The Trials Assistants to the ARPT are extension officers seconded to the team and will be returned to the extension service. The on-farm trials, verification and demonstrations conducted by these technicians has greatly increased their skill and usefulness as extension agents.

In addition to activities at the provincial extension level, the RELO has worked at the national level. He organized an "Effective Teaching and Training Workshop" along with the visiting "INTERPAKS" team from the UIUC, and participated in a number of national level training sessions. A list of workshops fully or jointly sponsored/conducted by the CP/ARPT during 1985 is included in Annex C. Most of these workshops provide extension training

Although the CRT advisors worked in research, all have had contact with extension agents through field demonstrations of research results and participation in formal training courses. Other direct project support for extension has included the financing of 30 motorcycles and their operation in the Central Province. Many of those benefitting have been EWs and their supervisors.

The level of project support has not been sufficient to overcome the severe operational fund shortages that face the extension service. These shortages make the procurement and maintenance of vehicles, motorcycles and bicycles impossible. This is a serious constraint because the extension worker is obliged to travel great distances because of the low population densities in Zambia and the great distances between farms or farm clusters. Motorcycles and bicycles as well as allowances for their operation are not available. Additionally, teaching and extension aids are few and funding for inputs for field trials and demonstration plots is scarce. Finally, staff salaries are felt to be inadequate.

On the other hand there are a number of donors who are providing extension assistance. The World Bank for the past five years has been trying to establish a Training and Visit (T & V) extension system and presently a modified version is operational in 5 districts in three provinces. Additionally, the GRZ has implemented a wide variety of integrated rural development and area development programs in order to boost standards of living in rural areas of Zambia. In 1984 there were six Integrated Rural Development Programs (IRDP) supported by bilateral donors (Northern, Eastern, Luapula, North Western, Southern, and Central provinces), three Area Development Projects (ADP) supported by the World Bank and/or IFAD (Eastern, Southern, and North Western provinces), a Village Agricultural Program (VAP) in Northern Province supported by the Norwegian Agency for Development (NORAD), and an Agricultural Extension Program in Luapula Province supported by the Finnish International Development Agency (FINNIDA). In addition, there is the LIMA program which is supported in various ways by external donors. The degree to which these programs purport to strengthen agricultural extension varies considerably, but each of them has at least some focus on extension. In general, the ADPs aim at strengthening the agricultural extension and extension capacity at the provincial level, whereas IRDP activities have been tied more to agricultural and rural development activities at the district level. The IRDPs generally devote a relatively minor proportion of activities directly to strengthening the agricultural extension service. The IRDPs and VAP are involved in a wide array of other economic, social-amenity, and rural development activities, including feeder roads, water supply,

women's activities, health and nutrition, workshops, and training centers. For instance, in the budgetary plan for 1984, 6% of the financial support of SIDA to the IRDPs in Northern, Eastern, and Luapula provinces was earmarked specifically to strengthen agricultural extension; the remainder was devoted to a series of specific community and institutional development activities. The mere task of coordinating all of these donors and their different approaches is a burden on the DOA. See Table 6 for a summary of extension assistance by province.

In an attempt to bring some order to the various systems and special programs, the GRZ has completed and adopted a Strategy for Extension that is comprehensive and yet flexible enough to embrace the differences. At the national level there are planned a number of new positions designed to coordinate extension training methods, communication systems and information flows. In this multi-donor environment, they can be crucial to development of an effective extension service. The need for AID or other donor technical assistance in these areas is great.

Another area that offers potential for AID assistance in Phase II is operational support to the extension service, perhaps in the Central Province. As is the case for most provinces an adequate number of staff and buildings exist to get the job done. However, operational funds and training are missing. A true test of the DOA extension system would be to provide operational funds, through local currency generations, and training in the province. This funding could complement existing ODA extension assistance provided through the IRDP in the Central Province. For Phase II, this type of assistance would be the logical outreach step for the techniques and technologies developed in Phase I.

#### B. Commodity Procurement and Construction

The amount budgeted in the PP for commodity procurement was \$834,000 for farm and scientific equipment, computers, vehicles and motorcycles. Generally, for the larger items, direct AID procurement was undertaken, with the computers and specific lab equipment procured under the university contract. The procurement has gone relatively well. Appropriate machinery and equipment for the most part arrived in a timely manner. However, there were two problem areas. First, at the start of the project, farm machinery was purchased that was too large for the scale of research work and the tractor purchased. The equipment has sat unused to the present. The GRZ is in the process of selling the equipment to local commercial farmers to recoup some funds for the project.

SLP

TABLE 6

## MULTI-DONOR PROVINCIAL RESEARCH, EXTENSION AND DEVELOPMENT PROJECTS IN ZAMBIA (A PARTIAL LIST)

PROVINCE	IRDP	ARPT	ADP/T&U	VAP/EXT	ARPT TEAM MEMBERS	NOTES
Central	ODA	USAID			Farming Systems Agronomist (E) Farming Systems Agronomist (Z) Farming Systems Economist (Z) Farming Systems Economist (E) Research Extension Liaison (E) Research Extension Liaison (Z)	In training ARPT Provincial Coordinator
Eastern	SIDA	IBRD/IFAD	IBRD		Farming Systems Agronomist (E) Farming Systems Agronomist (Z) Farming Systems Economist (Z) Research Extension Liaison (Z)	ARPT Provincial Coordinator In training
Luapula	SIDA	SIDA SIDA		FINNIDA	Farming Systems Agronomist (E) Farming Systems Agronomist (Z) Farming Systems Economist (E) Farming Systems Economist (Z) Research Extension Liaison (Z)	ARPT Provincial Coordinator
Lusaka		ODA			Farming Systems Agronomist (E) Farming Systems Agronomist (Z) Farming Systems Economist (Z) Rural Sociologist (E) Rural Sociologist (Z) Research Extension Liaison	ARPT Provincial Coordinator In training Open
North Western	GRZ	IFAD	IBRD		Farming Systems Agronomist (E) Farming Systems Agronomist (Z) Farming Systems Agronomist (Z) Farming Systems Agronomist (Z) Farming Systems Economist (E) Farming Systems Economist (Z) Farming Systems Liaison (E)	ARPT Provincial Coordinator Kambo district Chizera and Zambezi district
Western		Netherlands			Farming Systems Agronomist (Z) Farming Systems Economist (E) Farming Systems Economist (Z) Research Extension Liaison (Z)	In Training ARPT Provincial Coordinator Open
Northern	ODA/SIDA	NORAD NORAD NORAD		NORAD	Farming Systems Agronomist (E) Farming Systems Economist (E) Farming Systems Economist (Z) Research Extension Liaison (E) Rural Sociologist (E) Rural Sociologist (Z)	ARPT Provincial Coordinator Open
Southern	GTZ	IBRD IBRD	IBRD		Farming Systems Agronomist (E) Farming Systems Economist (Z) Research Extension Liaison (E)	Open Part Time
Copperbelt	EEC may finance this province				Farming Systems Agronomist Farming Systems Economist Research Extension Liaison Rural Sociologist	Open Open Open Open

A second problem area is computers. For approximately \$42,000 the contractor purchased two Irish made computers that have been placed in Kabwe and Mount Makulu. The machine in Kabwe has not worked and there are serious limitation on the usefulness of the other. AID/Washington approved the purchase of these machines based on standardization justification for the country. Since that time, the GRZ has purchased IBMs and other equipment, presumably changing the standardization policy. UIUC and the local sales agent for the machines are presently in dispute over machine operation and cost. UIUC is refusing to pay some recent billings. The team recommends that UIUC continue the negotiations and press the supplier to make the machines operational or refund the money. At the same time, because the need for computers in data analysis and program monitoring is so great, UIUC and AID should agree to purchase name-brand U.S. computers soon. The scientists working on the project can give a good assessment of need.

The procurement of additional vehicles is also needed. The ADO has reviewed the present condition of the ZAMARE vehicles and in accord with AID vehicle replacement guidelines, seven new vehicles are required. Given the evaluation team's recommendation to extend the project to December 31, 1987, the procurement is justified on the use of the vehicles by the expatriates alone.

Six houses were planned for construction under the project. However, in order to save funds and to have houses ready in time for the arrival of the team, UIUC, AID and MAWD decided to renovate existing houses on the stations. This decision saved money and time. The houses were ready for the scientists when they arrived and much aggravation to them and their families was avoided. Subsequently, AID agreed to use the funds originally set out for construction to purchase the foreign exchange items needed to build nine additional houses at Kabwe and Mount Makulu. Kwacha costs will be covered by AID local currency generations. These houses will replace the houses renovated and used by the American team. At both Kabwe and Mount Makulu housing is a problem.

#### IV. PROJECT MANAGEMENT

##### A. Team Leader Role

The first qualification for the Team Leader set out in the PP is "a Ph.D in agricultural economics with experience in organizing and carrying out multi-disciplinary research/extension programs." This professional qualification is needed because the Team Leader was expected to assist the CRT's and ARPT in economic reviews and analyses. However, the bulk of the duties listed in the job description are

58

administrative in nature. The Team Leader recruited from UMES is a geneticist with experience in agricultural education and administration. He has been heading the project since its beginning in August 1982.

The balance between professional work and administrative and management responsibilities is difficult to establish without a thorough knowledge of the government procedures and attitudes as well as an understanding of the effort required to get things done in the country. UIUC selected a strong administrative officer somewhat at the cost of relevant professional skills and experience in farming systems research. Given the very difficult political situation that existed in 1981 - 1982, the decision to seek a strong administrator was justified.

Experience through the first two years further justifies this decision. The Team Leader has not only put in place administrative practices but has also established an excellent rapport with MAWD officials and promoted the ZAMARE Project throughout the country. The governmental and public image of ZAMARE is very positive.

As the Team Leader established operations and contacts, his responsibilities shifted from nearly 100% project management to take on an advisory role to the Director and Deputy Directors in DOA. He has been integrally involved in the conceptualization of the GRZ's strategy for agricultural extension and research. This is the key document in the process of institutionalizing the evolving approach to research/extension systems supported by the project. The Team Leader's duties have recently expanded to include assisting the DOA in the evaluation and coordination of technical assistance provided by other donors. The fact that the Team Leader has been charged with this responsibility is a testament to his acceptance and central role in the Ministry. It does, however, put an American in the position of judging other donors' inputs and programs for the GRZ. The need for diplomatic and careful reviews and comments is obvious.

The scope of work of the Team Leader covers the type of advisory assistance described above, but this emphasis has meant that he has had little time to participate in the commodity and farming systems research carried out by the ZAMARE team. The experience of the Team Leader better qualifies him for administrative and organizational tasks rather than farming systems research. However, closer attention to the development of CP/ARPT methodology and systems could have greatly strengthened the results and institutional development in Kabwe. The Team Leader needs to guide and direct this component of the project to ensure satisfactory progress during the remainder of the project. This should be given highest priority.

59

B. University Support

Project expenditures through June 1985 (most current figures) for university support includes:

Home Office Salaries	\$280,727
Home Office Fringe Benefits	50,000 (Est.)
Home Office Operations	54,125
Indirect Costs	1,003,265
Field Office Operations	<u>85,343</u>
	\$1,473,460 (29%)
Total Contract Expenditures through June 1985	\$5,016,069 (100%)

Travel and certain other direct costs are not included in the university support costs.

The ZAMARE field staff and the AID Project Officer were not able to identify the specific uses to which the university support financing was directed. The benefits of this expense are not easily identified nor their contribution to the project directly apparent. The UIUC Project Coordinated did provide the following explanation of on-campus support.

The project is funding 50% of the salary of a Campus Coordinator at UIUC and 25% of the salary for the same positions at UMES and SIU. Additionally, a full time Project Assistant works at UIUC handling the logistics. Secretarial support is provided to all professionals using project money. These direct on-campus costs are in addition to the overhead paid by AID to the universities. The overhead rates paid by AID to UIUC are 42% for on campus expenses and 28% for field activities. No overhead is charged for training and most procurements.

