

**MALAWI AGRICULTURAL RESEARCH AND EXTENSION PROJECT**

**MID-TERM EVALUATION REPORT**

**Submitted to:**

**Secretary for Agriculture, Government of Malawi**

**and**

**United States Agency for International  
Development/Malawi**

**Prepared by:**

**W. Ronnie Coffman**

**Robert L. Bruce**

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**Kenneth L. Robinson**

**P.K. Sibale**

**Raymond A. Woodis**

**Under Contract with the  
State University of New York (SUNY)  
for Technical Support to Missions in  
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## Acronyms Used

ACAO	Assistant Chief Agricultural Officer
ACFT	Agroforestry Commodity Team
ADD	Agricultural Development Division
AFRENA	Agroforestry Research Network for Africa
AID	Agency for International Development
AR	Adaptive Research
ARC	Agricultural Research Council
ARP	Adaptive Research Programme
ART	Adaptive Research Team
ATOT	Agricultural Training of Trainers
BLADD	Blantyre Agricultural Development Division
CAO	Chief Agricultural Officer
CARO	Chief Agricultural Research Officer
CAS	Controller for Agricultural Services
CIAT	Centro Internacional de Agricultura Tropical
CID	Consortium for International Development
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional de Mejoramiento de Maize y Trigo
CIP	Centro Internacional de la Papa
CR	Commodity Research
CRT	Commodity Research Team
DAR	Department of Agricultural Research
DOA	Department of Agriculture
EAB	Extension Aids Branch
EARS	Evaluation and Action Research Section
EPA	Extension Planning Area
FATOT	Field Agricultural Training of Trainers
FRIM	Forestry Research Institute of Malawi
GOM	Government of Malawi
HCT	Horticultural Research Team
IARC	International Agricultural Research Center
ICRAF	International Council of Research for Agroforestry
IDA	International Development Association
IGA	Income Generating Activity
IITA	International Institute of Tropical Agriculture
IRRI	International Rice Research Institute
IUFRO	International Union of Forestry Research Organizations
KADD	Kasungu Agricultural Development Division
KRADD	Karonga Agricultural Development Division
LHO	Land Husbandry Officer
LADD	Lilongwe Agricultural Development Division
LWADD	Liwonde Agricultural Development Division
MAEPS	Malawi Agricultural Extension and Planning Support Project
MARE	Malawi Agricultural Research and Extension Project

## Acronyms Used (continued)

MATOT	Micro Agricultural Training of Trainers
MOA	Ministry of Agriculture
MZADD	Mzuzu Agricultural Development Division
NADD	Ngabu Agricultural Development Division
NARP	National Agricultural Research Program
NRC	Natural Resources College
NRDP	National Rural Development Program
OICD	Office of International Cooperation and Development (USDA)
OPC	Office of the President and Cabinet
OSU	Oregon State University
PCP	Pilot Communication Program
PT	Participant Trainee
RDP	Rural Development Project
REDSO/ESA	Regional Economic Development Support Office/East and Southern Africa
SFHA	Senior Farm Home Assistant
SLADD	Salima Agricultural Development Division
SMS	Subject Matter Specialist
TAP	Technical Assistance Personnel
TOT	Training of Trainers
TU	Training Unit
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VAO	Visual Aids Officer
VAU	Visual Aids Unit
WFO	Women's Programme Officer
WPS	Women's Programme Section
WSU	Washington State University

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## 0.0 EXECUTIVE SUMMARY

### MALAWI AGRICULTURAL RESEARCH AND EXTENSION PROJECT

#### MID-TERM EVALUATION

The Malawi Agricultural Research and Extension (MARE) Project was designed to improve the institutional capacity of the Ministry of Agriculture of the Government of Malawi to increase the productivity of traditional crops and to identify the most viable crops for diversifying smallholder production. To accomplish this purpose three components were financed:

**Agricultural Training:** This component was to establish an institutional training system to enable MOA staff to develop new skills and to upgrade their present ones. A Training Unit to be guided by a Training Advisory Committee was to be created as a part of this component.

**Agricultural Research:** This component was to assist the MOA to (1) develop a capability within the Department of Agricultural Research (DAR) to undertake an economic, financial and statistical analysis of crop production technology components; (2) strengthen five National Commodity Research Coordinating Units in horticulture, cereals, grains and legumes, livestock, and agricultural engineering and land husbandry; (3) establish eight adaptive research teams to carry out on-farm research on priority crops along with a national coordinating unit to provide administrative and management support to these teams.

**Agricultural Extension:** This component was to strengthen the MOA's extension service by (1) developing, testing, and promoting the use of cost-effective mass communications approaches in technology transfer; (2) establishing links with both applied and adaptive research programs; and (3) responding to information needs of female smallholders. A further purpose of this component was to support the research component by providing feedback from farmers to the research teams and to support the training component by providing training personnel and by assisting in the development of training materials.

The MARE project is complemented by two World Bank (IDA) projects which are financing related activities in agricultural research and extension including facilities and supplementary training activities. The projects were designed collaboratively so as to assure consistency in approach and to avoid duplication of efforts.

To implement the research and extension components of the MARE project USAID/Malawi entered into a four-year contract with the Consortium for International Development (CID). The training component was implemented through a contract with the Office of International Cooperation and Development of the United States Department of Agriculture (OICD/USDA). These contracts specified a mid-term evaluation and this review was conducted to fulfill that requirement.

The terms of reference for the evaluation, developed by USAID/Malawi in consultation with MOA and the contractors, called for the examination of several key issues falling under the broad headings of (1) institution building, (2) appropriateness and effectiveness of technology transfer, (3) management, and (4) sustainability.

#### General Findings and Recommendations

The "integrated approach" to technical assistance has proved highly effective in the MARE project and should continue to be utilized. Contractors have accommodated the new approach very effectively and contractor administrative support has been outstanding.

The MOA expressed a desire for contractor continuity over the long term. In view of the outstanding performance of the contractors and the many inherent advantages of continuity, such an arrangement is strongly supported.

Management lapses have been evident in certain areas and are recognized by those responsible. Corrective action is being taken wherever possible. In future contracts of this nature, operating expenses and vehicle purchases, should be a part of the technical assistance contract.

Financial management of MARE activities has been plagued by differences in accounting procedures between MOA and USAID. The posting of a USAID CPA in MOA should help solve this problem.

The GOM Steering Committee has not fulfilled expectations and should become more active in determining research, extension and training priorities and in improving linkages among the components of NRDP-V by scheduling regular meetings involving designated representatives (no substitutes) from each organization.

## Key Issues

Potential gains from the return of more trained personnel will not be realized unless additional funds are made available to conduct research and extension programs. USAID/Malawi should move up the final evaluation of the project to determine whether it would be desirable to extend the contract before funds are exhausted. To assure effective use of its large investment in training it is recommended that USAID, in conjunction with other donors, extend funds to projects specifically designed to aid smallholders.

HYV (High Yielding Variety) is a poorly understood term that probably should be replaced with MV (Modern Variety). The International Agricultural Research Centers (IARCs) are increasing their efforts to develop MVs for smallholders and facilitating IARC involvement in Malawi would be one of the most cost-efficient ways for donors such as USAID to stimulate the development of appropriate varietal technology for Malawi.

Commercial companies should be encouraged to invest in the seed industry in Malawi to facilitate the development of appropriate hybrid varieties. The availability of hybrid seed cannot be assured without the involvement of such companies.

New crops for smallholders is a realistic expectation in terms of encouraging smallholders to grow burley tobacco, coffee, groundnuts, and other export crops with established markets. Local markets can be easily saturated if large numbers of smallholders seek to diversify by producing more horticultural crops. An economist should be attached to AGREDAT to work on marketing problems related to crops that offer potential income earning opportunities for smallholders.

The scope of activities of the Agricultural Research Masterplan needs to be narrowed. Returns are likely to be higher if efforts are concentrated. Taking a realistic view of projected funding for agricultural research, there is a danger in attempting to do too much. More involvement of Adaptive Research and Extension personnel in setting research priorities would be desirable.

Serious attention needs to be directed towards facilitating regular contact and collaboration between Adaptive Research and Commodity Research and between these and Extension. Existing meetings (e.g. annual workshops) should always include representatives of all groups.

Specific means of tying non-localized research to extension need to be developed. One suggestion is for plant propagation to take place on selected farmers' fields, linking plant breeders, extension workers, and farmers. USAID Malawi should support

efforts to increase the availability of seed and other propagation material to smallholders.  
**Training**

The planning and administration of off-shore training appear to be sound. The training-needs analysis was thorough and is unusually well-based in organization needs.

A training system adapted to the country and to the institutional setting has produced a cadre of trainers who believe in what they are doing and appear to be both at ease in the methodology and competent to use it intelligently.

The establishment of a Training Branch is a critical element of the program that has not been achieved. USAID should move at once in concert with other donors and MOA to call this to the attention of GOM and press for immediate action.

The training function must have status and continuity if it is to succeed. Assignments to training duties should be for fixed periods and long enough for the development of expertise. There should be a clear career ladder in training for at least a few of the best.

The TOT program is now entering a critical stage as emphasis shifts from teaching the process itself to teaching a wide variety of subject matter, and greater numbers of trainees are reached. It is essential to continuity and to morale that the planned cycle be completed.

There should be no increase by MOA in the overall investment of staff time in training. Before initiating any extensive new program, the Training Unit and MOA should study the current and affordable levels of training investment, factoring the opportunity costs of staff time investments into the decision.

#### Extension

The elaborate structure of the Block Visitation System (T&V) requires enormous resources to establish and maintain. Differentiation among farmers will increase as some adopt modern practices. If T&V cannot serve the full range of farmers it should probably be modified or dropped.

The Pilot Communication Project (PCP) being implemented through MARE in the Mzuzu Agricultural Development Division has the potential for addressing several of the constraints to improving smallholder productivity, incomes and quality of life. It involves an infusion-diffusion model that is being tested for the first time during the current growing season. Enthusiasm for this approach is high among farmers and extension workers.

The PCP approach demands substantial time, human and financial resources and there is considerable doubt about whether the approach can be expanded to other districts and sustained in the absence of continued donor support.

Two evaluations of the PCP planned for the first half of 1989 can provide detailed information needed to address the question of sustainability. It is recommended (1) that the evaluation efforts be fully supported and implemented as scheduled, (2) that the information gained be used to develop a comprehensive plan to phase those aspects of the PCP approach that are determined to be most cost-effective into the ongoing extension/communication programs of the other seven AIDs, and (3) that technical assistance be extended until these efforts are completed.

Policy statements by the DOA have addressed the needs of women farmers and the Women's Programme Section (WPS) is off to a good start. MARE funds have been instrumental in achieving goals in training and laying the groundwork for a sustainable program. Recommendations include (1) careful monitoring of the Income Generating Activity (IGA) program as it is costly in staff resources, (2) use of some demonstration funds for simple messages reaching larger numbers of female farmers, (3) collecting basic data on current activities to facilitate monitoring and orientation of WPS, (4) achieving more effective coordination with adaptive and commodity research teams, (5) providing appropriate training for the Women's Programme Officer, and (6) consolidating current directions.

In the next phase, WPS should address the need to reach low-resource farmers and integrate gender analysis into research efforts.

## Research

AGREDAT was established for the purpose of ex-ante and ex-post economic analysis of experimental work and the establishment of a computer data bank. Efforts toward the first objective have been highly successful and the second objective has not been pursued. Continued emphasis on economic analysis seems justified. The mandate to establish a data bank should be deferred until there is more general agreement on the need for such a facility and more clearly defined objectives. Technical assistance should be continued during the life of the contract to maintain momentum and integrate returning scientists into the system.

The Adaptive Research Programme (ARP) was established to strengthen research/extension/farmer linkages. The MOA should review the ARP within the context of long-term plans for research and extension. Financial sustainability of the entire system

must be considered. Longer-term commitments to the program should be deferred until the MOA has completed its evaluation of the entire ARP, an evaluation now scheduled to take place in March 1989.

Future efforts in horticultural research should focus exclusively on crops of potential benefit to smallholders. The emphasis on temperate fruits is misplaced for all categories of growers and the initial investment and maintenance costs for tree nuts are too high for smallholders.

Seed and seedling production and distribution should be the focus of efforts to strengthen research/extension/farmer linkages in the area of horticultural crops, keeping in mind that good farmers are the most capable seed producers.

A portion of the resources under the agricultural research component of MARE should be directed toward the improvement of maize varieties for cultivation in mixed cropping systems used by smallholders in Malawi.

Agroforestry research conducted under MARE and ARC is vigorous, practical and technically appropriate. Some significant results have been achieved with which preliminary extension messages and adaptive research can proceed. Recommendations include (1) extending technical assistance by 18 months, (2) consolidating research activities in 1989/90, (3) study tour to Rwanda, (4) focus on seedling technologies which promote vegetative propagation and on-farm production, and (5) enhanced collaboration with other MARE/MOA activities such as AGREDAT and ARP.

MARE Mid-Term Evaluation Recommendations Requiring Timely Action:

<u>Recommendation</u>	<u>Deadline for Completion</u>	<u>Person(s) Responsible (Initial Action and Follow-up)</u>
1. USAID/CID contract-amendment prepared and sent to CID for signature. Amendment to include (in addition to other pending items) TAP extensions for:  R. Tinsley and D.N. Hilleman	31 Jan 89	A. Radi and REDSO/RCO
C. Culler, T. Cusack and T. Bunderson	28 Feb 89	A. Radi and REDSO/RCO
2. Obtain GOM approval to establish permanent Training Unit and posts	30 Apr 89	USAID/Malawi with GOM
3. PASA amendment to extend USDA TAP prepared and (pending completion of #2 above) sent to USDA	15 May 89	A. Radi
4. USAID and MOA to reach agreement on a mutually acceptable method for disbursing and accounting for the \$157,000 of vehicle-operating funds	31 Mar 89	A. Radi and CAS/NRDP
5. CPA TDY to begin work with MOA	30 Apr 89	A. Radi

## 1.0 BACKGROUND

The Malawi Agricultural Research and Extension (MARE) Project was designed to improve the institutional capacity of the Ministry of Agriculture to increase the productivity of traditional crops and to identify the most viable crops for diversifying smallholder production. To accomplish this purpose three components were financed:

Agricultural Training: This component was to establish an institutional training system to enable MOA staff to develop new skills and to upgrade their present ones. A Training Unit to be guided by a Training Advisory Committee was to be a central purpose of this component.

Agricultural Research: This component was to assist the MOA to (1) develop a capability within the Department of Agricultural Research (DAR) to undertake an economic, financial, and statistical analysis of crop production technology components; (2) strengthen five National Commodity Research Coordinating Units in horticulture, cereals, grains and legumes, livestock, and agricultural engineering and land husbandry; (3) establish eight adaptive research teams to carry out on-farm research on priority crops along with a national coordinating unit to provide administrative and management support to these teams.

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## 2.0 PROCEDURE

### 2.1 Terms of Reference

The terms of reference for the evaluation (Appendix 1), developed by USAID/Malawi in consultation with MOA and the contractors, called for the examination of several key issues falling under the broad headings of (1) institution building, (2) appropriateness and effectiveness of technology transfer, (3) management, and (4) sustainability. Several of these issues are of general concern and are addressed in the first section of the report under the heading of General Findings, Conclusions and Recommendations. Others are specific to one of the project components (training, research and extension) and are addressed in the section entitled Focus Area Findings, Conclusions and Recommendations.

### 2.2 Composition of the Evaluation Team

The evaluation team was composed of a plant breeder (team leader), an economist, a training/extension specialist, and a communications specialist provided under the contract with the State University of New York for Technical Support to Missions in East and Southern Africa; an anthropologist (women's development specialist) from the Harvard Institute of International Development; an agroforester from REDSO/ESA, Nairobi; and a plant breeder from the MOA (Appendix 2), providing for expertise in all components of the project. In addition, three of the team members were administrators with expertise in the management of research, extension and communication activities.