Presumably using funds generated from overhead, the University of Illinois pays for the training advisor who estimates that nearly a third of his time is spent arranging for ZAMARE training. He is supported by one secretary. Also, UIUC pays for the services of an accountant who spends a quarter of his time working on the project.

Not to belabor a point made often by AID field staff, but it should be noted here again that University contracts are expensive. This one is especially so because of the high level of home office support over and above overhead. The need for this support should be reviewed to see if some of the moneys can be used to support field positions during an extension of the project.

Reflecting institutional commitment and as an effort to promote better management, the universities have sent two Executive Visit Teams (EVT) to review project impact and management. Project funds were used to finance the visit of two of the four team members. The EVT report on its review in January 1986 states:

The objective of the executive visit was to review the overall progress of the project from the perspective of the contracting universities.... A second objective was to assure faculty members that their respective universities are keenly interested in their work in Zambia. The executives were also familiarized with the type of work conducted by their respective ZAMARE team members. A third objective was to convey to the Zambians and the USAID officials that the contracting universities were clearly committed to an outstanding performance during the Phase I of the Zamare Project and of their interest in being selected for Phase II.

The consortium has worked well together and has shared the technical assistance and training load relatively equally. The technical assistance positions have been filled by experienced scientists in a timely manner. Only one serious gap (6 months for the economist) exists in the provision of TA. The experience of the individuals in research and extension has been good with the only caveat being the need for greater FSR experience and training.

Training has proceeded in a timely manner with nearly 110 individuals placed in various long and short term programs in the U.S. The universities have managed this process well. The team suggests that the use of IARC facilities training should increase. Administrative back-up has been good. Nearly all of the Zamare staff can identify examples of quick action in the provision of information or commodities that has facilitated the field work.

In the technical assistance section, the point was made that most (6 of 11) of the advisors are part of the university system. In these cases the mutual commitment of the university and scientists to the project fosters cooperation and improved management. Project linkages between UIUC's Intsoy and Interpaks also promote an understanding of problems and stronger cooperation. Overall, the contractor management has been good.

### 3. Project Support Unit

USAID/Zambia has established a Project Support Unit (PSU) under the direction of the Mission's Executive Office. It provides

administrative and logistic assistance to ZAMARE and ZATPID and will soon begin assisting the recently selected contractor for the Human and Institutional Resources Development Project. It is staffed by an administrator, an assistant administrator and a secretary as well as 3 support staff. The Mission's maintenance unit works on a contract basis to support the PSU housing and other repair needs. Two vehicles, one purchased with ZAMARE funding, are operated by the PSU.

The Team Leader's Office (TLO) has an administrative assistant, a secretary and five drivers (four at the research stations) to help in project administration and logistics. The TLO generally has responsibility for project support, such as logistic and administrative matters and the procurement of farm inputs, lab equipment, PIO/Ps, etc. The PSU is responsible for the administrative and logistic matters to support the American ZAMARE staff. There is a mutually acknowledged overlap and much confusion over the division of responsibilities between the PSU and the TLO. Efforts continue to set out the areas of responsibility for each office, but it appears to be a continuing process, confused by the shifting and different needs of the three projects covered by the PSU.

From the perspective of the project itself, the division of project administration between the two offices is inefficient and wasteful. At present ZAMARE Project administration requires the equivalent of 3.5 administrative people (2 in the TLO and half time of 3 people in the PSU), 6 drivers and part time typing assistance. For the size of the project, this is too large, especially given the substantial expense incurred under the contract for overhead and home office support. Consolidation of all administrative and other support support into either the TLO or PSU is a logistical step. The question is which is a better alternative.

The evaluation team recommends that ZAMARE drop out of the PSU arrangement and handle all support matters on its own. The project administrator position in the TL Offices should be upgraded to handle the added responsibilities. The impact that this withdrawal would have on ZATPID was not evaluated since it is beyond the scope of this evaluation.

From the standpoint of AID and ZAMARE operations, there are three reasons for the teams recommendations.

- (1) The present procedures generate a large number of Purchase Orders (1-2 per week) that must be processed through AID as separate actions. For universities, as is the case in this project, AID procedures allow the use of a draw-down financing system against a Federal Reserve Letter of Credit. Setting up a separate PIO/T for support and

62

generating many Purchase Orders under it is an unnecessary and undesirable arrangement for a university contract. Part of the confusion over the financial status of the project rests on this double channel of billing. UIUC should handle the administration costs through the FRLC mechanism and simply report them on their no-pay vouchers.

- (2) The AID Executive Officer, the PSU and TLO agree that the PSU should not have repair and maintenance responsibilities for the houses in Kabwe and Magoye. The PSU is set up to handle repairs and maintenance only for areas close to Lusaka. It follows, then, that the TLO should handle the house maintenance, and try to make arrangements to handle all houses in a similar manner to simplify management and to take advantages of economies in contracting for all of the houses.
- (3) The UIUC procedures for releasing funds are simpler and quicker than AID's, and the PSU is bound to follow certain AID procedures. The time savings and ability to respond quickly are benefits to the project if UIUC were to handle all administrative matters.

#### D. AID Project Monitoring

The Project Design is good in that it provides flexibility to adjust the program during the course of implementation. However, the contract team has felt that the Mission has held too rigidly to the project paper design. Although vehicles were in poor shape, the Mission has been slow to authorize procurements of additional ones because of poor financial management. The Mission was not sure whether money was available to purchase additional vehicles. The problem of inadequate soils testing facilities remains unresolved, even after years of discussion.

The evaluation team is not in a position to sort out all of the differences, but there are enough concerns that there appears to be a need for stronger channels of communications. We recommend that the ADO continue to participate in the ZAMARE team's quarterly meetings in order to review project progress. The ADO will also need to continue to review closely the annual work plans and quarterly reports. Based on the information gathered, the ADO should set out a quarterly agenda for action to be discussed and reviewed with Mission management.

A second area of concern is poor financial controls and is discussed in the following section.

## V. FINANCIAL MANAGEMENT AND CONTROL

### A. AID Financial Records

The evaluation team found no accurate financial records to review project expenditures and implementation. In Annex E, the most recent financial data summary report from RFMC and the UIUC proposed budget revision, which includes a statement of its expenditures through June 1986, are presented. There are obvious errors in the RFMC report; for example, the RFMC report shows that only \$3428 has been spent on training through April 6, 1986. The UIUC report is nearly a year old and it covers only the contract portion of the project. The Mission has been aware of this problem for some time and recently hired Deloitte Haskins and Sells (DH&S) to review the books and prepare an accurate statement of accounts. Given the expenses AID has incurred to upgrade the facilities of RFMC, the need to hire outside accountants to straighten up its own project records is discouraging.

The evaluation team did have an opportunity to review the draft DH&S report, and found that it did not present expenditures by project budget lines. It presented expenditures by the RFMC project elements which remain inaccurate. Again, training expenditures amount to only \$3,428.

It is imperative that the ADO and local accountant review all project expenditures and categorize them by the project budget. RFMC records should be revised (project elements modified, if necessary). Without accurate financial records, it is impossible to make a modification or extension of the project.

Also given the fact that the contractor uses a Federal Reserve Letter of Credit with only no-pay vouchers reviewed by the Project Manager several months after expenditures, the ADO should develop a system to ensure that the contractor sends him expenditure records monthly. AID has developed a computerized project monitoring systems that could be extremely helpful to the ADO in this regard.

### B. GRZ Contributions to the Project

The GRZ contributes to the project by providing the salaries, allowances, facilities and part of project-related operational expenses, all of which are part of their recurrent budget. The evaluation team was not able to identify how much of the recurrent budget did support ZAMARE activities, but the team did note the lack of counterparts discussed previously and some rather serious shortfalls in operational expenses.

64

In addition to these recurrent expenses, the government was to provide land for housing and contributions to a joint account for operational expenses specific to ZAMARE. Through 1985 the GRZ had contributed the kwacha equivalent of \$100,000 to the account. The GRZ and USAID agreed to use K 550,000 from PL480 local currency generations for ZAMARE support and in early 1986 deposited this amount into the joint account. The Mission did waive the requirement for a GRZ contribution for POL costs. The serious financial problems faced by the GRZ justified this change.

It is the evaluation team's view that the GRZ contributions on the recurrent budget side have been inadequate, but may be the best that can be expected given the difficult financial position of the GRZ. The use of local currency generations not only for the ZAMARE account but also for the operational expenses of the research stations should be initiated.

## VI. RECOMMENDATIONS AND LESSONS LEARNED

### A. Recommendations

Major recommendations resulting from this evaluation are presented below. Following each recommendation is the responsible officer/office for action and a time frame for completion of the recommendation. Other recommendations, more specific or operational in nature, are presented in the text of the evaluation. Annex E contains an agenda for action covering these specific and other recommendations proposed for the remainder of the project.

1. Because of the success of the project as well as the large continuing need in agricultural research and extension, a five-year second phase of the project is recommended. USAID/Zambia and the PID Design Team will submit a PID to AID/W by the end of June.
2. To allow for an orderly transition into Phase II, the present project should be extended until December 1987. Adequate funds appear to remain in the project for a no-cost extension. USAID/Zambia will prepare a PP supplement to extend the project before the end of August.
3. Support for project field staff should be increased immediately to enable them to undertake their contracted tasks. The evaluation proposes local currency financing for field administrative staff, additional trail assistants, enumerators, extension worker allowances, the procurement of bicycles and

65

other staff support. The ADO at the Mission will work with the contractor and MAWD to develop the necessary plans and mechanisms to be implemented before the end of August.

4. There is an immediate need to build operational systems and analytical capacity (i.e., computers) to do FSR in the Central Province. Most importantly, additional FSR study tours and training as well as close supervision and guidance is required for the ZAMARE CP/ARPT members. A list of more specific recommendations to achieve this end appears in the ARPT section of the evaluation. The Mission ADO and Team Leader are responsible for the completion of these tasks as soon as possible.
5. Using the DH&S financial report and project financial records, the ADO, the Mission Accountant and RFMC should develop accurate accounts set out by the PP budget categories. This needs to be completed immediately in order to set out a budget revision for a project extension.
6. Administrative arrangements need to be restructured to ensure more field support. Contractor home office support should be reviewed to see what could be transferred to the field or eliminated to free funds for the extension of field activity. Similarly, the Team Leader's Office in Lusaka needs to move as much operational support as possible to Kabwe and Magoye. ZAMARE should drop out of the PSU, thus allowing it to handle all of its own in-country administration. The ADO and Team Leader have the prime responsibility for completing these actions as part of the pending contract modification.
7. A training plan and strategy for ZAMARE has not been set out formally. Long term training in direct support of project components has been less than desirable. Although little money remains for training, a plan and strategy showing how the remaining training contributes to ZAMARE-supported activities and objectives should be prepared by the DOA and the contractor as soon as possible. The short term training program should include much more training at IARCs and long term training should be provided in rural sociology.
8. ZAMARE/UNZA linkages need to be strengthened. An aggressive strategy to use Special Study funds earmarked for UNZA should be initiated. JIUC is responsible for completing this action within the next month.

9. A basic soil testing capacity must be developed immediately. The ZAMARE project should provide technical assistance and, if possible, financing for equipment. UIUC and the ADO are responsible for resolving this serious problem as soon as possible.

#### B. Lessons Learned

First, it is important to note from the success of the project that the general approach to redirecting agricultural research to small scale producer needs is correct. ZAMARE started with a hypothesis that if sufficient resources were allocated to the applied commodity research and an equal emphasis placed on adaptive procedures and planning for small scale farmer production, then proven results would become available rather quickly. The project experience to date shows that the hypothesis is correct and results are beginning to flow to the small scale producers. Sufficient project inputs were not provided to strengthen the extension service and communication material production. The evaluation team's recommendation for a Phase II flows from this fact. Phase II will expand coverage for extension based on the priority needs of MAWD.

The various components of the project have different levels of success or failure and from these experiences specific lessons can be learned.

University Experience with Farming Systems And Applied Commodity Research: Although U.S. Title XII institutions are very experienced with agricultural research and extension, their familiarity and practice with the FSR approach adopted by MAWD is weak. The first and second group of advisors in the ARPT appointed by the contractor did not have FSR experience nor did the Team Leader possess the qualifications as specified in his scope of work. To a large measure, the relatively low level of success of the CP/ARPT results from the assignment of poorly qualified or trained individuals. On the other hand, the success of the CRT results from the assignment of scientists who are familiar with the research approach and practice. Because of the newness of the FSR approach and its development outside the States, AID should assume that Title XII contractors need much training and guidance in undertaking FSR technical assistance. However, they have the greatest experience and are the most qualified category of U.S. contractor to implement FSR.

The Research Team Concept (ARPT and CRT): The research team concept offers the opportunity of training more than one counterpart per advisor. The team approach provides not only for more training opportunities, but also a fertilization across disciplines that places the research in a context that is better understood by all participants.

67

Project Support Unit: Although there appear to be advantages of size and scale of combining the staff support efforts of several projects into a single unit (in this case, the PSU), there is much confusion and a duplication of functions when compared with the total support requirements of the contract. The additional burden on the Mission staff is also a question that has to be closely reviewed when such a unit is established.

Training Strategy and Plan: Without a training strategy and plan, project training activities do not combine to have a significant impact on project objectives and the institutional development of project-supported organizations.

Contribution by Host Government: In a country such as Zambia where the IMF and IBRD have identified serious economic problems and imposed severe credit and fiscal controls on the government, and AID is supporting such restrictions, then to expect the host government to meet its project contribution commitments is contradictory. On the one hand the donors are demanding cutbacks, and on the other, requiring a level of local support that is out of line with present budget constraints. Funding for staff and operational support is just not available. Fortunately, in Zambia, local currency generated from AID program support is available to finance host government activities.

### C. ZAMARE II

The team that completed this evaluation then went on to do a Project Identification Document for ZAMARE II. The scope of work for the evaluation required that the team set out recommendations for a second phase. These recommendations have been included in the PID and are based on this evaluation.

68

ACTION: AID-4 INFO: ECOM - 5

ANNEX A

26-MAR-86 TOR: 14:4  
CN: 22647  
CHRG: AID  
DIST: AID

VZCZCNA0571  
RR RUEHNR  
DE RUEHIS #1404/01 08 1437  
ZNR UUUUU ZZY  
R 261431Z MAR 86  
FM AMEMBASSY LUSAKA  
TO AMEMBASSY NAIROBI 9329  
BT  
UNCLAS SECTION 21 OF 03 LUSAKA 01404

AIDAC

FOR REDSO/ESA

E.O. 12356:N/A  
SUBJECT: ZAMBA EVALUATION/PID DESIGN PHASE II

REFERENCE: (A) LUSAKA 01217 (B) NAIROBI 09139 (C)  
STATE 095246

USAID/ZAMBIA APPRECIATES THE ASSISTANCE FOR SUBJECT ACTIVITY THAT REDSO/ESA HAS AGREED TO, AND LOOKS FORWARD TO THE TEAM'S ARRIVAL ON APRIL 28TH. BASED ON REFFIS B AND C, MISSION WILL EXPLORE POSSIBILITY OF CONTRACTING WITH A SOCIAL SCIENTIST LOCALLY; HOWEVER, IF THAT IS NOT POSSIBLE, WE MAY HAVE TO REQUEST ASSISTANCE IN LOCATING SOMEONE THAT IS AVAILABLE. THE TERMS OF REFERENCE AND SCOPE OF WORK THAT FOLLOW ARE INTENDED AS A GUIDE ONLY TO INDICATE TO THE TEAM SOME OF THE THINGS BEING LOOKED AT AND EXAMINED BY THE MISSION:

TERMS OF REFERENCE AND SCOPE OF WORK

I. BACKGROUND:

THE ZAMBIA AGRICULTURAL DEVELOPMENT: RESEARCH AND EXTENSION PROJECT (ZAMARE) (611-0201) WAS DESIGNED IN EARLY 1980; HOWEVER, DUE TO CONSIDERABLE SLIPPAGE, THE TA TEAM DID NOT ARRIVE TO START IMPLEMENTING THE PROJECT UNTIL THE LATER PART OF 1982. THE LONG-TERM GOAL OF THE PROJECT IS TO ASSIST THE GRZ IN IMPROVING THE WELFARE OF SMALL SCALE FARMERS AND INCREASING NATIONAL FOOD PRODUCTION THROUGH THE DEVELOPMENT AND ADAPTATION OF RELEVANT TECHNOLOGY. THE PURPOSE OF THE PROJECT IS TO HELP THE GRZ STRENGTHEN THE AGRICULTURAL RESEARCH CAPACITY OF THE MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT (MAWD), AND TO INCREASE THE EFFECTIVENESS OF THE EXTENSION SERVICE IN TRANSFERRING RELEVANT AGRICULTURAL TECHNOLOGY WITH SPECIAL EMPHASIS ON SMALL SCALE FARMERS. A MID-TERM EVALUATION REPORT DATED JUNE 1985, STATES THAT THE PROJECT HAD MADE EXCELLENT PROGRESS TOWARD ACHIEVING THE OBJECTIVES OF THE PROGRAM.

THE PROJECT IS PROVIDING TECHNICAL ASSISTANCE IN THE

DATE REC'D	
3-27	
REPLY'DUE	
4-4	
ACTION TO	
REDSO	
DIR	INFO
D/DIR	
REDSO	
RH/NO	
R/EA	
R/IC II	
R/NO	
R/NO	
ERD	
PHJ	
PH	
ACH	
EXO	
PER	
GSO	
RF	
DIR/ON	
DIR	

BEST AVAILABLE DOCUMENT

69

FORM OF A TEAM LEADER/GENETICIST, MAIZE BREEDER, SOYBEAN BREEDER, SUNFLOWER AGRONOMIST, AGRICULTURAL ECONOMIST, RESEARCH AGRONOMIST, AND A RESEARCH/EXTENSION LIAISON ADVISOR. THE PROJECT HAS ALSO PROVIDED A SOILS MICROBIOLOGIST TO ASSIST IN DEVELOPING AND INSTALLING INOCULUM PRODUCTION CAPABILITIES. THE TRAINING PROGRAM HAS INCLUDED BOTH SHORT TERM U.S. TRAINING (39 PARTICIPANTS), AND LONG TERM DEGREE TRAINING IN THE U.S. (32 DEGREE PARTICIPANTS). IN-SERVICE TRAINING HAS ALSO BEEN PROVIDED IN ZAMBIA IN THE FORM OF WORKSHOPS, SEMINARS, EXTENSION FIELD DAYS, FARMER FIELD DAYS, AND CROP DEMONSTRATIONS. FIELD TRIALS ON THE FARMERS' FIELDS ARE ALSO BEING CARRIED OUT UNDER THE AUSPICES OF THE ADAPTIVE RESEARCH PLANNING TEAM. FINALLY, THE PROJECT HAS A PROVISION UNDER WHICH GRADUATE STUDENTS FROM THE UNIVERSITY CONSORTIUM DO SPECIAL STUDIES IN ZAMBIA THAT BENEFIT THE PROJECT, AND FORM THE BASIS FOR GRADUATE DEGREE THESIS.

THE PROJECT'S TECHNICAL TEAM IS LINKED TO THE MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT (MAWD), WORKING SPECIFICALLY WITH THE COMMODITY RESEARCH BRANCH, AND THE CENTRAL PROVINCE ADAPTIVE RESEARCH PLANNING TEAM (ARPT). HOWEVER, SOME OF THE TEAM'S RESEARCH ACTIVITIES SPILL OVER INTO PROVINCES OTHER THAN CENTRAL PROVINCE.

SINCE INITIATION OF PROJECT IMPLEMENTATION, THE PROJECT TECHNICIANS WORKING WITH OTHER DONOR AND CRZ TECHNICIANS, HAVE IDENTIFIED AND RELEASED TWO NEW OPEN POLLINATING AND TWO NEW HYBRID VARIETIES OF MAIZE, TWO NEW VARIETIES OF SOYBEAN, AND ONE NEW VARIETY OF SUNFLOWER. THESE NEW VARIETIES INCREASE YIELDS BY AS MUCH AS 10-22%. ALSO, THE PROJECT HAS SUPPORTED THE ESTABLISHMENT OF AN INOCULUM PRODUCTION UNIT TO PRODUCE INOCULUM TO INOCULATE NON-FREE NODULATING SOYBEAN SEED BEFORE PLANTING, THEREBY INCREASING PRODUCTION BY AS MUCH AS 1,000 KG/HA.

INOCULUM PRODUCTION HAS BEEN INCREASED FROM ABOUT 2,500 ONE HUNDRED GRAM BAGS FOR THE 1992/93 CROP SEASON TO 24,000 BAGS FOR THE 1995/96 CROP SEASON. THIS IS ENOUGH TO INOCULATE SOYBEAN SEEDS FOR PLANTING 24,000 HECTARES.

## II. PURPOSE:

THE PURPOSE OF THE TEAM'S EFFORTS ARE TWOFOLD. THE TEAM WILL NEED TO (1) ASSESS PROGRESS TO DATE IN ACHIEVING PROJECT OBJECTIVES, AND (2) DETERMINE WHETHER A PHASE II IS JUSTIFIED, AND IF SO, DEVELOP A PID FOR PHASE II.

### III. ASSESSMENT OF PROGRESS:

SPECIFICALLY, THE ASSESSMENT OF THE PROJECT WILL INCLUDE THE FOLLOWING:

A. THE MID-TERM EVALUATION WHICH WAS DONE IN EARLY 1985 CONCLUDED THAT THE PROJECT WAS A SUCCESS. INFORMATION PROVIDED IN PARAGRAPH I ABOVE ALSO INDICATES THAT THE PROJECT WAS SUCCEEDING IN MEETING THE GOAL AND PURPOSE. HOWEVER, THE TEAM WILL NEED TO REASSESS PROJECT ACCOMPLISHMENTS AND DETERMINE THE EXTENT OF THAT SUCCESS.

B. THE TEAM WILL NEED TO STUDY THE PROJECT INPUTS PROVIDED UNDER PHASE I, DETERMINE WHETHER THE SAME TYPE OF INPUTS ARE APPROPRIATE FOR PHASE II, OR IF A DIFFERENT MIX OF INPUTS IS NEEDED, RECOMMENDING WHAT THAT MIX SHOULD BE.

C. THE GRZ HAS ADOPTED AN ADAPTIVE RESEARCH PLANNING TEAM (ARPT) APPROACH TO HELP BRIDGE THE GAP OF INFORMATION FLOWING BETWEEN THE SMALL SCALE FARMERS (SSF) AND THE COMMODITY RESEARCH TEAMS (CRT) AS TO WHAT THE REAL NEEDS ARE AMONG THE SSFs. THE TEAM NEEDS TO ASSESS THE PROGRESS MADE THROUGH THIS APPROACH, DETERMINE WHETHER THE ARPT APPROACH IS THE MOST APPROPRIATE METHODOLOGY TO ACCOMPLISH DESIRED OBJECTIVES, AND IF SO, RECOMMEND WHAT NEEDS TO BE DONE TO STRENGTHEN AND IMPROVE THE PERFORMANCE OF THE ARPT.

D. THE TEAM WILL NEED TO ASSESS THE TRAINING THAT HAS BEEN PROVIDED, THE NUMBER OF PARTICIPANTS THAT HAVE BEEN TRAINED, THE APPROPRIATENESS OF THAT TRAINING, AND MAKE RECOMMENDATIONS ON THE TYPE OF TRAINING, WHICH NEEDS TO BE INCLUDED UNDER PHASE II.