### 2.3 Evaluation Methodology

A schedule was developed (Appendix 3) that provided for the review of documentation (Appendix 4) and discussions with appropriate individuals in the MOA, as well as technical assistance personnel (TAP), during the first few days of the review. This was followed by approximately one week of visitations to relevant sites of project activity throughout the country. Individuals interviewed are listed in Appendix 5. The final week was devoted to report writing followed by a presentation and discussion of findings, conclusions and recommendations to the MOA by the entire review team. The team leader and selected members of the panel spent a few additional days incorporating revisions before the final report was submitted to USAID/Malawi.

### 3.0 GENERAL FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 3.1 Institution Building

##### 3.1.1 Effectiveness of Technical Assistants

Findings/Conclusions: CID and MOA should be commended for promptly recruiting competent and well-motivated technical assistance personnel (TAP). They have conscientiously sought to fulfill the objectives of the project by assisting with the development of technology for smallholders and improving linkages between the farmer, extension, and research.

TAP for training, provided by OICD/USDA, have done an outstanding job in assisting with the development of a training system adapted to the country and the institutional setting. They have helped to develop an enthusiastic cadre of trainers who believe in what they are doing and appear to be both competent and at ease in the methodology. They have helped to plan and administer a sound off-shore training program based on a training-needs analysis that was thorough and well-based in organizational needs.

The MOA has been pleased with the performance of TAP and management and have expressed interest in a long-term relationship with the contractors.

The assumption that TAP would become fully productive immediately after arrival was too optimistic. Reports submitted early in the life of the project indicate that productivity was adversely affected by shortages of vehicles and operating funds. Without vehicles (and in some instances funds to enable counterparts to travel with them) TAP could not efficiently carry out their mission. Counterpart scientists were generous in sharing the vehicles available to them but this placed an extra burden on everyone concerned. The turnover of personnel, made necessary by the training program, also made it more difficult to implement research, extension and training activities.

TAP interviewed were all very positive about the integration of the TAP into the Malawian system and, on balance, this approach appears to be superior to that of a separate group of TAP with a chief-of-party.

#### Recommendations:

\* The integrated approach to technical assistance should be continued in MARE and utilized in future AID projects in Malawi.

\* Every effort should be made to assure contractor continuity over the long term.

### 3.1.2. Research and Extension Linkages

Background: The MARE project set a high priority on the establishment of effective research and extension linkages. The rationale for promoting such linkages is to ensure that the needs of smallholders help direct research priorities and that recommended practices are appropriate to the economic, ecological and social conditions of farmers. Because these conditions vary, it is most important that research scientists maintain contact with the extension staff and adaptive researchers to ensure appropriate direction of research. Correlatively, the close communication between researchers and extension is needed to facilitate the most appropriate means of conveying research findings to different categories of farmers. While the objective of linkages between research and extension is valid, the project design was overly optimistic about the ease and speed of achievement.

Findings/Conclusions: Some progress has been made in developing links between research and extension. However, these links tend to be unsystematic, depending too much on individual initiatives rather than routine practice, and are stronger between adaptive research and certain parts of extension than between commodity research and extension. Linkages between Adaptive Research (AR) and Commodity Research (CR) are not as strong as they should be. Moreover, existing channels appear to direct the flow of information from CR to AR. Yet the rationale of AR being an integral part of research, designed to speak to the needs of smallholder farmers, is for there to be a strong current of information from AR to CR.

Current obstacles to collaborative research include first, not all AR teams are fully staffed because members are studying abroad; and second, the relative juniority of members of AR teams in comparison with those of CR teams. Nevertheless, collaborative links are being made. The AR teams have been encouraged by Technical Assistance Personnel to involve the extension staff at ADDs, namely, subject matter specialists, Women's Programme, and field extension workers, in their informal surveys. Some of the AR teams have begun collaborating with the Women's Programme Section (WPS) in developing trials and research studies.

There is still a lack of clarity about what linkages are needed. As one official said: "What are linkages? That's our problem, these have not been defined, they remain a word." MOA personnel tend to recognize that adaptive research is in its early days and stress its potential. Some TAP also pointed out that agricultural research in Malawi--as elsewhere--tends to be

dominated by agronomic research. Most scientists still think in terms of one-way communication with extension, i.e. that the latter's mission is to extend the varieties and practices they recommend. In these circumstances, creating effective links between adaptive research and commodity research and between these and extension cannot be expected to occur rapidly or without friction.

Opinions expressed by some officers in DOA and in several ADDs are favorable towards adaptive research. AR is welcomed because it has the potential of responding to local priorities and of recognizing local innovations that might be appropriately adapted for use in other areas or conditions.

The links between extension and commodity research seem more tenuous than those between AR and extension. But there are exceptions. For example, the Technical Assistance Personnel in horticulture, AGREDAT, and agroforestry have encouraged field research to ensure a closer fit between farmers' needs and ongoing research activities. Some of these efforts have involved the ARTs, linking directly with receptive officers at the ADDs and RDPs. Specific attempts have also been made by WPS and commodity research TAP to link commodity research to extension efforts on behalf of women farmers. Examples are agroforestry trials with Acacia albida, horticulture development of indigenous vegetables, and AGREDAT work on cassava. There is also a growing recognition of the importance of intercropping that promises to bring teams together. Some of the teams have also initiated collaborative research with the University (for example, a nutrition study in cassava areas).

Overloaded schedules and lack of staff and transportation are serious hindrances to regular contact. The existing annual meetings of the AR and CR, which are held separately, might be appropriately combined or overlapped. There, at least, should be regular representation of each group at the separate meetings. Because, at present, invitations to attend may or may not be accepted, more formalized contact is probably needed. This might be in the form of a committee to bring together AR, CR and Extension.

An example where means of regular interaction are being worked out is in the MARE Pilot Communications Project in MZADD. A task committee has been created to promote communication between researchers and extension agents. It is composed of AR teams, Training Unit and Audio Visual Unit staff, and Subject Matter Specialists. Within this committee, a work group has executive authority. The PCP has found difficulty ensuring representation by all members because of conflicting schedules. However, as members have worked together "coordination and communication among" these have "improved considerably."

Specific means of creating effective channels of communication require innovative thought for their creation. One suggestion would be for plant breeders to develop linkages through Extension to farmers for the purpose of propagating new cultivars. Access to seed of improved varieties is one of the major limitations of smallholders. Extension personnel could help plant breeders identify capable farmers (of both sexes) to propagate varieties and at the same time benefit from feedback by the farmer about the performance of the varieties. This would increase the availability of seed to smallholders throughout the country and, at the same time, place plant breeders in direct contact with farmers and extension personnel.

It is recognized that strong linkages (here defined as effective and timely consultation and collaboration) are possible only where there is mutual respect between the units. Moreover, although it is commonly assumed that extension is the link between farmers and research, extension personnel tend to work more with prosperous farmers and, therefore, may be ill-informed about the needs and constraints of the majority of smallholder farmers. To overcome this deficiency, extension has to become more adept at reaching a broader audience. To do so, they need more transportation support and more relevant messages.

#### Recommendations:

\* Regular meetings and collaboration between Adaptive Research and Commodity Research and between these and extension must be created and/or strengthened. The DOA and DAR should provide leadership. Existing meetings (e.g. annual workshops) should include representatives of all groups. The proposal in the draft Masterplan to establish a coordinating unit is a further option.

\* Innovative arrangements to link research to extension should be devised. An illustration is to propagate plants on selected farmers' fields, linking plant breeders, extension and farmers.

\* Greater use should be made of consultants from international centers who have substantial experience with adaptive and commodity research and extension and, preferably, a knowledge of Malawi. They could help identify the most productive channels for collaboration.

### 3.2 Appropriateness and Effectiveness of Technology Transfer

#### 3.2.1 New Crops for Smallholders

Findings/Conclusions: Encouraging smallholders to grow traditional export crops such as coffee and burley tobacco is feasible because marketing arrangements already exist and the

necessary inputs are available. This is not true for most horticultural crops. It is unrealistic to expect smallholders to compete successfully in selling either tropical- or temperate-zone fruits and vegetables on world markets because of climatic limitations and high transportation costs. Buyers require consistent supplies and uniform quality. Consequently, the larger farms rather than small-scale producers are likely to capture whatever commercial markets exist for either new or traditional products.

Only a minority of smallholders can expect to profit from increased production of horticultural crops. Local markets for fruits and vegetables adapted to smallholder production are easily saturated. Improved cultivars will make it possible to augment supplies and thereby improve nutrition, but the benefits of larger supplies are likely to accrue mainly to consumers rather than producers. If large numbers of smallholders seek to augment their incomes by producing new crops they are likely to encounter both pricing and marketing problems.

#### Recommendations:

\* Restrictions on growing burley tobacco should be relaxed to permit smallholders to take advantage of the current buoyant market.

\* Technical assistance should be continued for a horticultural specialist to help with the development of improved cultivars and appropriate production practices for locally produced fruits and vegetables.

\* Research should be continued on other crops adapted to production on small farms. Low priority should be given to research on deciduous temperate-zone fruits.

\* An economist (perhaps reassigned from DAR headquarters) should be attached to AGREDAT to work on marketing problems related to crops that offer potential income-earning opportunities for smallholders.

#### 3.2.2 Demands for High Yielding Varieties (HYVs)

Background: In spite of their widespread use in the developing world during the past 25 years, High Yielding Varieties (HYVs) are not well understood. Based on experience in other parts of the world, there is an unfortunate temptation to look to HYVs as a "quick-fix" for many of the agricultural development problems in Africa. They are not magic bullets that will somehow substitute for poor water control, lack of fertilizer, and poor management. On the other hand, HYVs do not necessarily require more inputs as some critics have suggested. The fact that they respond more readily to additional inputs of

fertilizer has caused some to assume that they require more fertilizer, which is not the case.

The term HYV originated with wheat and rice and is still used most appropriately in reference to those crops. To produce HYVs, plant breeders shortened the stature of traditional varieties, thereby increasing the ratio of the grain to the straw (harvest index). In the absence of added fertilizer, all other things being equal, HYVs of wheat and rice will produce higher yields than traditional varieties because more of the dry matter produced ends up in the grain. Of course, all other things often are not equal. Due to shorter stature, HYVs are less competitive with weeds. They tend to have shallower root systems, particularly in rice, and be more vulnerable to drought.

The situation with maize and other crops is not comparable to wheat and rice. A maize plant or a potato plant is very different from a wheat or rice plant and breeders have not found it useful to make the same types of structural modifications. Nevertheless, the term HYV has been used loosely to refer to any new variety (whether it be maize, potato, cassava, pigeon pea, or whatever) produced by the International Agricultural Research Centers (IARCs) or by commercial companies. It would be more appropriate to call these Modern Varieties (MVs) and to realize that many of them have been designed to meet the needs of smallholders. They may be more responsive to inputs, but they are not necessarily more input dependent.

The maize varieties referred to as HYVs in Malawi are either hybrid varieties or composites. Hybrid varieties derive their yield advantage from a phenomenon known as hybrid vigor which results when two cultivars (that are not closely related) are crossed. This phenomenon has been exploited for decades in developed countries with the infrastructure to produce and distribute the seed to farmers in a timely manner. As a result, all the hybrids are dent types suited to the needs of the temperate countries.

Commercial companies willing to develop hybrid varieties for Malawi should be welcomed. Pest-resistant hybrids with suitable quality characteristics could be developed. To provide extra incentive for pest-resistant cultivars, it is probably important never to license pesticides for use on maize.

It is important to realize that hybrids have never been the domain of small growers. New seed must be purchased every year. Recovering the cost of the seed may require added fertilizer (more cost). Risk of a total loss is greater as a hybrid flowers uniformly and is thus uniformly vulnerable to drought at that growth stage.

Composites are (simply stated) improved open-pollinated varieties. Because they cannot be grown in isolation on farmers fields composites are quickly integrated into the traditional varieties as a result of cross pollination and the fact that farmers save their own seed. They may contribute to the steady improvement of the maize cultivated by farmers but the contributions are masked because of the open-pollination and subsequent integration.

Findings/Conclusions: From discussions with farmers and researchers it seems clear that the demand for MVs in Malawi is not being met. Examples drawn from potatoes and rice serve to illustrate the problem. Some improved potato cultivars have been imported and varieties have been identified that are more suitable than those currently available to farmers. But the system to multiply and distribute seed potatoes appears to be entirely inadequate. In the case of rice, farmers are using antiquated cultivars developed 20 to 40 years ago in the USA and at IRRI. This situation has come about because the area of rice in Malawi is far too small to attract the attention of the IARCs concerned with rice.

Recommendations:

\* Commercial companies should be encouraged to invest in the seed industry in Malawi. To encourage the development of pest resistant varieties suitable for smallholders, pesticides should never be licensed for use on important smallholder food crops such as maize.

\* USAID/Malawi should facilitate the involvement of appropriate IARCs in Malawi. CIP and IRRI, for instance, would probably send staff members to assist with rice and potatoes if financial support were provided. IRRI has a budget of about 15 cents (US) for each hectare of rice in the world and it is difficult for them to justify active collaboration with Malawi unless additional financial support is provided.

\* USAID/Malawi should support efforts to increase the availability of seed to smallholders. CIP has had outstanding success in working with groups of smallholders to rapidly produce seed potatoes sufficient for their needs. There are other sources of expertise as well, perhaps among the CID universities.

### 3.2.3 Environmental Impacts

Background: A negative Environmental Threshold Decision under Regulation 16 Section 216 was included within the Project Paper. The Africa Bureau and Regional Environmental Officers determined that the proposed project had no negative environmental impacts (State 024074 and Nairobi 09167, respectively). These statutory environmental determinations were

predicated on the assumptions that:

1. MARE-sponsored activities would lead to reduced deforestation due to improved on-farm forest commodity procurement and declining pressure from agriculture expansion;
2. MARE research and extension activities and attendant pesticide use would be controlled strictly and adhere to a set of pesticide guidelines to be provided by the Regional Pesticide Advisor (a covenant in the Project Paper);
3. Training and technical assistance provided under MARE were categorically excluded from environmental impacts.

Nonetheless the Project Paper recognized the inherent dangers associated with increased pesticide application and increased erosion due to promotion of monocultures through improved management of some traditional and alternative crops. The Project Paper did not address the very beneficial use of alternative organic amendments being investigated through MARE research in agroforestry and other biological nitrogen-fixing plants and possible reduction in inorganic fertilizers and groundwater contamination.

#### Findings/Conclusions:

- \* The Pesticide Guidelines were developed and issued by the Regional Pesticide Advisor as required.
- \* The Pesticide Guidelines have not been adequately circulated or emphasized and many MARE-supported researchers are unaware of pesticide use application procedures and restrictions.
- \* Use of controlled pesticides has been restricted to use on research stations as specified.
- \* Some of the technologies being developed under the agroforestry component could potentially reduce deforestation by alleviating fuelwood shortages and agricultural expansion.
- \* Some agronomic research is heavily dependent on the use of restricted pesticides which has negative ramifications for eventual extension of improved genetic varieties and management practices to smallholders unable to procure these restricted commodities.
- \* ARP has not continued the previous agriculture research project's work on identification and resolution of smallholder pest problems.

\* According to several knowledgeable sources the use of restricted pesticides is common in Malawi and there is little or no policy regulating importation or control of distribution. Evidently many chemicals are "dumped" in Malawi from surrounding countries with tighter controls.

#### Recommendations:

\* USAID/Malawi should request the Regional Pesticide Advisor (REDSO/ESA) to schedule semi-annual visits to revise pest guidelines and assist MARE team members to become familiar with and adhere to pesticide-use guidelines.

\* USAID/Malawi and CID should re-emphasize the use of the accepted USAID/EPA guidelines.