E. THE TEAM WILL NEED TO ASSESS THE IMPACT THAT THE RECENT LOSS OF SOME RATHER HIGHLY QUALIFIED MAWD TECHNICAL STAFF TO THE PRIVATE SECTOR IS HAVING ON PROJECT IMPLEMENTATION AND DEVELOPMENT, AND RECOMMEND WAYS TO REDUCE THE CHANCES OF LOSS OF TRAINED TECHNICAL STAFF IN THE FUTURE.

F. THE DESIRABILITY OF INCREASING THE FOCUS ON AGRICULTURAL EXTENSION HAS BEEN TENTATIVELY IDENTIFIED. THEREFORE, THE TEAM WILL NEED TO ASSESS EXTENSION, DETERMINE WHETHER OR NOT THERE IS A NEED FOR INCREASED FOCUS, AND IF SO, MAKE RECOMMENDATIONS ON WHAT SHOULD BE DONE UNDER PHASE II.

BEST AVAILABLE DOCUMENT

-4-

G. THE TEAM SHOULD ASSESS THE WORLD BANK PROPOSAL ON AGRICULTURAL RESEARCH AND EXTENSION, AND WHAT OTHER DONORS ARE DOING IN RESEARCH AND EXTENSION, AND MAKE RECOMMENDATIONS ON WAYS THE PROJECT UNDER PHASE I CAN BEST COMPLEMENT AND SUPPORT WHAT IS BEING DONE BY THE WORLD BANK AND OTHER DONORS, WHILE AT THE SAME TIME ACCOMPLISHING THE PROJECT'S GOAL AND PURPOSE.

H. THE GRZ HAS MADE SOME MAJOR MACRO-ECONOMIC AND SECTORAL POLICY CHANGES IN RECENT MONTHS; THEREFORE, THE TEAM WILL NEED TO ASSESS THE IMPACT OF THOSE POLICY CHANGES ON AGRICULTURAL DEVELOPMENT, AND IDENTIFY ANY NEEDED CHANGES OF DIRECTION/FOCUS OF THE PROJECT UNDER PHASE II.

I. UNDER PHASE I OF THE PROJECT, THERE HAS BEEN A GREAT DEAL OF EFFORT TO INCREASE PRODUCTION OF MAIZE, SOYBEANS, AND SUNFLOWER; THEREFORE, THE TEAM WILL NEED TO ASSESS THE PROGRESS OF THOSE EFFORTS, AND ASSESS THE CAPABILITIES (PRESENT AND FUTURE) OF THE ZAMBIAN INFRASTRUCTURE TO HANDLE, PROCESS, AND MARKET ANY ADDITIONAL INCREASE IN PRODUCTION OF THOSE MAJOR CROPS. RECOMMENDATIONS SHOULD BE MADE AS TO WHAT CAN OR SHOULD BE DONE UNDER PHASE II OF THE PROJECT, IF ANYTHING, TO IMPROVE THE PERFORMANCE OF THAT INFRASTRUCTURE.

72

J. THE NEED TO STRENGTHEN THE LINKAGES BETWEEN UNZA, MAWD AND USAID HAS BEEN IDENTIFIED; THEREFORE, THE TEAM WILL NEED TO ASSESS THIS NEED, IDENTIFY AND RECOMMEND WAYS THAT THESE LINKAGES CAN BE STRENGTHENED UNDER PHASE II OF THE PROJECT.

K. EVEN BEFORE THE DEVALUATION OF THE KWACHA, THE GRZ WAS HAVING DIFFICULTY IN PROVIDING AN ADEQUATE BUDGET TO COVER RECURRENT COSTS FOR PROJECT SUPPORT. SINCE THE DEVALUATION OF THE KWACHA, THE SITUATION HAS BECOME MORE DIFFICULT; THEREFORE, THE TEAM WILL NEED TO ASSESS THE GRZ'S ABILITY TO COVER RECURRENT COSTS IN SUPPORT OF PHASE II PROJECT ACTIVITIES, AND RECOMMEND STEPS NEEDED TO INCREASE GRZ'S CONTRIBUTION OF FUNDS TO COVER RECURRENT COSTS.

L. BY THE TIME PHASE II OF THE PROJECT IS READY FOR IMPLEMENTATION THE ZAMARE PHASE I TA WILL HAVE BEEN IN COUNTRY FIVE YEARS; THE TEAM NEEDS TO ASSESS THE TA REQUIREMENTS UNDER PHASE II, RECOMMEND WHAT IS NEEDED TO MEET THOSE REQUIREMENTS AND FOR HOW LONG.

#### IV. PID PREPARATION:

BASED ON THE ABOVE ANALYSES AND FINDINGS, THE TEAM SHOULD DETERMINE WHETHER A ZAMARE PHASE II PROJECT IS JUSTIFIED. IF IT APPEARS THAT THIS IS THE CASE, THEN THE TEAM SHOULD PREPARE A PID FOR ZAMARE II (611-2228). THE TEAM WILL DEVELOP THE PID IN A MANNER TO OVERCOME THOSE PROJECT WEAKNESSES IDENTIFIED IN THE EVALUATION, AND TO INCREASE THE FOCUS ON THOSE ASPECTS OF RESEARCH AND EXTENSION WHICH THE EVALUATION INDICATED WERE IN NEED OF MORE EMPHASIS. THE TEAM WILL ALSO CONSIDER CAREFULLY THE POTENTIAL ELEMENTS OF PHASE II IDENTIFIED BY THE CURRENT PHASE I CONTRACTOR.

#### V. TEAM COMPOSITION:

REDFC/ESA FDC  
 REDSO/ESA ADO  
 SOCIAL SCIENTIST (FROM AID/W OR OTHER SOURCE)  
 USAID/ZAMBIA AGRICULTURAL ECONOMIST  
 USAID/ZAMBIA ADO  
 USAID/ZAMBIA AGRICULTURAL ASSISTANT

#### VI. TIME REQUIRED:

3-4 WEEKS.

MISSION WILL ADDRESS THE ISSUES RAISED IN REF C AT THE TIME OF PREPARING THE SOW FOR THE SOCIAL SCIENTIST WHICH WILL BE SENT SEPT. HARE

BT

#1404

NNNN

73

## SUMMARY OF ZAMARE PROJECT EVALUATIONS

Formative Evaluation (September 1983):- The Executive Summary of the Evaluation States:

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.

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. 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.

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.

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.

- 2 -

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.

Mid Term Evaluation (June 1985) - The Executive Summary states:

This project has made excellent progress toward achieving the objectives of the program. Most notably is training. Thirty four participants were planned for in the project paper. Those have all departed and all will have completed their program during the life of the project. Short training has equally been as successful and is on schedule.

The project was designed to strengthen the commodity research program on maize, sunflower, and soybeans. The project paper also called for farming systems research efforts through the applied Research Planning Team (ARPT). The ARPT in addition to conducting surveys and designing applied research to resolve constraints to small farmer problems made a direct link to extension and central research through the RELO (Research Extension Liaison Officer). This was the first project to attempt this approach through the RELO concept.

Implementation within the first two and half years has been excellent. The implementing contractor and cooperating institutions have fielded a team professionally qualified and who have as well immersed themselves into the structure of the Ministry of Agriculture and Water Development (MAWD) where they have found outstanding success in working with their host country counterparts. The program has been so successful that logistic problems have occurred because of increased activity and involvement over what the design paper envisioned. These have been and continue to be resolved as they occur.

The ARPT concept has been very successful. Problems of small farmers are being identified, research has been designed to investigate solutions to those problems and the RELO has been shown to be a viable concept.

The RIG Audit (October, 1985)

The auditor's report is not as strong in its support of the projects success. Nonetheless, the report states that "the project was progressing satisfactorily toward meeting both research and participant objects." However, the report identified the failure of the GRZ to contribute adequately to

75

- 3 -

the project. Even FL480 generated local currency programmed to support the project had not been disbursed by the GRZ. The report also faulted the system for not disseminating relevant research results to the farmers. Finally in returning to the project design the report stated:

The project lacked quantified outputs or benchmarks to measure progress towards project objectives. Therefore, project progress and the impact on small farmers could not be measured. RIG/A/N recommended that AID/Zambia quantify project outputs and establish benchmarks. According to AID/Zambia officials efforts to quantify outputs and benchmarks had already been initiated.

76

ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION (ZAMARE) PROJECT - SHORT-COURSE TRAINING LIST  
 PARTICIPANTS WHO COMPLETED SHORT-TERM TRAINING AS OF MARCH 31, 1986

April 6, 1986 ANNEX.C.

NAME	DEGREE	BRANCH	POSITION	COURSE NO. TITLE AND DURATION	UNIVERSITY	DEPT. DATE	RET. DATE	BRANCH	PRESENT POSITION
Mary Musaka	BSc. Nutrition	Ext.Lusaka H/Qtrs	Home Economics Officer	TC120-7-Soybean Processing for Food Uses - 7 weeks	UIUC				
J.E.Kulilo	MSc/DIC	Res/NCSR	Scientific Res. Officer	Comprehensive Vector Control - 8 weeks	University of S. Carolina	9/4/83	9/6/83	Resigned Research NCSR	Scientific Res. Officer
Medson Chisi	BSc. Agriculture	Res. Mt.Makulu	Agronomist	TC110-17-Ag.Res Methodology -7 weeks	University of Missouri			Res. Mt.Makulu	Agronomist
Charles N Nkhoma	BSc. Agriculture	Res. Mt.Makulu	Agronomist	- ditto	- ditto -	-ditto-	-ditto-	- ditto -	- ditto -
C.M.M. Chawe	BSc. Agriculture	Res. Luapula	- ditto -	- ditto -	- ditto -	-ditto-	-ditto-	- ditto -	- ditto -
John C Musanya	BSc. Agriculture	Res. Chipata	- ditto -	- ditto -	- ditto -	-ditto-	-ditto-	Research Mt. Makulu	- ditto -
Weasley C MUKWONO	Diploma Agriculture	Res Kabwe	Agricultural Supervisor	TC130-3 Seed Improvement 9 weeks	Mississippi State University	-ditto-	-ditto-	Research Chipata	- ditto -
M.C. Macaanta	Diploma Agriculture	-ditto-	- ditto -	- ditto -	- ditto -	-ditto-	-ditto-	Research Kabwe	Agric. Supervisor
J.B. Siakantu	MSc. Irrigation	Res. N.I.R.S.	Irrigation Engineer	TC120-1-Irrigation Problems and Practices - 8 weeks	Colorado State University	-ditto-	-ditto-	- ditto -	- ditto -
Vitalis Munene	Diploma Agriculture	Research Mt. Makulu	Agricultural Supervisor	TC130-5- Plant Quarantine - 8 weeks	USDA/APHIS/WASHINGTON			Research N.I.R.S.	Irrigation Engineer
Russell Mulele	MSc. Ag.Ext	Extension Lus/H/Qtrs	Deputy Director of Agric(Ext)	TC110-5.Dev.& Op of Ag Ext.Programs-10 Weeks	University of Wisconsin		14/11/83	Research Mt. Makulu	Agric. Supervisor
Robert G Hilina	Diploma Agriculture	Extention Chipata	P.A.O.	- ditto -	- ditto -	29/8/83	- ditto -	Ext.H/Qtrs Lusaka	Deputy Dir of Ag.(Ext)
Brian K Chivunda	MSc. Ag. Ext.	Extension Lus.H/Qtrs	Senior Extension Trng Officer	- ditto -	- ditto -	- ditto -	- ditto -	Extension Chipata	P.A.O.
Suzyo A Chellah	Cert. Home Econ-	Extension S/Province	Home Economics Officer	- ditto -	- ditto -	- ditto -	- ditto -	Extension Lus/H/Qtrs	Chief Ext. Trng.Officer
				- ditto -	- ditto -	- ditto -	- ditto -	Ext. S/Province	Seconded to S/Prov. Ag. Dev.Prog. Planning Off

4

ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION (ZAMARE) PROJECT- SHORT-COURSE TRAINING LIST  
 PARTICIPANTS WHO COMPLETED SHORT- TERM TRAINING AS OF MARCH 31, 1986

April 6, 1986

2.

NAME	DEGREE	BRANCH	POSITION	COURSE NO. TITLE AND DURATION	UNIVERSITY	DEPT. DATE	RET. DATE	BRANCH	PRESENT POSITION
Eleanor Muzymba	Diploma Nutrition	Extension H/Q Lusaka	Acting Senior Home Econ Off.	TC120-7-Soybean Processing for Food Uses - 10 Weeks	UIUC	7/5/84	5/7/84	Extension H/Q/Lusaka on Study Leave	Home Econ Officer Training
Scholastica Mubuya	Certificate Nutrition	Extension Z. College of Ag. Monze	Home Economics Officer Trng	- ditto -	- ditto -	9/5/84	5/7/84	Extension Z.C.Ag. Monze	Practical Instructor
Simon C. Hachanci	Certificate	Research Mt. Makulu	Senior Exec. Officer	TC140-23-Mgmt of Ag. Org in Dev. Countries -7 weeks	USDA/Washington	16/5/84	19/7/84	Research Mt. Makulu	Senior Exec Officer
Stanislaus Nakumbula	MSc.Agric.	Reserach Magoye	Soybean Agronomist	TC120-6-Technical & Econ Aspects of Soybean Prod 12 Weeks	UIUC	20/5/84		Research Magoye (Resigned, with Nakambala)	Soybean Agronomist
Samson Mufaya	Certificate	Research NIRS/MAZ	Chief Ag. Supervisor	TC130-4-Range Mgmt & Forage Prod.-9 weeks	New Mexico State University	20/5/84	30/7/84	Research NIRS/MAZBUKA	Chief Ag. Supervisor
Cassim E A Masi	BSc.Agric	Research Mt. Makulu	Entomologist	TC110-17-Ag. Research Methodology-7 weeks	University of Missouri	27/5/84		Research Mt. Makulu	Entomologist
Abraham Ngoliya	Diploma Agriculture	Research Mt. Makulu	Ag. Superv.	- ditto -	- ditto -	- ditto -		Research Mt. Makulu	Agricul. Supervisor
Herbert Masole	Diploma Agriculture	Research Luapula	Ag. Superv.	- ditto -	- ditto -	- ditto -		Research Luapula	Agric Supervisor
Sikuniso Mupo	Diploma Agriculture	Research Kaoma	Ag. Superv.	- ditto -	- ditto -	- ditto -		Research Kaoma	Agric. Supervisor
Macwani Nawa	Diploma Agriculture	Research Choma	Plant Inspector	TC130-3 - Seed Improvement	Mississippi State University	27/5/84		Research Choma	Plant Inspector
Gary F. Hambiliki	Diploma Agriculture	Research Mt. Makulu	Agric. Supervisor	- ditto -	- ditto -	- ditto -		Research Mt. Makulu	Agric. Supervisor
Siyambango Siyoto	MSc. Animal Science	Extension Kalabo	PAO Kalabo	TC110-5.Dev. & Op. of Ag.Ext.Prog.- 9 weeks	University of Missouri	3/6/84		Extension Kalabo	PAO Kalabo
Leighton J Mwaile	BSc. Agric.	Extension Mongu	PAO Mongu	- ditto -	- ditto -	- ditto -		Extension Mongu	PAO Mongu
Donald S Mwachshi	BSc Agric	Research NIRS/MAZ	Hort. Officer NIRS/MAZABUKA	TC130-8-Integrated Pest Management-6 weeks	Purdue University	3/6/84		Research NIRS/MAZ	Hort.Off NIRS/MAZ
Joe Milimo	Diploma Agriculture	Research Mt. Makulu	Plant Inspector	TC150-2-Grain Storage and Marketing-6 weeks	Kansas State University	3/6/84		Research Mt. Makulu	Plant Inspector

88

ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION (ZAMARE) PROJECT - SHORT-COURSE TRAINING LIST  
 PARTICIPANTS WHO COMPLETED SHORT-TERM TRAINING AS OF MARCH 31, 1986

April 6, 1986

3.

NAME	DEGREE	BRANCH	POSITION	COURSE NO. TITLE AND DURATION	UNIVERSITY	DEPT. DATE	RET. DATE	BRANCH	PRESENT POSITION
Westone Msikita	BSc. Agric.	Research NIRS/MAZ	Hort. Officer NIRS/MAZabuka	TC130-11-Veg. Crop Prod & Marketing-8 weeks	Rutgers University	24/6/84		Research NIRS/MAZ	Hort. OFF NIRS/MAZ
Margaret Lubinda	Diploma Agriculture	Extension Kalulushi	Prin. Ag. Superv Lecturer	- ditto -	- ditto -	- ditto -		Extension Kalulushi	Prin. Ag/Sup Lecturer
Howard B. Chishala	Diploma Agriculture	Extension Kalulushi	Ag. Superv Lecturer	- ditto -	- ditto -	- ditto -		Extension Kalulushi	Ag. Superv Lecturer
David C Kambikiya	BSc. Agriculture	Extension Kalulushi	Hort. Officer Training	TC110-15-Training of Trainers for Ag Rural Dev.-8 weeks	USDA/Washington	3/7/84		Extension Kalulushi	Horticulture Officer Training
Irene Nawa	Diploma Agriculture	Research Mt. Makulu	Agric Supervisor	Seed Pathology 4 weeks	Washington State University	1/7/84	2/8/84	Research Mt. Makulu	Research Assistant
David Kajimo	Certificate Agriculture	Extension Kalulushi	Principal Z.C.H.T.	TC110-5-Dev. & Op. of Ag. Ext. Prog. - 10 weeks	University of Wisconsin	26/8/84		Extension Kalulushi	Principal Z.C.H.T.
Obed Kampamba	Certificate Agriculture	Extension Kasama	PAO Kasama	- ditto -	- ditto -	- ditto -		Extension Kasama	PAO Kasama
Ephriam Simunyola	Certificate Agriculture	Extension Solwezi	PAO Solwezi	- ditto -	- ditto -	- ditto -		Extension Solwezi	PAO Solwezi
Gladys Mlongoti	Diploma Agriculture	Research Mt. Makulu	Agric Supervisor	TC130-5- Plant Quarantine - 8 weeks	USDA/APHIS/ Washington	5/8/84		Research Mt. Makulu	Agric Supervisor
Arundel Sakala	Diploma Agriculture	Research Mt. Makulu	Agric Supervisor	TC150-7-Postharvest Loss Reduction of Perishable Goods - 5 weeks	University of Idaho	26/8/84		Research Mt. Makulu	Agric. Supervisor
Chosani A Njovu	MSc. Agric Economics	Research Mt. Makulu	Farm Mgmt & Res. Officer	TC140-33 - Basic Agric. Survey Statistics & Methods - 6 weeks	USDA	12/9/84		Research Mt. Makulu	Farm Mgmt and Res. Officer
Eric M Kaluba	MSc. Animal Science	Research Choma	OIC/Animal Husb. Officer	TC140-24- Management of Ag. Research - 6 weeks	USDA/Washington	22/7/84	9/9/84	Research Choma	OIC/Animal Husb. Off.
West K Chita	MSc Agriculture	Research Magoye	OIC Magoye	- ditto -	- ditto -	- ditto -	- ditto -	Research Magoye	OIC Magoye
Moses S.C. Simwambana	BSc. Agriculture	Research Luapula	Agronomist OIC	- ditto -	- ditto -	- ditto -	- ditto -	Research Luapula	Agronomist OIC

55

ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION (ZAMARE) PROJECT - SHORT-COURSE TRAINING LIST  
 PARTICIPANTS WHO COMPLETED SHORT-TERM TRAINING AS OF MARCH 31, 1986

April 6, 1986

4.

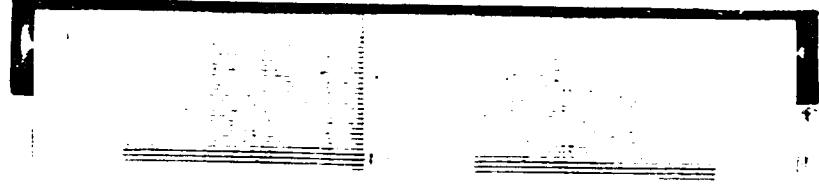
<u>NAME</u>	<u>DEGREE</u>	<u>BRANCH</u>	<u>POSITION</u>	<u>COURSE NO, TITLE AND DURATION</u>	<u>UNIVERSITY</u>	<u>DEPT. DATE</u>	<u>RET. DATE</u>	<u>BRANCH</u>	<u>PRESENT POSITION</u>
Richard D. Nwenya	Cert.Sc. Lab.Tech	Research Mt.Makulu	Research Asst.	Soil and Plant Analysis - 5 weeks	IITA, Ibadan Nigeria	12/1/85	16/2/85	Research Mt. Makulu	Research Asst.
Margdalene Mozinta	Diploma Nutrition	Extension Chipata	Home Economics Officer	Soybean Utilization Workshop 2 weeks	Peradeniya Sri Lanka	12/1/85	27/1/85	Extension Chipata	Home Econ Officer
Scholastica Mabuya	Certificate Nutrition	Extension Monze	Practical Instructor	- ditto -	- ditto -	-ditto-	-ditto-	Extension Monze	Practical Instructor
Eleanor M. Lungu	Diploma Nutrition	Extension HQ/Lusaka	Actg Sr.Youth Ext. Officer	- ditto -	- ditto -	-ditto-	-ditto-	Extension HQ/Lusaka	Actg Sr.Yth Ext. Officer
Joseph M Mwale	MSc.Food Technology	NCSR Lusaka	Head,Food Tech Research Unit	- ditto -	- ditto -	-ditto-	-ditto-	NCSR Lusaka	Head,Food Tech,Res,Un
Yeffi Chanda	BSc. Agriculture	Research KABWE	Farm Mgmt Off Kabwe	Fert.Effic.Res & Tech Transfer W/shop for Africa 1 week	Douala Cameroon	17/1/86	26/1/86	Research Kabwe	Fm.Mgmt Officer
Russell Mulele	MSc. Agric Extension	Extension HQ/Lusaka	Deputy Director of Agric(Ext)	- ditto -	- ditto -	-ditto-	-ditto-	Extension HQ/Lusaka	Dep.Dir. Agric.(Ext)
Dharati K Patel	Ph.D Nematode	Research Mt. Makulu	Chief Agric. Res. Officer	Agricultural Research Policy Seminar - 2 weeks	University of Minnesota	10/4/85	5/5/85	Research Mt. Makulu	Chief Ag. Res. Off.
Kanona Mulonda	BSc. Agricultural Extension	Extension Chipata	Crop Husbandry Officer - Chipata	TC110-14-Application & Diff of Ag.Res.Results to the Community Level - 6 weeks	Iowa State University	19/5/85	17/7/85	Extension Chipata	Crop Husb Officer Chipata
Bernadette Habowa	MSc Agronomy	Research Mt. Makulu	Sunflower Plant Breeder	TC110-17-Agric. Research Methodology - 7 weeks	University of Missouri	26/5/85	23/6/85	Research Mt. Makulu	National Oilseed Coordinator
Charles Mvumbula	MSc.Plant Breeding	Research Mt. Makulu	Maize Agronomist	- ditto -	- ditto -	-ditto-	-ditto-	Research Mt. Makulu	Maize Agronomist
Godfrey P. Mwila	BSc. Agric. Science	Research Mufulira	Agronomist	- ditto -	- ditto -	-ditto-	-ditto-	Research Mufulira	Agronomist
Jones Kalekanda	BSc. Agric Science	Research Mt. Makulu	Maize Breeder	- ditto -	- ditto -	-ditto-	-ditto-	Research Mt. Makulu	Maize Breeder
George Mulenga	MSc. Plant Pathologist	Research Mt. Makulu	Plant Pathologist	TC130-8- Integrated Pest Management	Purdue University	3/6/85	8/8/85	Research Mt. Makulu	Plant Pathologist