\* USAID/Malawi and CID should encourage all MARE researchers (Adaptive Research and Commodity Teams) to be more cognizant and supportive of smallholder pest problems and identification of alternative controls. A short seminar or series of technical notes should suffice.

### 3.3 Management

#### 3.3.1 Agricultural Research Masterplan

Background: The agricultural research masterplan reflects the priorities of the GOM. The primary goal is to increase production. A secondary objective is to identify new crops that could provide income-earning opportunities for smallholders. The commodity priorities spelled out in the report are based on an analysis of the relative importance of major crops in each ADD. Adaptive research teams played a role in identifying priorities in each district.

Findings/Conclusions: The report is commodity-oriented rather than problem-oriented. It emphasizes crop-improvement programs, but does not specifically mention mixed cropping. Some of the most pressing problems of smallholders such as labor shortages at critical periods and pest damage are addressed only indirectly.

The proposed research agenda is extremely ambitious. Despite the large number of individuals sent abroad for training, it is doubtful if there will be enough plant breeders, plant pathologists or entomologists to carry out the proposed program of research. Even if sufficient numbers of trained personnel (and the right mix of skills) are available, it will be difficult to carry out the program without a substantial increase in operating funds.

### Recommendations:

\* Institutional arrangements within the DOA need to be modified to insure more direct involvement of adaptive research and extension personnel in setting research priorities. This can be done by formalizing ARP and Extension participation in Annual Commodity Research meetings.

\* The MOA should be encouraged to be more selective in funding projects. The returns to Malawi from additional expenditures on research are likely to be higher if they are concentrated on a smaller number of projects and a more limited array of crops.

#### 3.3.2 GOM Steering Committee

Background: The GOM Steering Committee was established to enhance coordination among the various projects (including MARE) under NRDP-V. Membership includes representatives from MOA and the various donors. It was expected to be helpful in determining research, extension, and training priorities and to help forge linkages among the various components of NRDP-V.

Findings/Conclusions: The GOM Steering Committee has not met regularly and has not fulfilled expectations.

#### Recommendations:

\* The GOM Steering Committee should become more active in determining research, extension and training priorities and in improving linkages among the components of NRDP-V by scheduling regular meetings involving the designated representatives (no substitutes) from each organization.

#### 3.3.3 Financial Management of MARE Activities

Findings/Conclusions: Financial management has been a source of friction between the TAP and USAID and between USAID and the MOA. The earlier audit report addressed many of the critical issues. Some of the problems mentioned in that report still exist, especially delays in obtaining funds. In the case of the Women's Programme, for example, delays in funding for two income-generating projects were delayed for three to five months. Similar problems have arisen in obtaining funds for training courses and demonstration projects. In one instance, a training course had to be cancelled because the MOA would not release the funds. They claim not to have received the funds from USAID.

There is dissatisfaction within MOA about the accounting requirements of USAID. That does not come as a surprise to anyone familiar with USAID requirements for accountability. The MOA contends that these requirements have not always been

communicated clearly. USAID proposes to help solve this problem by placing a CPA in the MOA financial office.

Recommendations:

\* In the future, USAID should spell out more clearly at the beginning the kinds of documentation and audits required. The plan to place a CPA in the MOA should be implemented as soon as possible.

\* USAID should draw on the experience of other donors and try to develop a less cumbersome method of funding projects.

3.3.4 Administration of Technical Assistance Team

Background: The MARE project represents a new approach in the deployment of a technical assistance team. There is no chief-of-party and all TAP have been integrated into the Malawi system upon which they rely for supporting services.

Findings/Conclusions: Mid-way through the project, enthusiasm for this approach is strong among the TAP, their counterparts and their superiors in the Malawi system.

This approach has placed an extra burden on CID and USDA in administering the team and has probably resulted in some hardships for certain TAP. Working through the MOA, timely procurement of vital equipment sometimes has been a problem. The absence of leadership among the TAP means they can only relate individually to USAID, review teams and others who may be concerned with the project as a whole. Administrative tasks must be handled by individual TAP, relying on the supporting services of the MOA.

The project officer from OSU/CID appears to be doing an outstanding job in supporting the project, traveling to Malawi on a quarterly basis to provide administrative support. A less supportive individual in this role could cause serious problems in the absence of local leadership. He is supported by a locally based administrative assistant.

The project officer from OICD/USDA has been equally supportive of TAP concerned with training. From both the MOA and the TAP there were many compliments and few complaints about the administration of the technical assistance team.

Recommendation:

\* The "integrated approach" to technical assistance should continue to be utilized in Malawi.

### 3.3.5 USAID and Contractor Management

Findings/Conclusions: USAID receives high marks from the MOA in assisting with the selection of the contractor. Contractor management by CID and OICD/USDA has been outstanding. The MOA was very pleased with the selection of the technical assistance personnel and the cooperation between USAID, CID and OICD/USDA to arrange for deployment of most TAP within a month after the contract was signed. Since that time, some management problems have emerged on the part of USAID that could have been avoided.

Vehicles for the project were delayed 18 months due to a conflict between MOA and USAID about specifications. Due to the nature of the project and its focus on linkages with farmers, the availability of suitable vehicles for travel to the field is rather critical. The vehicles ultimately chosen are considered inappropriate by all users due to a lack of clearance, traction and cargo capacity.

The five-year duration of the project is too short to accomplish the training objectives without interfering seriously with continuity of research and extension in Malawi. This has been aggravated by poor management by USDAID. TAP were willing to extend and provide continuity, but the paperwork within USAID has prevented that from happening. The horticulturist had to leave in October 1988 and his replacement has not arrived. The contracts of other critical TAP are due to expire within weeks and there is some doubt that the paperwork will be in place for extensions. Many of the achievements now attributed to the project may be lost because of this problem and there may be considerable personal sacrifice on the part of TAP who were assured of an "85 percent chance" of being extended.

#### Recommendations:

\* USAID/Malawi should take all possible steps to extend appropriate TAP contracts and assure continuity of MARE supported programs.

\* In future contracts of this nature, operating expenses, vehicle purchases, etc., should be a part of the technical-assistance contract.

### 3.3.6 Monitoring and Evaluation

According to the Project Paper establishment of an ambitious monitoring and evaluation system within the MARE project was expected to help measure progress and systematically identify constraints and opportunities which could be avoided or used by research and extension. In addition such a system was to assist USAID/Malawi to develop information which would help it to better manage its programs and tell its development story.

The MARE project was predicated on several socioeconomic and institutional assumptions. Some of the more succinct parameters included:

#### Economic/Financial Justifications:

- \* Fifteen percent adoption rate of technologies increasing maize yields by 1 metric ton/year/hectare by 1995;
- \* Savings of K545,000/year in DAR's research network through improved management and efficiencies;
- \* Savings of "almost" 1 percent of MOA's annual budget by 1990;
- \* Demonstrate benefits of improved food production to women's groups;
- \* Encourage adoption of improved technologies by women through extension and provision of tools and equipment.

#### Institutional Justifications:

- \* Development of functional Commodity Teams;
- \* Improved linkages between applied and adaptive research and extension activities;
- \* Creation of a functional Agriculture Research Council;
- \* Improvement of DAR's staff-evaluation process;
- \* Provision of adequate technical and management training.

In order to allow MOA/DAR, CID and USAID/Malawi to gauge project success at achieving these objectives and to provide an internal guidance system for project implementation, a monitoring and evaluation system was prescribed. This system was to:

1. Collect baseline information which would serve as a benchmark for measuring project outputs at the purpose and goal levels;
2. Establish a reporting structure, to be agreed upon by USAID and MOA, to monitor project performance;
3. Evaluate agriculture research (appropriateness and feasibility of transfer); and
4. Establish a schedule of evaluations.

According to the Project Paper, CID was to submit a Monitoring and Evaluation plan to USAID. The MOA Planning Unit was to measure improvements of MOA and ARC management efficiency but it was unclear who was to monitor research results and farmer-adoption data.

#### Findings/Conclusions:

\* It is not clear that a baseline of adequate resolution was ever established to use as a benchmark for measuring project impact. The Project Paper specified MOA's Planning Division "supported by IDA" would develop a benchmark survey which would be supported by UNICEF/Cornell Food and Nutritional Surveillance Project data.

\* The MARE Evaluation System (CID 1987) was designed to measure contractor performance through periodic reporting and evaluation of log frame outputs. The system is adequate to address and report outputs identified in areas 2 through 4 (above).

\* The system does not provide for the systematic collection, analysis and reporting of data capable of measuring project progress toward the overall goals and purpose statement.

\* Much of the information required to gauge project performance is available through various channels and sources and could be centralized for analysis. The Evaluation Units of each ADD generally are capable of amassing farmer-adoption data (although not gender-disaggregated at present). Applied and adaptive research results are available to provide on-farm impact.

\* The costs and benefits of establishing such a system have not been evaluated adequately and alternative levels of data collection and resolution of analysis have not been weighed.

#### Recommendations:

\* USAID/Malawi should review present information flow and determine if it is adequate to gauge project performance as specified in the Project Paper.

\* In the event development of a system appears to be too costly USAID/Malawi should provide an administrative remedy which releases CID from this obligation. The Mission should also outline the rationale for not fulfilling this design function, taking into account the impact on the final evaluation.

\* If, on the other hand, USAID/Malawi and MOA feel the Monitoring and Evaluation component is useful and feasible they should require that CID and ARC/MOA develop and submit for USAID

review specific methodologies and associated costs. Short-term TAP and/or assistance from REDSO/ESA could be solicited to help determine the optimal type and methods of data collection.

### 3.4 Institutional and Financial Sustainability

#### 3.4.1 Pilot Communication Project

Background: The Pilot Communication Project (PCP) being implemented through MARE in the Mzuzu Agricultural Development Division (MZADD) is based upon an infusion-diffusion model and is aimed at "enhancing the existing organizational structure to promote better two-way communication among researchers, extension workers and smallholders to increase the productivity, quality of life and incomes of farmers." (MZADD Pilot Communication Handbook, Jan. 1989.)

Findings/Conclusions: Observations suggest that the PCP approach has the potential for addressing several of the constraints to achieving the above goal that have been identified in MARE project documents and reports. (Note: A more detailed discussion of achievements, obstacles and related concerns can be found in Section 4.2.1 of this report.)

Potential benefits of the PCP approach include the following: improved two-way communication among farmers, researchers and extension personnel; stronger linkages between research and extension by involving both perspectives (as well as farmers' interests) in the problem identification and the message development, production and delivery processes; and enhancement of the teaching-learning process by providing field staff with up-to-date, technically accurate and locally appropriate information to be delivered to farmers using improved communication/education techniques.

The approach is being tested for the first time during the current growing season in four MZADD Extension Planning Areas (EPA). Observations and interviews suggest that the approach is being embraced enthusiastically by MZADD Visual Aids Unit staff, Subject Matter Specialists, Field Assistants and Farm Home Assistants, and farmers.

Although further refinement of the procedures for research-extension interaction in the message prioritization, development and validation processes is needed, those important linkages are being developed and could well become "habit" (and less prescribed) over time.

Ten MOA communication staff members (nine from the Extension Aids Branch and one from the MZADD Visual Aids Unit) have completed short-term off-shore training. One EAB staff member is currently involved in a year-long computer-design training

program in the US and short-term off-shore training is scheduled for three others (one from EAB and two from the MZADD VAI) during the first half of 1989.

A candidate for Masters-level training has also been identified. This individual will return to the EAB Evaluation and Action Research Section (EARS).

The cadre of communication professionals that has received additional training since the inception of the MARE project form a human-resource base that can sustain the efforts that have been initiated to upgrade the capabilities of EAB and move toward a more decentralized communication-support system.

Some additional follow-up/reinforcement training may be needed as many staff only recently have completed off-shore training and may need support in implementing their newly acquired skills under actual working conditions. Also, they may need assistance in developing training skills and materials so that they can prepare others to assume new roles and responsibilities as the PCP approach is diffused to other ADDs.

Although the approach being tested in the PCP appears to address many of the identified shortcomings in the extension educational delivery system, it involves a substantial commitment of staff time to gathering information from smallholder target audiences, infusing that information into the message development and delivery processes, training field staff, and evaluating the effectiveness of individual efforts. It also involves committing resources to improving mobility of staff at all levels and providing funds to purchase consumable supplies and materials (paper, marking pens, etc.) needed by field staff to develop communication aids to enhance their message delivery.

It is important to note that MARE funds were not used to purchase consumable materials for use in the MZADD PCP--with the exception of eight reams of paper. This suggests that other ADDs should be able to meet this demand with only modest increases in funding. Communication equipment, such as that MARE supplied the MZADD PCP, already has been procured for the other seven ADDs.

Because the PCP approach demands substantial time, human and financial resources, there is considerable doubt about whether it can be extended to the other seven ADDs and sustained, at the same level of intensity, in the absence of continued donor support or a major commitment of GOM funds.

Determining whether the PCP approach is--wholly or partially--transferrable to other ADDs is beyond the scope of this evaluation which is primarily based on observations and interviews. Two evaluation efforts, planned for the first half of 1989, should provide a detailed assessment of that potential.

The first is the follow-up evaluation to be carried out by the MZADD Evaluation Unit in cooperation with the SMS on the effectiveness of the methods used and messages delivered, for the first time this growing season, via field staff to farmers in the four PCP experimental EPAs. The second is an end-of-pilot evaluation effort, to be carried out with the assistance of a short-term MARE Design/Evaluation Consultant during the first half of 1989, that should provide cost-benefit analyses and other information upon which to base management decisions.

Also planned for early 1989 is the first Diffusion Workshop that will share preliminary results of PCP activities with management and communication personnel in the other seven ADDs and provide an opportunity for them to infuse their concerns about adapting the approach to their own areas.

These three activities will provide a basis for developing an action plan for extending the PCP approach and continuing the process of decentralizing communication-support efforts now centralized in the EAB. It will also provide a basis for EAB to plan for the transition from a primarily production role to a training, backstopping role.

The PCP approach is not an "all or nothing" proposition. Benefits derived from gathering and incorporating information from farmers and involving research, adaptive research and extension perspectives in the design and development of timely, technically accurate, locally appropriate messages are essential elements to maintain. They need not be dependent upon expensive technology, such as desktop publishing, at least at the start.

#### Recommendations:

\* MARE, EAB and MZADD leadership should give full support to completion of the follow-up evaluation activities planned by the MZADD Evaluation Unit for the first quarter of 1989.

\* Appropriate GOM, MARE, USAID and CID personnel should develop terms of reference for and begin recruitment of a Design/Evaluation Consultant to carry out the required end-of-pilot evaluation as soon as possible. It is essential that the effort be completed while the TAP is still in Malawi.

\* MOA leadership should encourage and support participation of management and communication personnel from all ADDs in the upcoming Diffusion Workshop to convey their thoughts and concerns about adapting the PCP approach to their areas.

\* MOA planners, in cooperation with MARE advisors, should use the information gained to develop a comprehensive plan to phase those aspects of the PCP approach that are determined to be most cost-effective into the ongoing extension/communication programs of the other seven ADDs.

\* To provide continuity and benefits of experience gained over the past two-plus years, USAID/Malawi should extend the contract of the MARE Agricultural Communication Specialist until the above steps have been completed.

#### 3.4.2 Financial Support and Recurrent Expenditures

Findings/Conclusions: Potential gains from having more trained personnel will not be realized unless additional funds are made available to conduct research and extension programs. Even now, with many individuals studying abroad, operating funds are inadequate. The situation will become even more acute when the individuals trained abroad return to Malawi and efforts are made to expand existing programs. If equipment and operating funds are not available, one can expect trained personnel to seek employment elsewhere.

#### Recommendations:

\* USAID/Malawi should move up the final evaluation of the project to determine whether it would be desirable to extend the contract before funds run out. Additional support may be required to capitalize on the initial investment in training.

\* Research projects aimed at solving the problems of smallholders should be designed in such a way as to attract outside support. USAID/Malawi should try to identify areas where external assistance may be needed and to work with other donors in seeking such assistance.

#### 4.0 FOCUS AREA FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

##### 4.1 Training

###### 4.1.1 Establishment of Training Unit

Background: As part of the covenant under which NRDP-V was established, Government of Malawi (GOM) agreed to establish a Training Unit, staffed and functional within the Ministry of Agriculture (MOA). The unit was to be headed by a qualified Malawian Training Officer of at least P5 grade, assisted by two other national training officers and two project-funded advisers. (Project Paper, p. 13)

Submissions have been made to GOM, beginning in 1986, for the establishment of the unit. Most recently, in April 1988, a revised organization brochure was prepared and submitted to GOM. By memorandum of 17 June 1988, the Secretary for Agriculture appealed a decision. By Loose Minute of 27 September 1988, the Secretary for Personnel Management and Training rejected the submission.

Findings/Conclusions: TAP for training have done an outstanding job in assisting with the development of a training system adapted to the country and to the institutional setting. The Training Advisor and MOA have prepared a comprehensive plan for establishing the Training Unit, consonant with the terms of the covenant, and have pursued the matter diligently and within appropriate GOM channels. GOM has neither established the unit nor created the positions called for in the plan and agreed to in the covenant.

The plan as submitted not only satisfies the original project plan, but is appropriate to the needs of MOA. The formal establishment of a training unit and the posts proposed within MOA is essential if the training effort is to be effective. Extension of the project and Training Advisor is dependent upon the establishment of the unit and posts by April 30, 1989. Without approval of the Training Unit (TU) posts, seconded TU staff may return to originating posts even prior to TAP departure which would greatly hamper administering and implementing current and proposed training for MOA officers.

Recommendation:

\* USAID should move at once, in concert with other donors and MOA, to appeal the OPC ruling. If the Training Unit is established as covenanted, by April 30, 1989, the project and associated TAP should be extended.

4.1.2 Staffing of The Training Function

Findings/Conclusions: The training function must have status and continuity if it is to succeed. In the Ministry of Agriculture (MOA) training sometimes appears to have neither of these attributes. Assignments to training duties are often of short duration with little regard to past experience or future intentions, suggesting that training is viewed as not needing special expertise. There is no career ladder for those who wish to specialize in training. Officers now assigned to training duties are seconded from other units and functions. To advance, they must return to those duties and, meanwhile, may have lost momentum and seniority. This situation results in a lack of incentive for progress and a lack of program continuity, with much overlap and backtracking.

Because the Training Branch staff will be expected to develop and carry out training to meet new problems, it is essential that there be some conceptual depth. To this end, at least one officer should be scheduled for PhD-level training in adult education and/or human-resource development.

Recommendations:

\* The establishment of a training branch is essential to the continuity and quality of the training function. USAID must make its establishment an issue in negotiating any extension of the project.

\* If establishment cannot be secured, and the project is continued, it is imperative that staffing and promotion practices within MOA be adjusted to assure continuity of staff and recognition of accomplishment in training assignments.

\* MOA should keep long-term training staff small and supplement it by one- or two-year secondments from other positions within the service. This will help to assure that training staff are in tune with the reality of the staff they are training.

\* One training officer should be scheduled for PhD-level training in adult education and/or human-resource development.

#### 4.1.3 Training of Trainers (TOT)

Findings/Conclusions: The principal focus of 'TOT' training so far has been on the process itself, although participants at the Micro Agricultural Training of Trainers (MATOT) level develop technical training packages as practice.

The Experiential Learning Cycle (ELC) concept has been adapted intelligently to local needs and is implemented in a non-doctrinaire way consistent with the local culture. Trainees are given enough basic understanding to be able to make their own adaptations, and the trainees observed from the national level Agricultural Training of Trainers (ATOT) training appeared to be excellent.

Tutors at the Natural Resources College (NRC) have used the approach. They have found that it requires more time than traditional methods to cover the same technical topics, but that students are better able to use the knowledge gained. Several of those interviewed have used the ELC approach in making informal presentations at meetings and report enthusiastic responses.

The MATOT IIB training cadre demonstrated considerable skill and resourcefulness. It was clear that the training they received was deep enough to enable them to deal with unexpected situations and questions. This is especially critical, as lack of depth and rote learning are endemic limitations of the TOT strategy. The Training Specialist deserves credit for this. He has done an excellent job of providing breadth and building confidence by coaching, without diminishing the authority or leadership of the trainers.

MATOT IIB participants were engaged and enthusiastic, and the effort appeared to be highly successful. It should be noted that this group--senior district level staff with strong subject-matter backgrounds--are the most conservative single group in extension and the least likely to be enthusiastic. Apparently, several had passed up other highly attractive activities in order to participate.

Administration supports the TOT concept and believes that it will be sustainable with a few modifications and if it is tied closely to local program priorities. Localization is seen as essential to acceptance, and must include geographic, cultural and subject relevance. There is also concern for the amount of staff time being required in this project.

The test of the TOT approach will be in its ability to enhance the training skills of those staff who deal directly with farmers. The program is now entering this critical stage as a less-experienced and non self-selecting audience is involved, as the emphasis shifts from teaching the process itself to teaching

a wide variety of subject matter, and as greater numbers of trainees are reached.

#### Recommendations:

\* The planned TOT cycle should be completed, with adaptations as needed to meet the problems and time constraints encountered. While the TOT strategy is not perfect, changing it now would be disastrous both to continuity and to morale.

\* The Training Unit should take steps at once to determine how long the final stages of the cycle will require. This final stage can best be carried out under the leadership of the current training specialist because of his intimate involvement in the adaptation of the program to needs and conditions and the high regard he enjoys among the staff.

\* If it appears that the TOT cycle cannot be completed before the end of the current contract, MOA and USDA should first seek extension of the current training specialist for the period needed. If that is not possible, the approach now in use should be adapted for execution by local staff. Introduction of a new training specialist at this stage would be counterproductive and is not recommended.

\* The Training Unit and the Department of Agriculture (DOA) should consider redesigning the Field Agricultural Training of Trainers (FATOT) cycle to fit within the training component of the Block Visit System. A portion of the days currently allocated to training (one/week) could be devoted to this purpose without seriously cutting into other vital training. Each ADD will have adequate numbers of competent trainers when the MATOT stage has been completed. This approach, if adopted, should be piloted carefully in the time remaining.

\* Professional trainers need more depth of training than is possible under this approach. Once the training has been stabilized through the establishment of a Training Branch, the Branch should move to enhance the professional competence of the core training group through further study and professional contact. This might well be done in conjunction with training personnel in other divisions of government.

#### 4.1.4 Off-Shore Staff Development and Phasing of Training

Findings/Conclusions: The Training Unit manages off-shore training and in-service education funded under all MOA projects. To date 47 of the 49 MOA officers scheduled for advanced degree training under MARE, 11 of 13 under NARP and 3 of 6 under MAEPS have been placed. Placement of the remaining candidates, including 34 extension officers scheduled for short-term certificate and diploma training, is underway.

Most of the institutions in which trainees have been placed are experienced in dealing with the time lags imposed by governmental fiscal management. However, the persistent problems encountered in reimbursing training institutions with IDA monies could affect future relations with training institutions and, if they continue, could affect the trainees' programs.

In general, trainees pursuing advanced degrees off-shore will benefit from the opportunity to do in-country research. The plan developed is to be commended. There are cautions, however:

- \* Some research important to Malawi involves variables or conditions not currently present or achievable in-country (e.g. the study of a particular extension/research linkage).

- \* Some highly technical studies may require conditions or facilities which do not exist in Malawi or which can be provided more economically at the training institution.

- \* Academic authority regarding content of the trainee's program, the conduct of research, and the requirements for completion resides with the training university. The trainee may be caught between two sets of authority which give conflicting advice or--worse--direction.

None of these problems is fatal to the policy and none calls for serious changes, but they suggest caution and consultation.

The practice of holding conferences in which all trainees in the US can share experiences is useful in building relationships that should continue upon completion of training. The same caution about division of authority applies, however.

The current balance between PhD and MS programs represents a sound investment decision. (See Table 1.) While there might be minor advantages in relationships and communications if more PhDs were allocated to Extension, the lower cost in money and time strongly favors MS-level training at this point. If investment is to be made in a PhD, it should be in the Training Unit, and then only if a long-term appointment is assured.

The use of short-term and non-degree training where appropriate is to be commended. (See Table 2.) Such programs often address the needs of the organization more effectively than study for advanced degrees, especially if they permit experienced and otherwise qualified officers without formal academic qualifications to get needed skills.

The off-shore long-term training plans are extremely ambitious, and require the investment of much staff time. Considerable disruption of operations is inevitable. Given the magnitude of the training effort, the alternative of spreading

the training over a long period is equally unattractive. The policy adopted has been well administered. A large number of trainees has been placed; they have been placed in a wide range of institutions (25 in all) appropriate to their needs; and the institutions chosen are of high quality.

The phasing of training done off-shore, presents special difficulties. Problems of overlap with TAP will occur in any case, but were made more serious by attempting to train large numbers of people in a comparatively short time.

The instability of staff assignments has also been a problem. In some cases, there was little opportunity for a counterpart relationship to be built before the trainee's departure. This will be exacerbated if trainees do not return to the posts for which the training was intended. It is expected that one of the training unit counterparts and one or both WPOs who have gone overseas under MARE will be assigned to other duties on return.

The sheer numbers involved are daunting. At one point during 1988 almost 50 Malawi staff were in off-shore training, under MARE alone, and the number will be at least 30 through 1989. (See Figure 1.) While this has resulted in problems, as noted elsewhere in this report, the alternatives were also unattractive.

The donors are not the only ones who have contributed to staff development. Malawi will have made a substantial investment in loss of services. MOA should now act to protect that investment. The return of a large group of specialist-trained officers with advanced degrees will call for rethinking of career structures and promotion criteria, if they are to be kept within their new areas of specialization and a loss of trained staff is to be avoided.

#### Recommendations:

\* The in-country research policy should be continued, but should be examined to make sure that it does not conflict with responsibilities of the training institutions or put the trainee at risk.

\* Serious attention must be given by MOA to the posting of returnees. Except in extreme emergency, they should return to the posts selected for strengthening and remain in those posts for long enough to have an effect.

\* It is essential that new and attractive career structures be developed by MOA, and implemented by GOM, to provide incentives for the new class of specialist-trained officers to remain in the work for which they are fitted.

Table 1. Types of training provided under MARE, 1985 to 1991.

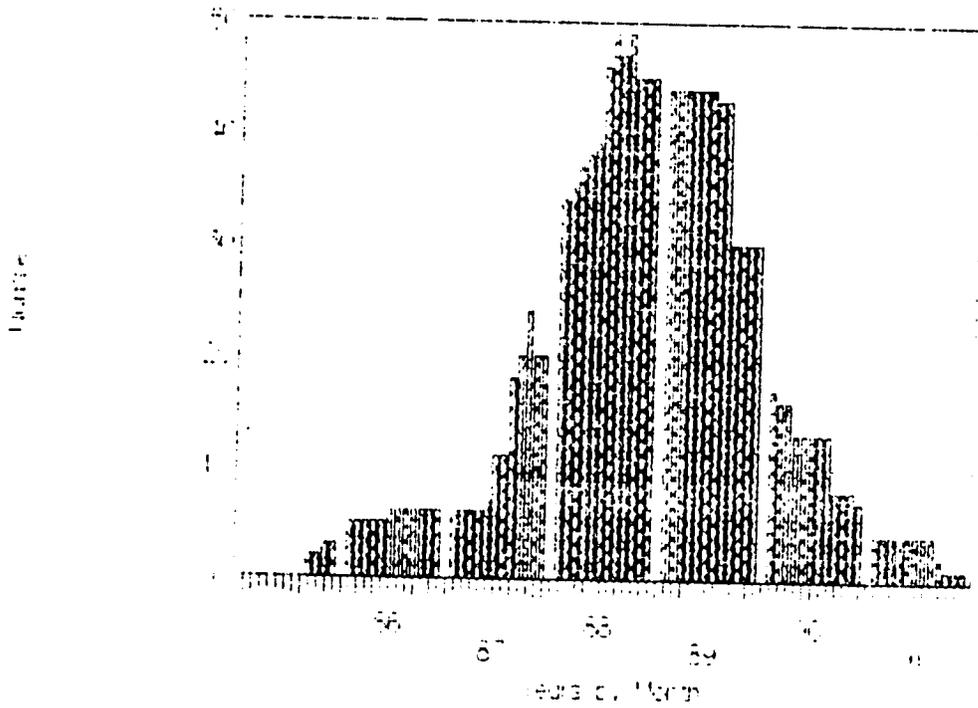
<u>Degree</u>	<u>Number</u>	<u>Universities</u>
MS/MSc	45	17
PhD	4	4
<u>Other Training</u>	<u>Number</u>	<u>Universities or Countries</u>
Training Conference	23	12
Tours	4	2
Conference	1	1

Table 2. Fields of study of MARE supported off-shore trainees.

<u>Topic/Field</u>	<u>Degree</u>	<u>Non-Degree</u>
Agriculture	1	1
Agricultural Economics	6	
Agricultural Engineering	1	
Agriculture/Environment	1	
Agronomy	19	1
Animal Science	1	1
Communication	1	2
Computer Science	1	
Extension	2	1
Farming Systems		2
Food Science/Nutrition	2	
Forestry	1	
Horticulture	1	3
IGA Study Tour		4
Land Resources	1	
Photography		3
Plant Breeding	3	
Printing Technology		2
Publications		1
Seed Technology	1	1
Vegetable Production	1	1
Video Repair		1

Figure 1. Staff in Off-Shore Training Through MARE Funding

### Staff in Off-Shore Training Through MARE Funding



#### 4.1.5 Other In-Country Training

Background: Management training is regarded by the Training Unit as a major program thrust. Fifty top MOA managers have participated in an Executive Management Seminar and some 70 Project Officers have attended one or another of three three-week training courses on various management functions. A series of five two-week courses is planned for the next 18 months to train 120 Development Officers. It has been proposed that a short-term management consultant be employed to assist in further development of management training.

Training in extension program development and planning has also been identified as a need. a highly successful conference on the topic has been held, and there are indications that more work is needed in that area.

Findings/Conclusions: The need for better program development is supported by the generally low uptake of programs offered at the Day Training Centers, and the need for management development is supported by testimony from the managers themselves, as well as by statements of outside observers.

Against these undoubted needs, one must set the present large commitment of staff time being taken up in training. Some 142 different in-country training activities were offered in 1988. They ranged in length from a few days to a month, with the typical length being 5-6 days. Apart from the 37 training events in the TOT cycle and--possibly--the three management seminars, all appear to be infinitely repeatable.

This high demand is understandably a source of concern to many MOA managers. The opportunity cost in staff time lost to other purposes far exceeds the money costs of mounting the training. This may be a good time to evaluate the training strategy, especially before undertaking another new program, however useful it may be.

#### Recommendations:

\* There should be no increase by MOA in the overall investment of staff time in training.

\* Before initiating any extensive new program, the Training Unit and MOA should study the current and affordable levels of training investment, factoring the opportunity costs of staff time investments into the decision. Priorities and trade-offs need to be assessed.

\* If analysis favors introduction of new programs, the Training Unit should build on the momentum created in management and program development to develop sustainable programs.

## 4.2 Extension

### 4.2.1 Communications

**Background:** Among the outputs called for in the "Logical Framework: EAB--MARE Project" are the following:

- \* Upgrade EAB production capacity to meet major MOA publication requirements.
- \* Integration of Video capacity into the EAB Cine Unit.
- \* Development of Pilot Project to test decentralized communication strategies at the ADD level.
- \* Establishment of a communication planning organization at the MZADD management level.
- \* Development of a regional communication delivery system.
- \* Localization of the communication process to reach target audiences.
- \* ADD Communication Training to support localization/decentralization strategies.