ZAMBIAN AGRICULTURAL RESEARCH AND EXTENSION (ZAMARE) PROJECT - SHORT-COURSE TRAINING LIST  
 PARTICIPANTS WHO COMPLETED SHORT-TERM TRAINING AS OF MARCH 31, 1985

April 6, 1986

NAME	DEGREE	BRANCH	POSITION	COURSE NO. TITLE AND DURATION	UNIVERSITY	DEPT DATE	RET. DATE	BRANCH	PRESENT POSITION
Bodwin T C Khondowe	Diploma Agriculture	Research Choma	Ag. Superv Crops	TC120-5- Soil Testing & Fert. Management - 8 weeks	Auburn University	3/6/85	12/8/85	Research Choma	Ag. Superv Crops/Choma
Humphrey S C Goma	Diploma Agriculture	Research Misamfu	Agricultural Supervisor	- ditto -	- ditto -	-ditto-	-ditto-	Research Misamfu	Agric. Supervisor
Martin C Kaoma	MSc. Ag. Extension	Extension Choma	Extension Trng Officer	TC110-5-Dev. & Op of Agric Extension Programs-9 weeks	University of Missouri	3/6/85	12/8/85	Extension Choma	Ext. Trng Officer
Evans K Mphande	MSc. Ag. Extension	Extension Kabwe	Extension Trng Officer	- ditto -	- ditto -	-ditto-	-ditto-	Extension Kabwe	Ext. Trng Officer
Paul Maimbo	MSc. Ag. Extension	Extension Mongu	Extension Trng Officer	- ditto -	- ditto -	-ditto-	-ditto-	Extension Mongu	Ext. Trng Officer
Georgina M Simwanza	Diploma Agriculture	Research Misamfu	Agricultural Supervisor	TC120-1 - Irrigation Problems & Practices-8 Weeks	Colorado State University	10/6/85	12/8/85	Research Misamfu	Agric. Superv.
Francis Mweemba	BSc. Agric Science	Extension Chapula Kalulushi	Lecturer Zambia College of Hort. Trng	TC130-11-Vegetable Crop Prod and Marketing-8 weeks	Rutgers University	24/6/85	26/8/85	Extension Chapula Kalulushi	Hort. Training Officer
Isaac C. Nkhungulu	MSc Horticulture	Extension Head Quarters Lusaka	Chief Horticultural Officer	Organization & Op. of Ag. Ext Services in Int'l Setting - 5 weeks	INTERPAKS University of Illinois UC	12/9/85	22/10/85	Extension Head Quarters Lusaka	Chief Horticultur Officer
Josias P Lungu	MSc. Ag. Extension	Extension Lusaka	PAO-Lusaka Province	TC110-5-Dev. & Op pf Agric Extension Programs-10weeks	University of Wisconsin	26/8/85	11/11/85	Extension Lusaka	PAO/Lus Province
Thomas Mubita	MSc. Ag. Extension	Extension Ndola	PAO Ndola	- ditto -	- ditto -	- ditto -	-ditto-	Extension Ndola	PAO Ndola
Rita M Mwampole	MSc. Ag. Extension	Extension K/Q/Lusaka	Senior Ext. Trng. Officer	- ditto -	- ditto -	- ditto -	-ditto-	Extension HQ/Lusaka	Senior Ex t Trng. Off
Lingston P Singogo	MSc. Crop Agronomy	Extension Kabwe	PAO Kabwe	- ditto -	- ditto -	- ditto -	-ditto-	Extension Kabwe	PAO Kabwe
Jason K Sinkamba	Diploma Agriculture	Extension Luapula	PAO Luapula	- ditto -	- ditto -	- ditto -	-ditto-	Extension Luapula	PAO Luapula

8



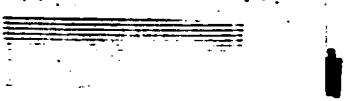
AGRICULTURAL RESEARCH INSTITUTIONS 1986

<u>NAME</u>	<u>BRANCH</u>	<u>POSITION</u>	<u>TITLE OF DEGREE</u>	<u>DESIRED DEGREE</u>	<u>FIELD OF STUDY</u>	<u>PROPOSED DEPT. DATE</u>
1. P.C. Simwanza	Research Kasama	Agronomist	BSc. Agriculture	MSc.	Agronomy/Crop Science	May 1986
2. Charles Chewe	Research Mt. Makulu	Agronomist	BSc Agriculture	MSc.	Agronomy/Plant Breeding	June 1986
3. Irene Nawa(Ms)	Research Mt. Makulu	Agric. Superv. Seed Pathology	Diploma in Agriculture	BSc.	Seed Pathology	June 1986
4. Herbert Masole	Research Mansa	Technical Officer	Diploma in Agriculture	BSc	Agronomy (Maize)	June 1986
5. Martin N. Mbewe	Research Mt. Makulu	Legume Breeder	BSc Agriculture	MSc	Legume/Plant Breeding	June 1986
6. R. Kwaanbwa	Extension HQ/Lusaka	Principal Ag. Supervisor	Diploma in Agriculture	BSc.	Agricultural Economics	June 1986
7. V. Mushiba	Extension Solwezi	Crop Husbandry Officer	BSc Agriculture	MSc	Agronomy	June 1986
8. E.X.Sikapande	Res/Ext Mr.Makulu	Research Extension Liaison Officer	BSc. Agronomy	MSc	Agric.Ext and Education	June 1986
9. Bruce Mubuka	Extension Mansa	Agricultural Supervisor	Diploma in Agriculture	BSc	Agriculture	June 1986
10. A. Siyumbano	Extension Lusaka	Practical Instructor	Diploma in Agriculture	BSc.	Agriculture	June 1986
11. H. Siangonya	Extension Kalabo	Agricultural Supervisor	Diploma in Agriculture	BSc	Agriculture	June 1986
12. E. Chin'gembu	Extension Solwezi	Agricultural Officer	Diploma in Agriculture	BSc	Agriculture	June 1986

Ngono

KALONWA

PS



## ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION PROJECT (ZAMARE)

- SHORT-TERM TECHNICAL TRAINING -NGMINATIONS FOR 1986

<u>NAME OF PARTICIPANT</u>	<u>BRANCH</u>	<u>POSITION</u>	<u>TITLE OF DEGREE</u>	<u>COURSE NO &amp; TITLE</u>	<u>UNIVERSITY</u>	<u>DURATION</u>
1. A.G. Ngoma	Extension Ndola	Principal Ag Supervisor	Diploma - Agric/ Rural Development	TC110-5 Dev.& Op of Ag.Ext.Programs	U.of Wisconsin	10 weeks Sept-Nov
2. H.L. Moomba	Extension Choma	Principal Ag Supervisor	Diploma in Agriculture	- ditto -	- ditto -	-ditto-
3. Edith Kusweje(Lungu)	Extension Kabwe	Crop Husbandry Officer	BSc. Agricultural Chemisty	- ditto -	- ditto -	-ditto-
4. J.M. Chintu	Extension Kabwe	Provincial Agric Officer	MSc. Agricultural Extension	- ditto -	- ditto -	-ditto-
5. E. Kasapu (Mrs)	Extension Kabwe	Agric. Supervisor Home Economics	Certificate Home Economics	TC120-7. Soybean Processing for Food Uses	UIUC - INTSCY	7 weeks May-July
6. F. Nkhoma	Extension Mumbwa	Agric. Assistant Home Economics	Certificate Gen. Ariculture	- ditto -	- ditto -	-ditto-
7. P. Ngangula	Extension HQ/Lusaka	Deputy Head Rural Info Serv.	Diploma in Adult Education	TC110-3. Communi-cations & Media Strategies for Ag. and Rural Dev.	Iowa State University	5 weeks June - August
8. B.K. Patel (Ms.)	Research HQ/Lusaka	Chief Agricultural Research Officer	Ph.D. Nematode	TC140-24. Management of Agric. Research	UDCA/ Washington	6 weeks Jul-Sept.
9. M. Gumbo	Research Mt.Makulu	Maize Agronomist	BSc. Agricultural Science	TC110-17. Agric. Res. Methodology	University of Missouri	7 weeks June - July
10. C. Lubasi	Extension HQ/LUSAKA	Chief Crop Husbandry Officer	MSc. Agricultural	Organization & Mgmt of Agric.Ext. Services	INTERPAKS UIUC	5 weeks June - July

ZAMBIA AGRICULTURAL RESEARCH AND EXTENSION PROJECT (ZAMARE)  
- SHORT-TERM TECHNICAL TRAINING  
NOMINATIONS FOR 1986

<u>NAME OF PARTICIPANT</u>	<u>BRANCH</u>	<u>POSITION</u>	<u>TITLE OF DEGREE</u>	<u>COURSE NO &amp; TITLE</u>	<u>UNIVERSITY</u>	<u>DURATION</u>
11. J. B. Mutelo	Research HQ Lusaka	Asst. Director of Agric.(Res.)	MSC. Agric. Engineering	Agricultural Research Policy Seminar	University of Minnesota	2 weeks 11/4-25/4
12. S. Mulickela	Research HQ Lusaka	Head, Seed Cert. Institute	BSc. Seed Technology	- ditto -	- ditto -	- ditto -

78-84

**WORKSHOPS FULLY OR JOINTLY SPONSORED/CONDUCTED BY THE ARPT/CP - 1985**

1. Semi-Annual LIMA Training, Keembe. 1. February 18-22, 1985: 41 participants (35 Block Supervisors, 6 Crop Husbandry Officers), 1,640 man hours of training.
2. Farming Systems Research/Extension Workshops (FSR/E-W)
  - (a) Kabwe Rural & Urban District (FSR/E-W), March 18-21, 1985: 34 participants (29 male, 5 female), 1,088 man hours of training.
  - (b) Mkushi District (FSR/E-W), April 1-4, 1985: 10 participants (8 male, 2 female), 280 man hours of training.
  - (c) Serenje District (FSR/E-W), April 15-18, 1985: 33 participants (31 male, 2 female), 1,056 man hours of training.
3. Crop Husbandry District Workshop, April 24-27, 1985: 19 participants (14 field supervisors, 5 lecturers), 608 man hours of training.
4. Extension Program Planning, Keembe F. I., May 5-9, 1985: 35 participants (29 Camp Officers, 6 Block Supervisors), 1,260 man hours of training.
5. Effective Communication and Teaching Skills Workshop, Keembe F. I., June 17-19, 1985: 27 participants, 540 man hours of training.
6. Research Management Workshop (UMES); Lusaka, Kafue, Magoye; August 19-30, 1985: 50 participants (25 tractor operators, 800 man hours of training; 17 farm equipment mechanics, 648 man hours of training; 8 farm managers, 392 man hours of training), total man hours of training: 1,840.
7. Pesticide Use and Safety Workshop, NRDC, August 22-24, 1985: 31 participants, 620 man hours of training.
8. Farming Systems Research Workshop, (FSSP/UIUC - INTERPAKS), October 27 - November 1, 1985: 25 participants (17 Zambians, 8 Malawians), 700 man hours of training.
9. Trials Assistants Training Workshop, November 12-15, 1985: 5 participants, 125 man hours of training.

The Activities of the International Agricultural Research Centers Which Should Be of Particular Interest to Zambia

Center	Activities
IITA	Research with maize, rice, cassava, sweet potatoes, cowpeas, soybeans, and peasant cropping systems. Training program for scientists and production specialists.
ILCA	Research in livestock and pasture management, and training programs in these fields of activity.
ILRAD	Animal disease research, and the training of scientists in the techniques of disease control.
WARDA	Rice research, variety trials, seed multiplication and distribution, and rice production training courses.
ICRISAT	Research with millet, sorghum, groundnuts, pigeon peas and chick peas, and water management systems. Training programs for scientists and production specialists.
CIMMYT	Research with wheat, triticale, barley, and maize, and production training courses for these crops.
CIAT	Research with wheat, triticale, barley, and maize, and production training courses for these crops.
IRRI	Rice Research, international rice testing nurseries, and training programs for scientists and production specialists.
CIP	Research and training programs with white potatoes, including the development of heat-tolerant varieties for the tropics.
ICARDA	Research with wheat, barley, faba beans and lentils, and dryland farming systems. Training programs for scientists; and production specialists.
ICRAF	Research on agroforestry systems and training programs in these and related areas.
VRDC	Research and training programs with tomatoes, soybeans, cabbages, and sweet potatoes, especially for tropical climates.
SNAR	Materials and workshops on monitoring and evaluation of agricultural research programs.