Findings related to progress in meeting those output goals, conclusions and recommendations are discussed under various subheadings below.

#### 4.2.1.1 Mzuzu ADD Pilot Communication Project

**Findings/Conclusions:** A Pilot Communication Project (PCP) is in place in the Mzuzu Agricultural Development Division (MZADD) to test decentralized communication strategies at the ADD level. A key component of the PCP strategy has been the development and introduction of a model that adds an infusion dimension to the communication process. The approach provides a means of bringing client (farmer) problems and needs into the message determination and formulation processes and to determine whether the response is appropriate. (MZADD Pilot Communication Project Handbook, Jan. 1989.)

A MZADD Pilot Communication Handbook has been developed that provides "a guideline within which specific plans will be adapted to changing conditions" and outlines procedures for developing and testing localized messages and delivery methods.

MZADD Visual Aids Unit (VAU) staff and Subject Matter Specialists (SMS) and Field Assistants (FA) and Farm Home Assistants (FHA) in four experimental Extension Planning Areas (EPA)--Bolero, Bulala, Chinteché and Emfeni--have received training in message development, message pretesting and maize presentation plans. Because only PCP EPA field assistants have had training in communication delivery, however, additional training is needed for the balance of the MZADD EPAs.

A Baseline Survey involving farmers in the four Pilot Communication Project EPAs has been completed. The aims of the

survey were:

- \* To obtain baseline data on farmers needs, resources, practices and constraints.

- \* To assess farmers' knowledge and utilization of current extension methods.

- \* To seek suggestions on how current extension methods could be improved as part and parcel of the Pilot Communication Project.

- \* To train FAs in infusion methods and promote the use of the same. (MZADD Pilot Communication Project: Baseline Survey Report.)

A Task Committee has been established at the MZADD level, with representation from national and regional research and extension perspectives, to determine message strategies and priorities based on infusion from field staff, researchers and farmers. A Work Group from within the Committee has been formed to facilitate the communication process within the MZADD and contribute to the successful production, delivery and evaluation of appropriate extension messages. Although definite terms of reference have been developed for the Work Group within the Task Committee, there has been some difficulty in bringing the group together because of pressure of other assignments. Coordination between extension and research needs additional strengthening. Because many of the messages are going to the field as printed information, technical validity needs careful review. Also, the role of the Adaptive Research Team (integrated in the MZADD during the last quarter of 1988) in the message review process needs to be clarified and operationalized.

A "Presentation Plan" format has been adopted for delivering messages to the FAs and FHAs in the PCP EPAs. This format integrates technical messages with sound delivery processes based on extension educational principles to facilitate local/decentralized communication. The Presentation Plan concept has been received enthusiastically by FAs within the PCP EPAs and in other EPAs as well. In fact, there has been considerable pressure to diffuse the concept to all MZADD EPAs which would compromise the integrity of the experimental design. This pressure has been overcome and the integrity of the design preserved so that the effectiveness of this delivery approach can be compared with that of more traditional approaches. The situation illustrates enthusiasm for the Presentation Plan concept and the eagerness of field staff to have current, localized information to pass on to farmers.

FAs and FHAs indicate that attendance at block and other extension educational meetings has increased since they began using new presentation techniques; that farmers are pleased that their concerns, needs and experiences are considered important and are reflected in the localized messages developed; and that farmers, generally, "see them differently." One FA noted that

even credit defaulters are coming back to block meetings. "When they see me coming with my backpack, posters and other materials, they know that I am there to bring them something useful," he said.

The Work Group has collaborated on the development of 17 new messages which are now either completed and in the field, ready for use, or in the final editing and formatting stages. (MARE Communication Report--Fourth Quarter: October-December 1988.) The maize message package was pretested by the MZADD Evaluation Unit in the Bolero EPA during November and modifications incorporated in the FA training programs. Follow-up evaluations are planned for later in the growing season.

Two important evaluation efforts that should provide critical input for management decisions on expanding the PCP concept to the other EPAs within the MZADD and to other ADDs are planned for early 1989. The first, mentioned above, is the follow-up evaluation of the methodologies introduced in the PCP EPAs, to be conducted by the MZADD Evaluation Unit in cooperation with the SMS that is planned for February. This effort will provide a measure of the effectiveness and impact of the approach and indicate which techniques worked best and should be considered for replication in other areas.

The MARE project document also calls for evaluation consultation upon completion of the PCP. It is anticipated that the Design/Evaluation Consultant will carry out studies that address the important issue of cost-effectiveness of various interventions introduced in the PCP and provide information upon which management can base decisions related to extending the PCP approach to other EPAs within MZADD and to the other seven ADDs in the country. There must be sufficient overlap between the these two critical evaluation efforts and the departure of ACS so that findings can be incorporated and a transitional plan developed.

To this point, the PCP emphasis has been directed toward upgrading the quality of information provided to extension field staff. The next logical step is to determine how the information flows from the FAs and FHAs to farmers. The TAP/Agricultural Communication Specialist suggests that liaison with rural sociologists at Bunda College could help in this regard. There is also need for continued inputs from the Training and Evaluation Units, as well as from the SMS, to assist VAU staff in the message development process. Training Unit input is particularly critical to assure that sound adult-education principles and the most effective mix of presentation aids (audio-visuals, demonstrations, etc.) are incorporated in the presentation plans.

Efforts to decentralize the operation and management of the mobile cinema vans--popularly known as the "Yellow Vans"--has been delayed because of lack of appropriate housing for drivers and other support personnel in the ADDs. As a result, utilization of the Yellow Vans to support message delivery in MZADD during December had to be coordinated through EAB at Lilongwe. Both farmers and field staff were enthusiastic about incorporating the special Yellow-Van campaign into the message diffusion process. Discussions between farmers and field assistants, district officers and project officers that followed the Yellow Van educational puppet-show presentations provided additional "infusion" and, thus, opportunities to further localize messages.

Lack of transportation continues to be a problem. To effectively infuse the concerns of smallholders, ADD staff must be in frequent contact with large numbers of individual farmers. Supervisory staff must also be in frequent contact with field staff to provide needed support and to receive feedback on both farmer and field-staff problems and needs.

The Visual Aids Officer (VAO) in the MZADD Visual Aids Unit plays a key role in coordinating the process and in the actual preparation of messages and accompanying communication-support materials that will be used by field staff to teach farmers. At present, he carries a rank that is lower than that of SMSs and others with whom he must interact. This can affect his ability to function as an equal and limit his effective input into the process.

The VAO has received short-term, off-shore training in communication and two other VAO staff members (radio/editorial and audio-visuals/graphics) are scheduled for training during 1989. VAO staff have also received in-country training in message development, desktop publishing and maize presentation plans. Planned training in video production was delayed because of late arrival of video field equipment. That equipment has now been delivered and the TAP has begun preliminary training. More extensive training in video and follow-up/reinforcement training in the skill areas listed above must be continued. The EAB (and the TAP while he is still attached to EAB/MZADD) should continue to provide hands-on training and review of basic skills for all VAO staff.

#### Recommendations:

\* MARE, EAB and MZADD leadership should give full support to the follow-up evaluation planned by the MZADD Evaluation Unit so that it can be completed during the first quarter of 1989.

\* Appropriate GOM, MARE, USAID and CID personnel should develop terms of reference for and begin recruitment of a Design/Evaluation Consultant to carry out the required end-of-pilot evaluation as soon as possible. It is essential that the effort be carried out while the TAP is still in Malawi.

\* MOA planners, in cooperation with MARE advisors, should use the information gained to develop a comprehensive plan to phase those aspects of the PCP approach that are determined to be most cost-effective into the ongoing extension/communication programs of the other seven ADDs.

\* To assure sufficient overlap between the Design/Evaluation Consultant's work and the continuing efforts of the TAP, USAID/Malawi should extend the TAP's contract, as has been requested, through July 30, 1989.

\* MARE, EAB and the MZADD VAU, in coordination with the Training and Evaluation Units, should develop a comprehensive training plan to reinforce training that VAU staff, SMSs and others have already received in communication processes and skills and to upgrade those skills as needed. A comprehensive training plan also will be critical for the successful introduction of PCP concepts and processes throughout other MZADD EPAs and other ADDs throughout the country.

\* MOA planners should give careful consideration to finding ways to alleviate transportation problems that limit contacts between farmers and field staff, as well as between supervisory/support personnel and field staff. Regular contact is critical to the successful operation of the infusion-diffusion approach of the PCP.

\* MOA management must continue to allocate funds to provide basic consumable materials and supplies (paper, marking pens, etc.) that field staff need to produce communication-aids to support and enhance the teaching-learning process. VAU staff must also have adequate supplies of film, film-processing chemicals, paper, and audio and video tapes needed to develop, produce and distribute educational and mass communication materials to support and complement the field staffs' direct farmer and group contacts. Management must also be prepared to address issues related to upgrading VAU positions so that professionals in these roles can function as equals with SMSs and others.

#### 4.2.1.2 Extension Aids Branch

Findings/Conclusions: The process of decentralizing communication-support efforts has been initiated with the decision to remove the mobile cinema units, the "Yellow Vans," from EAB headquarters in Lilongwe and place them at the ADD

level. The Senior Maintenance Officer at EAB has received off-shore short-term training in audio-visual maintenance and VAU staff from all eight ADDs have received in-country training in this area. Yellow-Van maintenance personnel also have been trained. However, assignment of the Yellow Vans to MZADD and other ADDs has been held up by lack of appropriate housing for support personnel. As a result, Yellow-Van support must continue to originate from EAB/Lilongwe. This may result in delays in delivering timely, localized messages to smallholder audiences.

The process of integrating video capacity into the Cine Section has also begun. The Cine Section Head/Producer has received short-term off-shore training and he and other section staff were also involved in an in-country training program conducted by a short-term MARE consultant in video production with the assistance of the TAP. (Short-Term Consultant Report: Video Electronic Field Production, 13 June -12 August 1988.) The final project of that training program was the production of a 10-minute video report, "Apindula Pogwirizana" ("Partnership for Profit"), that tells the story of a women's income-generating broiler project in the Lilongwe ADD. That video production is now being used by the Women's Programme Section to encourage other women's groups to take up broiler production.

The MARE project has also provided the EAB Cine Section professional video equipment--including editors, an edit-control unit, monitors and field camera and accessories--that will make production of a wide range of video productions possible.

Similarly, the publication-production capacity of EAB has been upgraded through both in-country and off-shore training and equipment provided under the MARE project. Publications-related EAB personnel who have received short-term off-shore training include the Senior Publications Officer, the Senior Typesetter and the Printer. These off-shore training experiences have been augmented by in-country training in word processing, computer graphics and desktop publishing conducted by MARE short-term consultants for EAB Publications and Editorial Sections' staff.

Intensive computer training under the direction of a MARE short-term consultant, with the assistance of the TAP, and the addition of more computer equipment have enabled the EAB Editorial, Typesetting and Graphics Sections to accelerate production and to meet deadlines for major MOA publications. The September/October and November/December issues of Za Achikumbi were published on time. The new desktop publishing capacity was also used to accelerate the publication of the 1988-1989 Guide to Agricultural Production in Malawi and other materials for EAB's exhibits for the Malawi Congress Party Annual Convention in Mzuzu in mid-September.

Nine EAB staff have completed short-term off-shore training in communication management, processes and skills. One staff member is currently involved in a one-year computer-design training program in the US and another is scheduled for short-term off-shore training in visual design during the first half of 1989.

The addition of new technology into the EAB Typesetting and Evaluation and Action Research (EAR) Sections will require additional training for effective, efficient operation. EARS was not included in off-shore training. (The EARS Head moved to a new position as Senior Publications Officer and received appropriate off-shore training in that area.) Typesetting training backup was limited to one three-month assignment. A candidate for Masters-level training has been identified. The individual will be employed in the EARS when that training is completed.

The Mid-Term Evaluation of the Agricultural Communication Component cites MARE's training input as "probably the most successful part of the project." That report also points out that training should be viewed as a continuous process and that there is a continuing need to train more staff both internally and externally. The need for continuing on-the-job training also is heightened by the fact that most of the off-shore training for EAB personnel was implemented during the second year of the project and returning personnel have had little time to utilize their newly acquired skills in the EAB setting. Also, some of the in-country training was hampered because short-term consultants arrived before all of the equipment for which the training was designed had been delivered. A continuing training plan needs to be developed in coordination with the Training Unit.

As the move to a more decentralized system of providing communication support for extension educational activities continues, the roles and responsibilities of the EAB will necessarily shift as well. On the production side, the ACAO anticipates that the emphasis will be on more "national" communication efforts, including Za Achikumbi, the Guide to Agricultural Production, handbooks, textbooks, radio programming and audio-visual and video presentations that have country-wide relevance and applications. Locally specific FA/FHA and farmer communication and training materials will be developed and produced at the ADD level. EAB staff will assume a greater role in providing training and support for ADD VAU communication staff and will need to be prepared to take on these responsibilities.

EAB staff will also play a key role in facilitating the process of decentralization and the introduction and adaptation of processes and procedures developed and tested through the PCP. That process is already under way. In early 1989, EAB will host

the first Diffusion Workshop to provide preliminary results of MZADD PCP activities. Participants will include management and communication personnel from the other seven ADDs; EAB PCP participants and MZADD VAU staff will serve as resource personnel. This workshop will provide useful information on what parts of the PCP approach other ADD staff see as most adaptable and relevant to their situations and problems they anticipate in integrating them into their systems. It also will provide an indication of training and backstopping needs that EAB staff will have to address as decentralization proceeds. It is critical, at this point, that EAB designate a staff member responsible for communication training activities so that the TAP can work with and turn over all training materials developed during the MARE project and assist in developing an action plan for further diffusion of the PCP experience.

#### Recommendations:

\* EAB leadership should identify areas where additional or follow-up/reinforcement training is needed and work with the Training Unit to develop a plan to meet those needs. A highly competent EAB staff, with experience and skills in training others, will be critical to sustaining the efforts begun under MARE and in extending the PCP concepts to other areas. Priority should be given to providing additional training for EARS staff.

\* EAB should designate a staff person to be responsible for communication activities as soon as possible so that the TAP can assist her/him in developing an action plan for further diffusion of the PCP experience and turn over to her/him all training materials developed during the MARE project.

\* EAB staff need MOA understanding, support and encouragement as they make the transition from primarily a production role to one that places greater emphasis on providing technical training and backstopping for communication staff in the VAUs at the ADD level.

\* MOA management, in coordination with other appropriate units and bodies, should give careful consideration to developing and instituting an incentive/motivation system to encourage staff who have demonstrated competence in communication processes at skills within the various sections at EAB to move into leadership/coordinating roles in the ADD VAUs. The EAB would, in effect, become a "proving ground" for junior communication staff who, after gaining skills and experience, would have an opportunity to advance to more responsible positions as VAOs. This would help to assure a continuing supply of competent, experienced professionals that will be needed to sustain the decentralized communication-support system.

#### 4.2.1.3 Technical Assistance

Findings/Conclusions: The MARE Agricultural Communication Specialist has provided technical assistance to both the EAB and the MZADD PCP. In that dual role, he has been "very successful," according to the Extension Aids Branch, Malawi Agricultural Research and Extension Project (NRDP-V) Mid-Term Evaluation of the Agricultural Communications Component report. That report lists among the interventions successfully launched since the TAP's arrival in 1986 the introduction and utilization of an infusion-diffusion model in the communication process; training of MZADD staff in communications skills; and training of EAB staff in computer skills.

Observation and conversations with EAB and MZADD staff, including field assistants, suggest that the TAP is widely known and respected and has been in regular contact with personnel at all levels. Farmers, at block and village meetings visited, also recognize the TAP and greet him as a friend. Although staff changes have occurred since the TAP arrived in Malawi, at least one of the changes has been fortuitous and has contributed to smooth functioning of the system. The TAP's original counterpart in the EAB is now the Deputy Program Manager--in effect, acting program manager--at MZADD. Thus, he has a good understanding of the objectives and goals of the PCP and is in a position to lend his support to the effort.

The TAP has important skills in video production, computer applications and desktop publishing to provide effective backstopping and trouble-shooting that complements training that EAB media producers and MZADD VAU staff have received either through overseas short-term or in-country training.

The TAP also has been effective in rallying support for the concepts and approaches embodied in the PCP. Staff at all levels eagerly discuss the problems associated with a top-down approach to information dissemination and the need for farmer infusion into the process and for localization of educational messages. A high level of enthusiasm for the approach is evident but, at the same time, there is concern about whether necessary support to continue the effort in the pilot area and to extend it to other ADDs will be available after the MARE projects ends.

The TAP's contract is currently scheduled to expire in early March with departure in February (mid-way through the PCP growing season). Follow-up evaluation of the methodologies introduced in the PCP EPAs, to be conducted by the MZADD Evaluation Unit in cooperation with the SMS is planned for February. This effort will provide a quantitative measure of the effectiveness and impact of the approach and some indication of which techniques worked best and should be considered for replication in other areas.

Also, the MARE project document requires evaluation consultation upon completion of the PCP. It is anticipated that the Design/Evaluation Consultant will carry out studies that will address the important issue of cost-effectiveness of various interventions introduced in the PCP and provide important information upon which management can base decisions related to extending the PCP approach to other EPAs within MZADD and to the other seven ADDs in the country.

It is important that there is sufficient overlap between the completion of these two critical evaluation efforts and the departure of TAP.

#### Recommendations:

\* USAID/Malawi should extend the contract of the TAP, as has been requested, through July 30, 1989.

#### 4.2.2 Addressing the Needs of Female Smallholders

A Policy for Women Farmers: A signal achievement of the Women's Programme Section is to have spearheaded the publication of a Policy and Implementation Manual. MOA policy now explicitly addresses the needs and contributions of women farmers. In the words of the Chief Agricultural Officer in the newly published Women's Programme Section: Policy Guidelines and Implementation Manual: "Women are farmers in their own right, therefore they should be trained in the essential skills and techniques to make them benefit more from their farming activities."

The Policy and Implementation Manual represents a major effort by WPS, who coordinated the reviews and revisions by officers at all levels (CAO, ADD staff, WPOs). The WPS, established in 1981, had introduced an emphasis on women's role in farming as well as in the home, but lacked a strong program. The MARE-funded activities have enabled WPS to provide specific direction and content to the policy of serving women farmers more effectively.

A parallel achievement of the Women's Programme Section is the restatement of policy as stated in the publication Agricultural Extension and Training in Malawi. The recommended restatement was articulated in the recent FAO-funded workshop on Improving Agricultural Extension and Training Policies for Rural Women in Malawi, held in October 1988, but reflects the work of the WPS towards this goal. In addition to the policy statement referring to "male and female smallholders" throughout the document, specific goals are set out to improve extension and training for women farmers (see the draft recommendations in the Workshop Report).

The Action Program of WPS: The WPS is placed within the Extension and Training wing of the Department of Agriculture. Its stated objectives are: "1. To increase women's participation in extension programs and services in order to optimize adoption and agricultural productivity; 2. To increase household income through income generating activities related to agriculture or agribusiness; 3. To improve home and farm management skills and utilize available resources in order to improve family health and well-being" (WPS: Cultivating Women's Involvement in Improved Agricultural Production).

The MARE project included as one of its objectives to aid the MOA in making its programs "more effective in assisting female farmers". The MARE project was intended to address the needs of female farmers in the three components, training, agricultural research by the MOA, and extension services. The project funds to the Women's Programme have provided support for training for the WP staff at all ranks, equipment, and long-term Technical Assistance to the WPS at Ministry headquarters, which is placed under Extension and Training. This has effectively meant that the major thrust of the MARE funded activities under the Women's Programme has been in extension programs.

The WPS has collaborated with Adaptive Research teams in several ADDs, with Commodity Researchers in agroforestry and horticulture, and made contact with other branches of agricultural development (such as farm machinery). At this point, the main efforts of WPS are directed to extension, and should be consolidated. In the future, a greater involvement of WPS in the formulation and implementation of agricultural research is needed. The role of agricultural research in the overall aim of improving women's agricultural production, productivity and income will be furthered when more women fill the ranks of scientists, researchers and administrators.

A review of the activities of the WPS shows that the office, under the guidance of the TAP, carries out a range of activities in its pursuance of the goal of improving the lot of women farmers. These include: (1) developing and maintaining a support system for the WP staff at Headquarters, ADD and field levels, which includes information dissemination, developing training materials, training courses, the formulation of development plans, section actions and directions; (2) developing methods of increasing women's participation in extension activities; (3) coordination with other sections in the Ministry and with other governmental and non governmental bodies in reaching women farmers; (4) developing systems of monitoring and evaluation of extension activities with reference to women farmers; (5) developing proposals for obtaining funding for research and other activities relevant to WPS responsibilities; (6) representing GOM and MOA at conferences and other meetings where the role of women in development is a central topic.

The WPS has set as one of its targets low resource female farmers, "with special emphasis on single household heads" (or female headed farm households). The MARE project-supported activities of the WPS have been directed toward training (which will be discussed in the section on Building Capacity below); to developing policy statements that direct the focus of the program (see above); to focussing the action program on the development of income generating activities (IGA); and to supporting other aspects of the action program such as developing methods of reaching women farmers, and establishing linkages with MOA agricultural research and with other bodies.

Income Generating Activities Program: The MARE project provided "a demonstration fund for agricultural production by women's groups" (Annex 9.10, p. 7). With the advice and participation of the TAP, the WPS has begun to use these funds for establishing income generating activities (IGAs) for women's groups. The goals of the WPS in its promotion of IGAs are: to increase women's access to improved technologies and practices; to increase women's productivity and income in agriculturally based activities; to increase the availability of food products in villages. In addition, successful IGAs are intended to act as demonstrations of both the advantages of recommended practices and of the credit-worthiness of women. The former demonstration is expected to spread the information and techniques, so that each IGA should spawn others, both as group and individual activities. The latter demonstration is intended to provide solid evidence of women's credit-worthiness: their ability to handle credit and to achieve high rates of repayment despite their usually low to zero collateral.

Sums of approximately K2,000 were allocated to each ADD in the 1987/8 cropping season and varying amounts in 1988/9. In 1987/8 funds were distributed to 22 groups, with an average of 17 members. (See Table 3.) The group enterprises include the raising and sale of crops of cotton, groundnuts, and vegetables, poultry (layers and broilers), a piggery, and an experiment in oil extraction. Given the average cash income in rural areas, this figure of approximately K40 per woman is a considerable injection of capital into the selected groups. At the same time, the total of some 400 women out of the target population of low resource women farmers obviously constitutes a very small number affected to date. What is the prognosis of this program being able to reach large sections of the target population?

It is important to stress that only three IGAs were visited so that the following statements have a fragile information base.

Table 3: Use of Demonstration Funds from MARE Project--1987/88

<u>ADD</u>	<u>NUMBER OF GROUPS</u>	<u>NUMBER OF WOMEN</u>	<u>AMOUNT</u>	<u>ENTERPRISES/PROJECTS</u>
Karonga	2	35	1,500	Cotton Groundnuts
Mzuzu	1	12	2,100	Tomatoes (rainfed)
Kasungu	3	93	2,000	Vegetable Growing
Lilongwe	1	27	2,000	300/400 broilers
Salima	3	60	1,700	Vegetable Growing Layers
	1		300	Experiment in oil Extraction
Liwonde	1	38	2,200	Piggery
Blantyre	4	62	2,000	Layers
Ngabu	4	60	2,000	Cotton and Rice
<b>TOTAL</b>	<b>22</b>	<b>387</b>	<b>15,800</b>	

### Achievements:

\* Group organization and management are recognized as central to the success of the IGAs. All existing groups are reportedly established groups, having been engaged in agricultural productive activities before. The groups observed were not homogeneous socially. Given that most groups depend for some of their resources, especially land, on members, it is not surprising that some of the members are better off than others. It would probably be a mistake to assume socio-economic homogeneity is a necessity for these groups, especially those with relatively high capital inputs (eg. a piggery). The task of reaching the poorer farmers, except as some are members of existing or future groups, is one still to be tackled by the WPS.

\* Observed levels of care and labor are high (eg., in the two layer projects, no breakages of eggs had occurred).

\* Serious attempts are made to ensure proper skills and training to the group enterprise. As well as the FHA, the local FA and relevant SMS are involved. DOs and POs are involved in supervision and distribution of inputs.

\* Demonstration effects are occurring in some cases (in one layer group, a quarter of the members were starting individual layer projects of their own). Also, the group had been approached by other women wishing to join, but had refused to increase their size for reasons of organization and income level.

### Problems and Constraints:

\* The requisite level of staff support and supervision is high and, given the existing ratio of FHA to the target population, costly.

\* Financial costing and management are inadequate, despite attempts by the WPS to provide some training to staff and, through them, to the women entrepreneurs.

\* Groups are dependent for many supplies (eg. feeds, building materials) on ADD and project staff. This results in loss of production and income to the groups and extra demands on extension staff.

### Recommendations:

\* More emphasis should be given by WPS, using funds made available through the MARE project, to providing basic principles and practices of assessing feasibility, establishing simple systems of financial accounting and record-keeping for FHA, WPO, FA, and group leaders.

\* WPS should ensure that the basic information that is presently being collected about IGA groups by local extension agents is recorded in a simple but consistent format at ADD and HQ levels to provide a basis for decisions on future direction of program effort.

\* Given the high demand on staff resources and the present level of staffing, especially at field level, it is recommended that GOM encourage non-governmental organizations to support some of these activities. While government, in the form of the WPS and operating with MARE funds, can play the important part of initiator in income generating activities, the hands-on, iterative and creative role needed in guiding IGA groups over a longer term is more appropriate for decentralized organizations. The suggestion made by certain bodies outside government that government play a coordinating role in IGAs is not considered appropriate. Representation by the WPS on a coordinating body is probably worthwhile, but a coordinating role is not the appropriate work for an already overloaded extension staff or HQ staff in these small group activities.

\* Because the IGA initiative makes heavy demands on staff time it is suggested that some of the demonstration funds be made available to WPS for a broader sweep of extension effort directed to women farmers. Some examples might be: (a) several large meetings conveying the message to women that is apparently held by ADD staff but that is not reaching many low-resource farmers that modern varieties of maize can be intercropped and do not require fertilizer to be worth trying; (b) information and, possibly, distribution of seeds of other productive crops being developed in other sections (such as vegetables); (c) show the demonstration film (about a broiler project) and have women from successful groups explain the project to large groups of women.

Reaching Women Farmers: While income generating activities are the central thrust of the WPS at present, they form part of the broader agenda of reaching women farmers. WPS Headquarters staff have been promoting among WP staff at ADD and field levels and other extension staff the need to encourage women farmers to join groups and clubs, and to attend block meetings and courses. (See Table 4.) The WPS has also promoted the extension of more credit to women farmers. The proportion of women receiving credit has increased from 25 percent to 30 percent between 1986/7 and 1987/8. Figures also indicate a longer term upward trend. (See Table 5.) In addition, WPS developed a new recording format for the credit program which were presented and accepted at the National Credit Seminar. These distinguish not only the gender of the recipient but also the household type of the borrower, thus making it possible to distinguish how many single female heads of households as compared with married women are receiving credit.

Table 4. Women Belonging to Groups and Clubs--June 1988

	KARONGA	MZUZU	KASUNGU	SALIMA	LILONGWE	LIWONDE	BLANTYRE	NGABU	TOTAL
WPO	0	0	1	0	1	1	1	0	4
AWPO	1	3	4	1	1	2	4	1	17
SFHA	1	3	3	2	5	1	2	0	17
FHA	11	29	25	13	54	28	38	16	214
FFA/FHA	2	5	5	2	11	3	2	3	33
FA	107	238		163	406	270	273	210	1667
DA	0	5	0	0	6	1	0	0	12
TOTAL	122	283	38	181	468	306	320	230	1948
Total FHAs (SFHAs, FhAs, FFAs)	14	37	33	17	54	32	42	19	248
<b>EXTENSION ACTIVITIES</b>									
<b>No. Mixed Clubs</b>									
84-85	583	575	1731		2425	1570	543	374	7801
85-86	540	654	2455		2279	1635	570	399	8532
86-87	527	583	2052		2322	1452	680	433	8049
87-88	539	100	2151	634	4640		1065	381	9510
<b>Females in Mixed Clubs</b>									
84-85	2402		5849	1712	3846	3347	4125	1169	22450
85-86	2132		12895	1729	3275	4231	4152	1559	29973
86-87	2814		10789	1590	12509	4089	6150	1271	39212
87-88	2620		14581	1648	28144	5808	10553	3244	66598
<b>No. Women's Groups/Clubs</b>									
84-85	2	132	64		97	102	50	31	478
85-86	48	123	229	54	154	152	61	42	863
86-87	55	154	419	36	163	165	103	49	1144
87-88	2	98	337	65	16	216	189	39	946
<b>Members of Women's Groups/Clubs</b>									
84-85	3626	2640	1038	1007		1877	1044	757	11989
85-86	3718	2540	4589	1114		3945	1956	913	18775
86-87	5019	3632	7461	1176		5345	3271	1100	27004
87-88		2421	13135	1369		2553		626	20104
<b>WOMEN FARMERS RECEIVING CREDIT</b>									
<b>In Farmers Clubs</b>									
84-85	2402	4083	5849	1724	10708		4443	1242	30451
85-86	2132	2259	12895	1483	10703	684	4757	830	35743
86-87	2814	2795	10789	1684	12006	1515	7379	620	39602
87-88	2620	2336	6667	1648	28144	8720	10553	985	55036
<b>No. of Members Receiving Credit in Women's Groups</b>									
84-85	34	252	1039	0	0		1044	0	2369
85-86	34	1105	4589	0	490	3178	1956	10	11362
86-87	93	1396	7461	0	330	3907	3271	11	16469
87-88	33	1367	11053	665	0	6421	5989		25528
<b>No. of Women with Med Term Credit</b>									
84-85	0	5	0	2	0	1	5	3	16
85-86	12	14	0	1	4	0	0	3	34
86-87	0	5	1	3	2	3	3	2	19
87-88	32	0	4	7		3		2	51
<b>No. of Women's Groups Receiving Credit</b>									
non-seasonal		0	312						312
medium term		0	4						4

A. D. D.	1982/83				1983/84				1984/85				1985/86				1986/87				1987/88			
	Clubs	MEMBERS			Clubs	MEMBERS			Clubs	MEMBERS			Clubs	MEMBERS			Clubs	MEMBERS			Clubs	MEMBERS		
		Men	Women	Total		Men	Women	Total		Men	Women	Total		Men	Women	Total		Men	Women	Total		Men	Women	Total
KARONGA	523			8003	453	6554	1833	8587	853	8248	2394	10642	537	6982	2195	9177	514	6655	2757	9422	538	6333	2725	9058
MZUZU	452			17251	548	19373	2146	21519	574	19507	3528	23035	654	14919	3364	18283	495	10137	3869	14006	778	14751	7196	21947
KASUNGU	702			23213	1117	27829	3134	30963	1472	34190	5849	40039	2055	49213	12965	62178	2052	43965	18250	62215	2141	40984	17826	58810
LILONGWE	2239			61663	2262	51787	9635	61422	2422	57603	10708	68311	2280	53190	10703	63893	2321	53738	12009	65747	2533	59991	15490	75481
SALIMA	860			8824	808	11266	2048	13314	1009	15660	1724	17384	872	13359	1409	14768	662	9370	1684	11054	649	10036	2424	12460
LIWONDE	651			15293	910	19061	3569	22630	1009	22265	4116	26381	902	15433	3862	19295	901	13717	5339	19056	1013	16721	8240	24961
BLANTYRE	733			16936	588	9565	3628	13193	540	9825	4472	14297	574	9150	5164	14314	681	10273	8249	18522	1059	16347	7415	33762
NGABU	494			5520	505	7586	1042	8628	539	10199	1482	11681	385	5371	717	6088	419	6053	334	6387	418	5812	1223	7035
<b>TOTAL</b>	<b>6654</b>			<b>156703</b>	<b>7191</b>	<b>153221</b>	<b>27035</b>	<b>180256</b>	<b>8148</b>	<b>177197</b>	<b>34273</b>	<b>211770</b>	<b>8259</b>	<b>167617</b>	<b>40379</b>	<b>207996</b>	<b>8045</b>	<b>153908</b>	<b>52501</b>	<b>206409</b>	<b>9129</b>	<b>170935</b>	<b>12513</b>	<b>897432</b>

Table 5. Farmers Participation in Seasonal Credit Programme During 1982/83 - 1987/88 Seasons

### Recommendations:

\* Present efforts directed to increasing women's participation in block meetings, groups, clubs and credit programs should be continued. Collection of basic data to monitor progress is needed (see below). Ways of providing incentives and training to (male) FAs to work with women farmers and with the WPS staff should be discussed with the director of extension and ADD staff.