1. Participants are identified by ZAMARE Team Members and GRZ Officials in the Department of Agriculture.
2. Recommendations are made through the Chief Agricultural Research Officer or the Deputy Directors of Agriculture for Research and Extension and the the Director of Agriculture.
3. Recommendations are then sent to the GRZ Training Officer in the Department of Agriculture.
4. The GRZ Training Officer consults with the ZAMARE Team Leader regarding the availability of funds and whether or not the program recommended is in direct support of the ZAMARE Project.
5. A meeting is then initiated between the Chief Training Officer and the Deputy Directors for Research and Extension to confirm candidates, review Academic Credentials and select the specific training desired.
6. ZAMARE Office contacts UIUC to obtain admission in the best schools for programs desired.
7. When admission in US schools, Universities has been found the GRZ Training Officer is notified and begins the paper work- Paid Study Leave, etc. with the Personnel Dept. in the Department of Agriculture, Cabinet Office, Finance and Manpower Development.
8. GRZ Training Officer submits the papers (Academic papers, etc) to ZAMARE Office for processing.
9. The ZAMARE Office completes the AID required forms and sends them to the AID Training Officer for signature and submission to Washington, D.C.
10. The ZAMARE Office completes IAP66 Forms, Visa Forms, obtains tickets, etc for participant departure.

D.I.

**ZAMARE BUDGET - REVISION II**  
**Highlighting Final Two Operational Years 1985/86 - 1986/87**

<u>Budget Category</u>	<u>Current Budget</u>	<u>Expenditures 12/81-6/85</u>	<u>Estimated Expenditures 7/85-6/86</u>	<u>Estimated Expenditures 7/86-8/87</u>	<u>New Budget Proposed</u>	<u>Current Minus Proposed Total Budget</u>
		( U.S. D O L L A R S )				
1. SALARIES	2,223,437	1,274,971*	475,000	664,500	2,414,471	(191,034)
A. Home Office		280,727	95,000	121,500	497,227	
B. Field Staff		994,244	380,000	543,000	1,917,244	
2. FRINGE BENEFITS	305,926	154,474	66,900	93,800	315,674	(9,748)
A. Home Office			11,900	15,200		
B. Field Staff			55,000	78,600		
3. Travel Support	782,560	413,236	107,500	211,000	731,746	50,814
A. U.S. Travel		41,897	7,500	8,500	57,897	
B. Int'l Travel		214,296	75,000	85,000	379,296	
C. Freight/Storage		139,092	20,000	110,000	269,092	
D. Int'l Per Diem		30,051	5,000	7,500	25,461	
4. Allowances	657,123	194,174	97,000	123,000	417,274	239,849
A. Post Differential		156,752	67,000	89,000	312,752	
B. Educ Allow/Travel		18,045	5,000	5,000	22,045	
C. Local Per Diem		20,477	25,000	29,000	82,477	
5. Other Direct Costs	1,228,774	319,260	219,000	258,500	796,760	432,014
A. Preparation		2,704	1,500	1,500	5,704	
B. Home Off. Oper.		54,125	14,500	19,000	87,625	
C. Field Off. Oper.		85,343	48,000	63,000	196,343	
D. Veh. Fuel/Maint.		45,678	25,000	30,000	101,678	
E. Library		60,354	25,000	25,000	110,354	
F. Publishing		457	5,000	5,000	10,457	
G. Special Studies		69,599	100,000	115,000	284,599	

SS

6. Equip/Mats/Supplies	624,422	369,808	150,000	150,000	669,808	(45,386)
7. Participants	2,964,966	1,283,271	762,500	657,500	2,703,271	261,695
A. Long-Term		805,336	504,000	381,000	1,690,336	
B. Short-Term		292,134	96,500	120,000	508,634	
C. In-Country		954	5,000	2,500	8,454	
D. Unspecified		-	100,000	100,000	200,000	
E. Int'l Travel		184,847	57,000	54,000	295,847	
8. Indirect Costs	1,489,167	1,003,245	260,200	361,200	1,624,765	(135,598)
A. On-Campus Rate			69,200	87,200	-	
B. Off-Campus Rate			191,000	274,100	-	
9. Contingency					602,606	
TOTAL	10,276,375	5,508,069	2,138,100	2,519,600	10,276,375	602,606

These figures represent total for the budget category.

68

AMBIA  
REPORT BY PROJECT  
8/86

DATE : 04/28/86  
REPORT PAGE NO.: 7  
MISSION PAGE NO.: 7

RESEARCH & EXTENS PROJECT OFFICER: DONALD E. ANDERSON

COMMITTED	DISBURSED	UNLIQUIDATED OBLIG/ EAR	ACCRUED	UNEXPENDED OBLIG/ EAR
7,912,694	5,522,100	691,605	C	691,605
2,447,902	2,409,655	38,247	C	38,247
57,231	32,194	35,806	0	35,806
0	C	0	0	0
12,193	C	15,800	0	15,800
1,466	1,466	34	C	34
0	C	17,760	C	17,760
810,902	810,902	0	C	0
583,000	2,267,883	315,117	0	315,117
000,000	C	2,000,000	0	2,000,000
0	C	1,731,159-	C	1,731,159-
3,248	3,248	2,695,752	C	2,695,752
3,248	3,248	0	C	0
0	C	2,695,752	0	2,695,752

MACS-P07A

USAID  
COMPREHENSIVE PIPEL  
AS CF (

OPTICN NO.: 1

OFFICE CODE: 101  
PROJECT NO.: 6110201.00

OFFICE NAME : USAID/ZAMBIA  
PROJECT TITLE: AGRICULTURAL

EARMARK  
DOC. NO

EARMARK  
CNTL NO.

BUDGET PLAN CODE/  
EARMARK DESC.

OBLIGATED/  
EARMARKED

ELEMENT NO. : 1

ELEMENT NAME: TECHNICAL ASSISTANCE

6,213,705

PIOTC0001	ZC00014	GESAB021611KG18	2,447,902
		PROVISION OF TECHNICAL SERVIC	
PIOC-611-0201-4-10052	Z100103	GESAB121611KG18	68,000
		PJ COMMODITIES	
PIOC-611-0201-4-10053	Z100102	GESAB121611KG18	0
		PROJ COMMODITIES	
PIOC-611-0201-4-10054	Z100110	GESAB121611KG18	15,800
		PJ COMMODITIES	
PIOC-611-0201-4-10055	Z100113	GESAB121611KG18	1,500
		250 KG CALCIUM CARBONATE	
PIOC611-0201-4-10053	Z100107	GESAB121611KG18	17,760
		PROCUREMENT OF VEHICLES.	
PIOT611-0201-3-10047	Z100102	GESAB121611KG18	810,902
		TEC. SERVICES-UNIV. OF ILLINOIS	
PIOT611-0201-3-20002	Z200082	GESAB221611KG13	2,583,000
		TEC. SERVICES-UNIV. OF ILLINOIS	
PIOT611-0201-3-00001	Z400495	GESAB421611KG13	2,000,000
		U OF ILLINOIS/LSK 00300	

EARMARKED TOTALS > > > 7,944,864

UNEARMARKED BALANCE 1,731,159-

ELEMENT NO. : 2

ELEMENT NAME: TRAINING

2,699,000

PIOP00008	ZC00016	GESAB021611KG18	3,248
		CONFERENCE ON SOYABEAN SEED	

EARMARKED TOTALS > > > 3,248

UNEARMARKED BALANCE 2,695,752

AMBIA  
 REPORT BY PROJECT  
 8/86

DATE : 04/28/86  
 REPORT PAGE NO. : E  
 MISSION PAGE NO. : E

SEARCH & EXTENS PROJECT OFFICER: DONALD E. ANDERSON

COMMITTED	DISBURSED	UNLIQUIDATED OBLIG/ EAR	ACCRUED	UNEXPENDED OBLIG/ EAR
926,452	877,417	936,083	C	936,083
433,907	401,761	32,146	C	32,146
0	C	0	C	0
54,839	54,839	10,161	0	10,161
37,223	37,223	277	0	277
51,924	51,924	13,076	C	13,076
19,823	19,823	6,177	C	6,177
16,812	16,812	0	C	0
29,419	28,726	5,274	C	5,274
230,736	229,751	7,369	0	7,369
32,000	23,491	8,509	0	8,509
19,769	13,067	20,933	C	20,933
0	0	932,161	C	832,161
112,890	108,331	757,669	0	757,669
6,743	2,248	4,495	0	4,495
106,147	106,083	2,117	0	2,117
0	0	962	C	962
0	0	750,095	C	750,095

92

MACS-P07A

USAID /  
COMPREHENSIVE PIPELIN  
AS CF 04

OPTICN NO.: 1

OFFICE CODE: 101  
PROJECT NO.: 6110201.00

OFFICE NAME : USAID/ZAMBIA  
PROJECT TITLE: AGRICULTURAL R

EARMARK  
DCC. NO

EARMARK  
CNTL NO.

BUDGET PLAN CODE/  
EARMARK DESC.

OBLIGATED/  
EARMARKED

ELEMENT NO. : 3  
ELEMENT NAME: COMMODITIES

1,813,500

PIOC611.0201-4-10026	Z000017	GESA8021611KG18 PROCUREMENT-AEGIS	433,907
LUSAKA 04788	Z100111	GESA8121611KG18 PROC.OF CALCIUM CARBONATE	0
PIOC10012	Z100037	GESA8121611KG18 PROCUREMENT OF COMMODITIES	65,000
PIOC10021	Z100038	GESA8121611KG18 PROCUREMENT OF MOTORCYCLES	37,500
PIOC10023	Z100039	GESA8121611KG18 PROCUREMENT OF VEHICLES	65,000
PIOC10024	Z100040	GESA8121611KG18 PROCUREMENT OF VEHICLES	26,000
PIOC10031	Z100041	GESA8121611KG18 PROCUREMENT OF TOYOTA VEHICLE	16,812
PIOC10034	Z100042	GESA8121611KG18 PROCUREMENT OF MISC HOUSE FUR	34,000
PIOC611-0201-4-10009	Z100016	GESA8121611KG18 PROCUREMENT OF FURNITURE	237,120
PIOC611-0201-4-10050	Z100105	GESA8121611KG18 2 FOUR WHEEL DRIVE TOYOTA VEH	32,000
PIOC611-0201-4-10051	Z100106	GESA8121611KG18 EARM.RES.OF FUNDS	34,000

EARMARKED TOTALS > > > 981,339

UNEARMARKED BALANCE 832,161

ELEMENT NO. : 4  
ELEMENT NAME: CONSTRUCTION

866,000

PIL611-0201-07	Z000020	GESA8021611KG18 MAWD/LABOR-RENOV TECH HSES	6,743
PIOC00028	Z000015	GESA8021611KG18 PROCURRENT OF CONST COMMODITY	108,200
PIOC-611-0201-4-00028	Z100112	GESA8121611KG18 COST OF PYMT.BUILDING BRANCH	962

EARMARKED TOTALS > > > 115,905

UNEARMARKED BALANCE 750,095

93

ZAMBIA  
 REPORT BY PROJECT  
 28/86

DATE : 04/28/86  
 REPORT PAGE NO.: 5  
 MISSION PAGE NO.: 9

SEARCH & EXTENS PROJECT OFFICER: DONALD E. ANDERSON

COMMITTED	DISBURSED	UNLIQUIDATED OBLIG/ EAR	ACCRUED	UNEXPENDED OBLIG/ EAR
503,232	423,066	49,729	C	49,729
503,232	423,066	80,934	C	80,934
0	C	31,205-	C	31,205-
0	0	450,000	0	450,000
0	C	450,000	C	450,000
0	C	0	C	0
0	0	0	C	0
0	0	0	0	0
0	0	0	0	0

94.