\* Field staff need more transportation support. The provision of bicycles, if not motor vehicles, is urgent.

### Linkages with Research

Adaptive Research: The MARE project document suggested that the role of women as farmers had to be incorporated into the ART agenda. Women were to be included in the diagnostic surveys and as participating farmers in Adaptive Research activities. It went on to suggest that the WPOs should be closely involved with the AR teams in their surveying and other work.

Some of this proposed interaction is taking place. WP staff have been involved in most of the diagnostic surveys, informal surveys, training sessions set up by the AR teams, and in several trials and studies (for example, a study of marketing constraints and a trial with potato-wheat sequential cropping).

On the other hand, the adaptive research trials to date contain a small minority of farmers who are women (I was unable to get the precise number). One problem is that the selection of participating farmers depends on contacts by the FAs, who have far fewer contacts with female farmers, particularly low resource women. A further cause seems to be the lack of serious commitment to the inclusion of women farmers among AR teams. In some ADDs, the WP staff have worked closely with the AR teams whereas in others virtually no contact apart from the initial surveys appears to have taken place. One program manager stated categorically that the WP staff did not work with the AR teams.

The incorporation of gender analysis into adaptive research does seem to be underway in that basic information in most surveys is disaggregated by sex.

### Recommendations:

\* The inclusion of gender analysis in adaptive research is critical because many of the constraints facing low resource farmers (shortage of land, labor supply, cash and/or credit for inputs, information) are particularly severe for many women farmers. Careful monitoring by the WPS in collaboration with the coordinating unit of Adaptive Research is needed to ensure that all data collection and analysis are disaggregated by sex.

\* It is essential that more effort be given to ensuring an appropriate representation of women farmers in the ARP surveys and trials.

Commodity Research: The links between the women's program and commodity research are presently fewer than those with the ARP activities. The horticulture and agroforestry TAP and their counterparts have worked with the WPS in establishing research trials on indigenous vegetables and *Acacia albida* respectively. In the latter trial, fifty percent of the farmers participating are women. Presentations by the Agroforestry TAP have been made to WPS seminars. The AGREDAT team has been working with the WP staff in a cassava trial at Salima.

There is no indication at present that gender analysis is incorporated into the research agendas of the commodity research teams nor that the commodity research has been influenced by constraints specifically associated with women farmers (whether low resource or not). Exceptions to the latter contention are the horticulture and agroforestry research.

#### Recommendations:

\* The existing initiatives involving WPS and CR should be carefully followed by WPS. Results should be presented at the annual meetings of the AR and CR teams. The DAR and DOA need to lead in this task and the leaders of the various commodity teams and the AR coordinating unit should meet with WPS to set up a regular channel of collaboration.

#### Building Capacity

Training Staff: A major contribution of MARE funds has been to provide resources for both short term and long term training for WP staff. Much of the time of the WPS and the TAP over the past two years has been devoted to the development of appropriate training for the WP staff with the overall goal of strengthening the capacity of the WPS to carry out its mandate. With the shift in emphasis of the WPS from home economics to agricultural productivity, the existing field staff are underqualified. The WPS has used MARE funds (in addition to other funds) to organize and/or attend short term training courses on a range of agricultural and methods topics (credit, animal power, land husbandry, extension management, income generation).

A course for SFHAs is in progress and a year-long course designed to upgrade the existing cohort of FHAs at the NRC is expected to be initiated in Autumn 1989. The shortage of FHAs in the field and the need to encourage and direct FAs to work more closely with women-farmer groups also suggest that the training of these categories of extension workers have a similar core (including agriculture and nutrition), with a choice of remaining subjects.

The TAP and counterpart Malawian staff have used MARE funds to develop and purchase training materials for extension staff, and informational materials on the program, including videotape, slides, photographs and posters.

In 1987, the TAP initiated an annual WPS workshop that provides a mechanism for collecting data (see below) on the program and staff, a forum for disseminating information, discussing policies, formulating workplans for the coming year, and facilitating communication among the scattered staff. The MARE funds (supplemented with UNDP funds) enabled the WPS not only to hold regional training workshops in income generation for rural women, but also the fact-finding trip of WPOs (from ADD level as well as two from headquarters) to several African countries. While the latter is probably not easily replicable, it is reported to have injected a great deal of energy into the program staff.

The Women's Programme is seriously understaffed (there are some 250 FHAs compared with over 2,000 FAs), thus making it virtually impossible to carry out its mandate of extending services to more women farmers. In addition, the WPS has no career structure and relies on borrowed posts. A particular problem is likely to face the WPS at the end of the MARE TAP's service. At present, there is only one PO position in the office. This is to be filled by the Malawian counterpart, who is the Section head, now doing her Masters degree in the US. However, all the training imparted by the TAP during her stay has been directed to the replacement officer. It would be a great loss to this nascent program not to provide a channel for the intensive in-service training undergone by this replacement officer. Moreover, the heavy workload that has been carried in the past two years by the experienced TAP and the (replacement) counterpart are impossible for a single person to manage.

#### Recommendations:

\* Efforts should be continued to provide training (in both specific subject matter and methods) to WPS staff, both in-service and pre-service, that addresses women's agricultural role and income needs.

\* There should be an aggressive recruitment drive for candidates for the FHA course at NRC and a revised course to provide the necessary training to equip them to act as effective agricultural extension staff.

\* The NRC training curriculum for FAs/FHAs should be revised. It should be focussed around a common core, including agriculture and nutrition, to help both FAs and FHAs work more effectively with women farmers and provide common ground for collaboration between them. Directives and incentives should be provided for them to work more effectively with groups of women farmers.

\* Two posts should be established (or, minimally, borrowed for the short term) for the WPS office at Headquarters.

\* If the MOA wishes to see the WPS sustain its present directions and achievements and, in particular, if it wishes the program to reach a larger proportion of the female farming population, then the present or another experienced TAP should be assigned to headquarters to work with the Malawian counterparts for a period of two and a half years. If the present TAP is unable to remain, a replacement should be sought immediately.

Monitoring and Evaluation: An effective extension service has to develop means of monitoring and evaluating its performance. To this end, the WPS has started developing methods of collecting basic statistics on the program. The WPS annual workshop is a mechanism for sending forms to all WP staff to fill in statistics on the numbers of women's groups, clubs, numbers receiving credit, etc. These routine data can also be supplemented by questions addressing a specific need. New credit forms devised by the Credit Section with the active advice of the WPS will provide information not available till now: not only the numbers of women and men receiving credit, but, of women receiving credit, how many are married (living with a husband) and how many are the single heads of their households. Yet to be developed is the collection of data on the types of courses taken by women and men farmers.

Networking, Coordination and Development: The combination of a small staff with the current interest in the topic of women in development has required the WPS to expend time and resources on networking and coordination. While some of this has originated in the current and projected work of the WPS (such as contacts with the University on workshops and research), some has also been directed to the WPS by the CAO. Attendance at conferences, seminars or meetings with governmental or non governmental bodies to represent the Ministry on women's affairs has been a part of the responsibilities of the WPS. Some of this has been at the cost of program priorities and has resulted in the delay of certain planned projects.

Development activities have included proposals to carry out two national studies, which have both been funded, one by MARE.

#### Recommendations:

\* A task for the next phase of work of the WPS should include an attempt to provide guidelines on the gender disaggregation of data. These should be publicized and promoted particularly among those sections of government already engaged in collecting, compiling and/or analyzing agricultural data. It should be pointed out that constant attention has to be paid to these matters at this stage of development of the women's program. One example demonstrates this: the report on the Mzuzu Pilot Project Baseline

Survey provides basic data that are not disaggregated by gender. And this is in a project that stresses the importance of women farmers.

\* The current activities of the WPS itself should be carefully monitored. This can only be done if there are good baseline data. The information being provided by FHAs and WPOs on the new IGAs, for example, should be put on standardized forms from which the data can be easily put into a personal computer and subjected to fairly simple analysis.

\* The WPS officers need to screen carefully the requests for their participation in general women/gender-related activities to ensure that their program directions are not diverted. Until there are more officers in the MOA competent to speak to issues of women in development, both the WPS and their superior officers need to decline some requests.

The Effectiveness of the Technical Assistance: The choice of TAP has been an excellent one for the WPS and for the Malawian counterparts. The place of the WPS under Extension and Training within the DOA and the nascent phase of the WPS reorientation towards women in agriculture (as well as in the home) have meant that the approach of the TAP has been most appropriate. The TAP brought considerable experience with extension services in the US, which, though the agricultural system is very different from that of Malawi, has methods of training that are germane to this country's extension services. The TAP has strong skills in administration and program development that have been essential to the program's establishment.

The achievements of the TAP, in collaboration with Malawian counterparts, include setting up work programs for WPS, developing strategies for action, organizing training programs and developing training materials for WPS staff, identifying out of country short term courses, and laying the groundwork for changes in the basic training of extension field staff. A strategic decision was taken to set priorities for the program. She took the initiative in using demonstration funds for income generating enterprises for women smallholders.

In addition, the TAP initiated the writing of proposals that have brought further resources to the WPS. Some progress has been made in establishing collaborative links with research, especially adaptive research, as have contacts with other sections of government, the University and non-governmental organizations. The collection of basic statistics will enable the MOA to assess its progress in extending services to women farmers and to orienting its research to encompass gender-differentiated determinants of agricultural production, food supply, and agricultural income.

The TAP has been effective in her relations with the Malawian counterparts in the WPS office, with the extension staff and with her colleagues and superior officers at the Ministry. The Malawian (replacement) counterpart has received useful training in writing and presenting information and data relevant to the program, executing workplans, organizing workshops, writing research proposals, and conducting research.

In summary, the TAP has met the requirements of her position in an exemplary way. The following recommendations address the program and its future direction.

#### Recommendations:

- \* WPS and CAO/DOA should continue to put staff and other resources into developing appropriate training courses and materials for WPS staff and for their work with women farmers.
- \* WPS should continue with its efforts to assure basic data collection to enable it and DOA/MOA to monitor the effectiveness of the Ministry in reaching women farmers and incorporating gender-related factors into its ongoing research and services.
- \* WPS should consult with other government agencies engaged in the collection, compilation and analysis of data to ensure gender-disaggregation is routine. This is particularly important for the research and development groups.
- \* More systematic effort needs to put into developing regular ways of consultation and collaboration of WPS with research teams in adaptive and commodity research. This needs support from the DAR.
- \* The costs of the IGA program are high, given especially the low staff-farmer ratio. Careful attention needs to be paid to this program to make a judgment on its costs and benefits.
- \* Current directions of WPS seem appropriate to MOA goals and should be consolidated in the next few years.
- \* In the next phase of work of the WPS, effort needs to be directed towards devising more effective ways of reaching the low-resource farmer. Although WPS has taken the low-resource farmer, including the poorer female-headed households, to be a major target audience, reaching the low-resource farmer is proving to be as difficult for the WPS as for the extension service in general.
- \* In the next phase of work, the WPS should encourage the GOM to address gender issues in agricultural research more directly. As noted, the present strategy is to stress extension services and within those, income generating activities. This makes sense. However, the progress of agricultural production by women farmers depends on their constraints and opportunities being more centrally

placed in ongoing research. A further reason that is not recognized at present is that the more productive smallholder male farmers (who are current or potential surplus producers of maize, and who grow cash crops such as tobacco, cotton, groundnuts, etc.) depend on the labor of their wives. Women in these households, which do not fall within the low-resource target group, are nonetheless critical to the present and future success of attempts to increase both food production and export crops. These should be a central focus of adaptive research in its mandate to identify constraints and opportunities among smallholders and to work out in collaboration with farmers the most appropriate means of increasing productivity through new technologies or the readjustment of existing factor ratios.

#### 4.2.3 Effectiveness of Block Visitation System

Background: It should be stressed that the period of time and opportunities for observation available to the review team were in no way adequate to a thorough evaluation of either the Block Visitation (T&V) strategy or the quality of its execution. Our observations were neither extensive nor systematic but they do suggest some tentative conclusions.

Findings/Conclusions: Extension staff stress the need to adapt the Block Visitation System to accommodate the variety of crops and problems, but what was observed appears to be a traditional T&V system in the four-on, one-off pattern.

Experience with the system has been mixed. Almost everyone interviewed concedes that the early days of the system were unsuccessful. The contact farmer approach did not work -- in fact did not seem to fit Malawian ideas of equality. Field Assistants often "ran dry," with little new to offer. Some experienced workers regard the system as a disaster.

The system seems to be working somewhat better in the Pilot Program area, where Field Assistants (FA) have been helped to provide localized messages with help from the Extension Aids Branch (EAB).

The credit clubs which serve as the local base for the system are more than a medium for inputs. The clubs have achieved a social and community function, providing help to members who have been injured or sick, etc., as well as having test or demonstration plots. This suggests that they are a potentially viable medium for the conduct of extension with their members.

The clubs still reach only a small proportion of farmers, and the farmers are differentiating as some take up practices and others won't or can't. It is not clear that the T&V system will work well or efficiently to serve a differentiated audience requiring differentiated information and services. Even now, some experienced

administrators are concerned that field staff are simply calling "huge meetings" instead of addressing specific issues with specific groups of farmers.

The elaborate structure of miniblocks, blocks, program areas, etc., requires a great deal of energy just to establish and maintain. Difficulties in providing necessary transport have seriously impeded the functioning of the system.

#### Recommendations:

\* MOA should monitor the Block Visitation System carefully to determine which local extension needs it meets effectively. If it is not serving the full range of farmers, or of farmers' information needs, it should be modified or dropped. It is too demanding of time and resources to be continued unless it will accommodate the full range of extension activities.

\* FAs should receive training and support in both content and process. Much of the success of the system will depend on the quality of the information to be delivered and the ability of the FAs to present it. DOA, the Training Unit and EAB share responsibility in this area.

\* Consideration should be given by the Training Unit and DOA to using the system and the training days it provides as the medium for the FATOT round of training.

### 4.3 Research

#### 4.3.1 AGREDAT

Background: The evaluation team's assessment of MARE's contribution to AGREDAT is based on conversations with the experiment station director at Chitedze, scientists with whom the TAP worked and his publications. The TAP was called home suddenly because of a death in the family and the evaluation team was unable to interview him.

The mission of the economist assigned to AGREDAT, according to the project paper (Annex 5.1 B, p. 10) is to help the unit conduct "ex-ante and ex-post financial and economic analysis of experimental work, plus some preliminary general assessments of the adaptability of technologies to farmer objectives." The AGREDAT economist also is expected to provide economic information to commodity teams. A second task spelled out in the project paper was to assist in establishing a computer data bank for past and current research.