MACS-P07A		USAID	
OPTICN NO.: 1		COMPREHENSIVE PIPEL	
		AS OF	
OFFICE CODE:	101	OFFICE NAME :	USAID/ZAMBIA
PROJECT NO.:	6110201.00	PROJECT TITLE:	AGRICULTURAL
EARMARK DCC. NO	EARMARK CNTL NO.	BUDGET PLAN CODE/ EARMARK DESC.	OBLIGATED/ EARMARKED
ELEMENT NO. :	5		
ELEMENT NAME:	OPERATIONAL RECURRENT COSTS		472,795
PIOT10019	Z10C043 GESAB121611KG18 MANAGEMENT SUPPRT COSTS		504,000
	EARMARKED TOTALS > > >		504,000
	UNEARMARKED BALANCE		31,205-
ELEMENT NO. :	6		
ELEMENT NAME:	INFLATION		450,000
	EARMARKED TOTALS > > >		0
	UNEARMARKED BALANCE		450,000
ELEMENT NO. :	7		
ELEMENT NAME:	CONTINGENCY		0
	EARMARKED TOTALS > > >		0
	UNEARMARKED BALANCE		0
ELEMENT NO. :	99		
ELEMENT NAME:	TO BE REDISTRIBUTED-NO INFO.		0
	EARMARKED TOTALS > > >		0
	UNEARMARKED BALANCE		0.

GR



MACS-P07A

USAID /  
COMPREHENSIVE PIPELINE  
AS CF 04

OPTION NO.: 1

OFFICE CODE: 101  
PROJECT NO.: 6110201.00

OFFICE NAME : USAID/ZAMBIA  
PROJECT TITLE: AGRICULTURAL R

EARMARK  
DCC. NO

EARMARK  
CNTL NO.

BUDGET PLAN CODE/  
EARMARK CESC.

OBLIGATED/  
EARMARKED

PROJECT TOTALS > > > 12,515,000

67

ANNEX E

ACTION AGENDA FOR REMAINDER OF PHASE I

1. A formal FSR orientation for the new ZAMARE CP/ARPT team and team leader as soon as possible. Crucial elements of such an event would include the participation of:
  - National ARPT coordinator and his colleagues at Mt. Makulu.
  - the CIMMYT regional DFR/FSP team, including FSR advisors from Zimbabwe.
2. Transport and communications needs for the CP/ARPT and CRT teams must be addressed, perhaps with local currency if no project funds are available. Some 80 percent of the motorcycles given by the project are out of commission and should be repaired or replaced if programs are to be accomplished in CP.
3. Some type of soil analysis facilities (both at Mt. Makulu and Kabwe) must be established for the duration of the project.
4. The Team Leader should be defined more towards servicing the field staff first and MAWD secondly.
5. Micro-computer facilities, and staff to operate them, should be established immediately at Kabwe and Mt. Makulu.
6. A bulk of the ARPT work is being done by trial assistants. Some formal training program should be set up for those people also. Housing is another benefit that could be used to keep up the moral of this group. A roof has gone missing on the Mkushi trial assistant's house for several months.
7. As new CRT members are added they should be made aware that part of their success will be judged on the performance of the CP/ARPT work. The number of farmer approved packages; or recommendations, should also reflect the backstopping that ZAMARE scientific staff has provided the CP/ARPT team. This may be a reorientation for ZAMARE, but it is one that is needed.
8. Establishment of data bases and project information systems is a high priority. Both the ARPT and CRTs should have been much further along than what is now present. This, we feel, has a direct relationship to the lack of computers, documentation controls, and other research tools not in evidence at ZAMARE. All relevant data and documents at the team leader's office should be duplicated and sent to Kabwe, where a collection of relevant reports and publications should be established and maintained throughout the remainder of Phase I.
9. Review special studies procedures for UNZA. This holds considerable potential for research and later for extension.
10. If the \$50,000 originally allocated in the PP is still

available, then a local sociologist should be hired or consulting assistance in sociology should be sought.

11. The national ARPT Sociology Coordinator (and counterpart) should be involved in the planning of the "community approach" to FSR in the CP.

12. Each ZAMARE advisor have prepared, by FACD, guides, manuals, instructional units, etc. for national counterparts so that upon their leaving the project there is some form of institutionalizing the research and extension work to be done. The ZAMARE sunflower agronomist's work is a good start, as is the national plan for soybean breeding done by the ZAMARE soybean breeder.

13. If possible, long-term training should be provided in rural sociology or anthropology for one Zambian during the remainder of Phase I. To date, no training in this area has been provided despite its high priority in the ARPT program.

14. Use of the IARCS for short-term training should be encouraged during the remaining LOP.

ANNEX F

LIST OF REPORTS CONSULTED

- Bezuneh, M.  
1985 Economic Work Plan for 1986: CP/ARPT, Kabwe.
- Chabala, Charles  
1984 Summary of the Major Findings from the Labour Survey.  
CP/ARPT, Kabwe.
- CIMMYT  
1984 Report of an ARPT/CIMMYT Workshop on the Role of Rural Sociology and Anthropology in Farming Systems Research and Extension. Networking Workshop Report No. 6, Nairobi, Kenya.  
1984 Final Report on the Formal Survey in Traditional Recommendation Domain # 5 (Kabwe Rural District). CIMMYT In-Country Training Programme, Zambia.
- CP/ARPT (Central Province/Applied Research Planning Team)  
1985 Trial Programme: 1985/86 Crop Cycle. CP/ARPT, Kabwe.  
1986 Quarterly Report for Jan. 1 to March 31, 1986.  
CP/ARPT, Kabwe.  
nd Prognosis of an Informal Survey of Farmers in Traditional Recommendation # 3 of Mkushi District. CP/ARPT, Kabwe.
- GRZ (Government of the Republic of Zambia)  
1985a Report of the Annual Review of the Adaptive Research Planning Team, 7-8 October, 1985, Mt. Makulu.  
1985b Interaction Between Adaptive Research Planning Team and the Extension Branch. Ministry of Agriculture and Water Development (MAWD), Lusaka.
- GRZ, with the assistance of the International Agricultural Development Services (IADS)  
1984a Zambia: Strategy for Agricultural Research. Lusaka, Zambia.  
1984b Zambia: Strategy for Extension. Lusaka, Zambia.
- Harms, A.  
1983 Are Small Scale Farmers Getting a Fair Share of Fertilizer? CP/ARPT, Kabwe.  
1984a Annual Report of Economist. ZAMARE, Lusaka.  
1984b Formal Survey of Farmers in TRD #3 in Mkushi District, Central Province. ZAMARE, Lusaka.

1985 Final Report Tour: Farming Systems Economist. ZAMARE, Lusaka.

Hudgens, R.

1985 End of Contract Final Report. ZAMARE, Lusaka.

ILO

1981 Zambia: Basic Needs in an Economy Under Stress. Addis Ababa, Ethiopia.

Kean, S. and W. Chibasa

1982 Institutionalizing Farming Systems Research in Zambia. ARPT, Mt. Makulu.

Kean, S., M. Mulele and B. Patel

1985 A Review of Zambia's On-Farm Research Programme-The Adaptive Research Planning Team. Paper presented at the Networkshop of Senior Agricultural Research, Extension, and Training Personnel of Eastern and Southern Africa, Maseru, Lesotho, 25-28 November, 1985.

N'Diaye, S.

1984 Research Outline of "Some Non-Economic determinants of Hybrid Maize Management in Chibale, Serenje. ZAMARE, Lusaka.

1985a Aspects of Labor and Crop Management Among Farmers in Chibale, Serenje. ZAMARE, Lusaka.

1985b Woman Life Cycle and Household Labor Supply Among the Lala of Serenje: A Case Study in Chibale. ZAMARE, Lusaka.

1986 Some Socio-Economic Determinants of Labor Shortages in Maize Growing: A Case Study in Chibale, Serenje.

Regional Inspector General for Audit

1985 Audit of Zambia Agricultural Research and Extension Project. Nairobi, Kenya.

Safilios-Rothchild, C.

1985 The Policy Implications of Women in Agriculture in Zambia. Planning Division Special Studies No. 20. MAWD, Lusaka.

Sutherland, A.

1984 Extension Workers, Small-Scale Farmers, and Agricultural Research: A Case Study in Kabwe Rural, Central Province, Zambia. ARPT, Mt. Makulu.

USAID

1980 Zambia Agricultural Development, Research and Extension: Project Paper. AID, Washington, DC.

USAID

1983 Evaluation of Zambia Agricultural Development Research and Extension Project (ZAMARE). USAID, Lusaka.

Yohe, J. et al.

1985 Mid-Term Evaluation of Agricultural Development  
Research and Extension Project (ZAMARE). USAID, Lusaka.

ZAMARE

1985 Annual report of Contract AFR-0201-c-00-1077-00, Jan.  
1 to Dec. 31, 1985. Lusaka, ZAMARE.

ANNEX 6

INDIVIDUALS CONTACTED

ZAMARE EVALUATION (MAY 1986)

- N. Mumba, Director of Agriculture, MAWD, Lusaka
- R. Mulele, Deputy Director of Extension, MAWD, Lusaka
- S. Lingston, National ARPT Coordinator, Mt. Makulu (formally Provincial Agricultural Officer, Kabwe)
- S. Kean, National ARPT Coordinator, Mt. Makulu
- B. Patel, Chief Agricultural Research Officer, Mt. Makulu
- C. Chileya, ARPT Sociologist, Mt. Makulu
- V. Eylands, Sunflower Agronomist, Mt. Makulu
- P. Gibson, Maize Breeder, Mt. Makulu
- J. Milimo, Director, Rural Development Studies Bureau, University of Zambia
- J. Ragin, ZAMARE Team Leader, Lusaka
- R. Stewart, Rural Sociologist, ZATPID, Lusaka
- M. Bezuneh, ARPT Coordinator and Economist, Kabwe
- E. Shingalili, ARPT Research and Extension Liason Officer, Kabwe
- F. Olson, ARPT Agronomist, Kabwe
- J. Muwamba, ARPT Economist and Officer in Charge, Kabwe Regional Research Station.
- J. Joshi, Soybean Breeder, Magoye Research Station
- G. Swallow, ARPT Research and Extension Liason Officer, Kabwe.
- W. Chitah, DIC, Magoye Research Station
- J. Tembo, District Agricultural Officer, Serenje
- J. Nshindao, Trial Assitant, Serenje
- M. Bwalya, Trial Assistant, Muswishi, Kabwe Rural Extension Camp Supervisor, Mkushi District
- Richard Edwards, ARPT Agronomist--Lusaka Province

Trial Assistant, Mkushi District

S. N'Diaye, Graduate Student, University of Illinois  
Section Chairman, Muswishi, Kabwe Rural

ODA Consultant, Sunflower Oil Press Program, Kabwe

L. Dean, Acting Director, USAID/Lusaka

B. McCloughlin, Executive Officer, USAID/Lusaka

F. Perry, HRDO, USAID/Lusaka

B. Cook, ADD, USAID/Lusaka

F. Javaheri, Soybean Agronomist, Mt. Makulu

B. Habowa-Lubozhya, Oilseeds CRT Coordinator, Mt. Makulu

N. Mwenya, Acting Dean, School of Agriculture, UNZA

Mr. Lungu, Director of Planning, MAWD

T. McCowen, Project Coordinator, UIUC, Illinois

Dr. Santas, Project Coordinator, UIUC, Illinois

B. Chivunda, Chief Extension Training Officer, MAWD

Mr. N'Gangula, Deputy Director, Rural Information Services, MAWD

Dr. Snodgrass, Professor of Agricultural Economics, School of  
Agriculture, UNZA