Findings/Conclusions: There is universal praise for the TAP's contribution to the first objective. He became directly involved in conducting field studies that ultimately produced some very useful information. For example, he demonstrated that applying

Daconil, a fungicide, to groundnuts did not pay. A similar type of study is now being conducted on cotton. The TAP also has been involved in a multi-donor funded study of cassava.

The second mission of the economist assigned to AGRE DAT was to assist in developing a data bank. This has not been done for several reasons. First, there is uncertainty among scientists as to precisely what types of data would be useful to have in a data bank. Second, it is not clear how or when the data might be used. Some believe it would be more useful to have each scientist retain what data he/she needs in their own microcomputer. Creating a data-management system requires special skills. The TAP assigned to AGRE DAT apparently did not possess these particular skills. He opted to work in an area where his skills could be most effectively utilized. The evaluation team is persuaded that he made the right decision.

As was the case with other TAP, the AGRE DAT TAP was frustrated by delays in acquiring vehicles and the lack of funds to carry out research projects. In some cases, we were told, he paid some of the expenses of field assistants out of his own pocket because they could not be reimbursed. The evaluation team is aware of the fact that the MARE project was not designed to provide research support (this was to be provided by the MOA), but scientists with whom he worked could not understand why there were no funds to carry out projects. The MARE project was compared unfavorably to projects funded by other donors which did provide such support.

The technical assistance provided under the MARE project has made research personnel aware of the importance of assessing the profitability of recommendations before they are finalized. While the TAP appears to have had little direct influence on research priorities, his work is appreciated by administrators and may lead them to give more consideration in the future to economic factors in deciding what projects to undertake.

#### Recommendations:

\* The contract of the AGRE DAT economist should be extended or a replacement recruited to continue the type of work he has initiated. Such an individual is necessary to provide continuity and to help in integrating returned scientists into the program.

\* The mandate to establish a data bank should be deferred until there is more general agreement on the need for such a facility and more clearly defined objectives.

## 4.3.2 Commodity Research

### 4.3.2.1 Agroforestry

Background: Agroforestry was selected as an area of specific emphasis within the MARE project because it offers attractive alternatives for maintaining or improving agricultural productivity without inputs often unavailable to the target smallholder audience. In addition to soil fertility maintenance and erosion control, agroforestry technologies are geared to provide these same farmers with a wide array of essential secondary subsistence and cash products including fuelwood, fencing and construction materials, and fodder.

Agroforestry, like farming systems research, is a diagnostic and multi-disciplinary approach designed to identify and solve farmers problems using tree-based technologies. As such agroforestry does not offer quick fixes emanating from wholesale transfer from systems proven elsewhere. Indeed, the slower growth characteristics of woody perennials used within agroforestry systems necessitate a comparatively long gestation period for technology validation and eventual extension.

It is necessary to recognize that the Agroforestry Commodity Team (AFCT) is now completing only its third season of trials establishment so many results and linkages with other MARE partners is just beginning. Even given the slow technology generation lag time, MARE's brief period of agroforestry research has already begun to produce results supporting development and extension of promising technologies which appear capable of alleviating critical production constraints.

Significant increases in non-fertilized maize yields have been demonstrated using Leucaena<sup>1</sup> and MARE on-station trials indicate mature hedgerows capable of contributing 35 to 50 kgs of N per hectare (Saka and Bunderson 1988). Other information is beginning to provide indications on management practices which maximize crop and/or tree biomass yields.

In addition, results from several West African countries (McGahuey 1984; Dancette and Poulain 1968) have recently corroborated the value of intercropping with Acacia albida, a tree

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<sup>1</sup> At Chitedze mean cob weights increased from 119 to 148 gms (+25%) and net per hectare yields increased from 2278 to 3241 kgs from a single top dressing of Leucaena leucocephala mulch in alley cropping trials (Bunderson unpubl. data).

common in Malawi<sup>2</sup>. Other alley cropping trials with other leguminous tree species offer encouraging results to assist in dry season fodder production, reduction of soil erosion through biological barriers, and resolution of fuelwood shortages through woody biomass production.

MARE Design Considerations: The MARE Project Paper prescribed the promotion of agroforestry through establishment of an AFCT which would be supported through three years of technical assistance to set up appropriate research while two selected individuals underwent long-term training. In essence, the TAP was to act as a catalyst in development of research methodology and field trials so that returning training participants could efficiently return to an established research agenda.

As with other project activities, agroforestry was expected to benefit from the synergy created through collaboration between on-station and Adaptive Research Programs. Other support from AGREDAT's Production Economist, extension capabilities of the Women's Programme Section, and the Extension and Training component were to have created a "critical mass," facilitating rapid deployment of agroforestry throughout the smallholder community. For many good reasons, some which were apparent at the design stage, this collaboration and resultant synergy has not materialized with regard to agroforestry. In any case several areas of collaboration will need to be increased if long-term agroforestry potential is to be realized.

Agroforestry Technical Assistance: The technical assistance to agroforestry research provided through CID and supported by MOA/ARC has been of very high calibre. The large number and geographic diversity of complex but appropriate experiments is impressive. The pragmatic approach of agroforestry research conducted under MARE by the AFCT is unfortunately not characteristic of most efforts elsewhere in Africa. The ambitious research agenda established over the last 26 months is far from conclusive but has already begun to provide significant input into on-farm research while wholesale extension of at least two technologies can begin immediately. The quantity and quality of supporting documentation is equally impressive.

Remaining time to project completion must be spent on consolidating efforts while actively seeking on-farm validation through adaptive research. AFCT will need to focus on geographic "windows of opportunity" where short-term smallholder adoption can be supported through strengthened links with other MARE components.

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<sup>2</sup> In limited samples maize yields measured under *Acacia albida* show a consistent decline as a function of distance from the tree base peaking at 6m (1.6 tons/ha) and declining to 1.35t/ha at 12m and 0.65t/ha at 21m from the tree.

### Findings/Conclusions:

- \* CID-affiliate Washington State University expeditiously provided the services of a qualified, effective and highly motivated agroforestry specialist. This individual's african experience and academic training have been largely responsible for catalyzing the Agroforestry Research Commodity Team's (AFCT) remarkable progress in a short period of time.
- \* Collaboration between the Agroforester and MOA staff, particularly ARC counterparts, has been excellent with regard to on-station and adaptive research.
- \* Coincident training and research implementation schedules and the resultant paucity of trained staff within the Adaptive Research Teams (ARTs) has obliged the AFCT to facilitate all on-farm testing through ex-MARE contacts (ADDs, RDPs). This has further stretched limited personnel and lowered supervision and data collection on both applied and adaptive research trials.
- \* The AFCT has recently forged linkages with the Women's Programme Section (WPS) and the Extension Aids Branch (EAB) within the Mzuzu Pilot Communication Project in the development of a campaign aimed at the widescale promotion of intercropping with Acacia albida. This represents a good opportunity to look at gender-disaggregated incentives behind adoption.
- \* The Agroforestry TAP has been very helpful in curriculum development and supervision of field research in Malawi for the two Malawians selected for long-term training. This should help assure their all-important integration into agroforestry research upon return.
- \* There will be no overlap between return of long-term training participants (12/89) and the scheduled departure of long-term TAP (09/89). This will create a gap that jeopardizes the continuity and quality of the investment made in agroforestry research to date.
- \* The extensive set of trials initiated under AFCT and other agroforestry research begun under the ICRAF's Agroforestry Research Network For Africa (AFRENA) and the Forestry Research Institute of Malawi's (FRIM) will directly compete for very limited personnel resources which could have a negative impact on MARE-generated research continuity.

### Recommendations:

- \* The Agroforestry Technical Assistant's contract should be extended for 18 months beyond its present October 1989 expiration date.

\* At completion of the 1988-89 research campaign the TAP should be encouraged to consolidate geographic and thematic research to focus on a program which would be sustainable after his departure. It is recommended that the TAP concentrate on strengthening existing links with ARTs, ADDs, the Women's Programme, and the Maize Commodity Team within the ADDs of highest potential.

Appropriateness and Transferability of Research: Like other agronomic interventions, the technical appropriateness and ultimate validation of agroforestry technologies are determined by two inextricably linked factors: biological performance and adoption by the target farming audiences. Therefore appropriateness at this early stage can only be judged by the coincidence of observed farm problems and ongoing trials based on available information.

The only possible criticism here could be the AFCT's overly cautious but laudable desire to categorically validate agroforestry technologies prior to releasing them for promulgation through extension channels.

Trials conducted under the AFCT include:

On Chitedze Research Station

1. Germplasm collection and propagation trials
2. Phenotypic screening of 90 tree species for intercropping
3. Periodicity/impact of Leucaena pruning application on maize
4. Inter-alley spacing effects of trees on maize growth/yields
5. Multi-story alley cropping with Cajanus and maize
6. Live fencing screening trials
7. Management of Leucaena in pure stands for fodder and mulch
8. Evaluation of Leucaena, Tephrosia, Cassia, and Cajanus mulch or manure on maize and differential impact with respect to varying levels of inorganic fertilizer application
9. Pruning periodicity of Cajanus leaf, stem and pods
10. Effect of rock phosphate application on biomass yields for Leucaena in alley cropping with maize
11. Effect of growth regulators on biomass yields in several leguminous tree species

Trials Elsewhere in Malawi

Trial	Location/#Trials
1. Maize response to <u>Leucaena</u> manure/mulch with & without N fertilizers	NADD/1
2. Screening tree species as live fences	NADD/1
3. Screening hedgerow species/spacings for alley cropping	BLADD/2
4. Contour buffer strips for fruit trees	LWADD/2
5. Evaluation of <u>Fusarium</u> -resistant <u>Cajanus</u>	LADD/1 BLADD/1

- |   |                                    |
|---|------------------------------------|
| 6. Evaluation of hedgerow spacing for soil fertility and erosion control                                      | LADD/2                             |
| 7. <u>Leuceana</u> spacing & pruning in alleys  | KRADD/1                            |
| 8. Interface studies with <u>A. albida</u> and maize yields and soil chemistry                                | ADD/2                              |
| 9. Alley farming for fodder production  | Mbawa Res. Sta                     |
| 10. Systematic integration of <u>A. albida</u> into smallholder systems-pilot extension and ART joint venture | MZADD/?                            |
| 11. Screening of highland hedgerow species for maize intercropping  | LADD/Dedza RDP                     |
| 12. Contour buffer strips for erosion control   | KADD/Kowa RDP                      |
| 13. Inter and intra-row spacings of hedgerow species with single and double rows                              | Bunda College<br>SLADD/Chipoka LHO |

As indicated above the AFCT has forged linkages with a wide variety of applied and adaptive research partners including ADD Land Husbandry Officers, Bunda College researchers, ARTs, the Women's Programme and specific Rural Development Project Program Officers.

#### Findings/Conclusions:

\* Present research quality, direction and emphasis appears to be consistent with available information on smallholder problems.

\* The technical focus and robustness of experiments established under the aegis of the Agroforester is appropriate and consistent with the emphasis on smallholder production systems prescribed in the Project Paper and farm constraints identified.

\* The AFCT adequately canvassed the literature, precedent research, ADDs and farmers to identify major constraints potentially addressable through agroforestry interventions in Malawi. In fact this "macro" diagnostic work reported in AFCT (1987a) was corroborated during an exhaustive national campaign recently conducted under the MOA/ICRAF Agroforestry Research Network for Africa (AFRENA) Project (MOA/ICRAF 1988 draft).

\* The number and geographic distribution of individual experiments is ambitious given available support (two Certificate-level Technical Assistants aided by a varying number of unskilled laborers). On-farm trials are being supervised by a wide variety of partners of convenience (ADDs, RDPs, Bunda College, etc.) and not through systematic contact with ARTs.

\* For reasons that are unclear the AFCT did not undertake the important agroforestry study trip to Rwanda scheduled for the first six months of project implementation. The absence of results obtained from visiting Rwandan projects has resulted in

some unnecessary duplication of efforts and probably slowed the pace of overall research and agroforestry technology dissemination.

\* There is some unnecessary duplication (e.g. alley widths, cutting regimes, screening of certain species) occurring between certain agroforestry research projects in Malawi. This is costly in terms of resource allocation as well as speed of technology development. The Agroforestry Task Force has developed a National Strategy but some researchers (not in AFCT) seem to be unwilling to effectively collaborate.

\* The ART did not canvass wood-related aspects of smallholder systems in questionnaires until recently when AFCT supplied a list of specific agroforestry concerns to be included in the Chipita Informal Diagnostic Survey.

\* Agroforestry potentials with respect to concerns of women have not been elicited explicitly through diagnostic work and linkages with the Women's Programme. AFCT has delivered several papers to WPS meetings and is making efforts to keep WPS informed of progress and potentials.

\* The economics of inputs and benefits of agroforestry "packages" presently under applied and adaptive testing have not been adequately analyzed with assistance from AGREDAT so that farm-level financial and economic feasibility remains uncertain.

\* There is a slowly fading predilection with the use of Leucaena in most trials. This species has been found to be overly susceptible to termites and requires inoculation with special rhizobium. It is felt these two traits will reduce significantly this species' transferability.

\* Although many of Malawi's smallholders are farming increasingly marginal areas and steeper slopes it appears that AFCT emphasis on this relatively small area of Malawi may be receiving disproportionate research attention to the detriment of the more typical and flatter farms.

\* Use of grass "buffer strips" (2-4 meters wide) and only trees has not proven to be an effective or widely adopted practice in soil erosion control elsewhere in the African Highlands.

\* Limited seedling production remains a critical bottleneck to agroforestry adoption over wide areas. Present GOM-subsidized seedling are discouraging privatization of seedling production and reducing post-planting maintenance and survival rates. The GOM nurseries also represent an unnecessary recurrent cost burden.

\* Funds earmarked for establishing and maintaining trials have been inadequate. Some time has been lost securing alternative resources. IDRC appears willing to support operation expenses in the Lilongwe Agricultural Development Division over the next five years.

#### Recommendations:

\* DAR and the Agroforestry Task Force should limit costly duplication of agroforestry research by identifying priority land-use zones and tasking lead projects/institutions for conducting research in specific geographic areas. The Task Force should also be responsible for the development of standardized performance measurement methodologies so that research results can fit a framework for transferability and transposition of results obtained elsewhere.

\* Upon completion of the 1988/89 planting and research campaign, AFCT should continue the consolidation of its agroforestry research portfolio decreasing trial locations and refocussing on priority geographic locations and the two or three most promising technologies.

\* Upon consolidation of ongoing research, MARE/AFCT should undertake a study of alternative seedling propagation technologies designed to stimulate on-farm multiplication through vegetative propagation and direct seeding. Trials to screen species for these two techniques should be conducted in direct collaboration with ART.

\* DAR should encourage increased collaboration and usefulness of AFRENA-sponsored research through establishment of a regular inter-project visitation and meeting schedule. Establishment of a professional society and a journal should be investigated and supported by MARE.

\* CID and USAID/Malawi should facilitate and actively support execution of the Rwanda/Kenya study tour to the maximum extent possible. REDSO/ESA will assist in developing an itinerary and provide appropriate contacts. This tour should be conducted in May 1989. The following tour participants are suggested: Dr. B. Manda, leader; Dr. A Saka, AFCT; Mr. G.P. Sakenda, Ministry of Forestry and Natural Resources; Dr. W.T. Bunderson, AFCT; Mr. L.D. Ngirwa, DAR; Mr. R.J. Twakalogho, MOA/DOA; Dr. S. Chiyenda, Bunda College; and a Women's Programme Section representative.

Suggested projects to be visited and approximate time to be allocated to each are listed below:

<u>Suggested Projects</u>	<u>Time</u>
PAP Project (Nyabisindu)	1 day
FSR (USAID/Rwerere)	1 day
BiModal AFRENA (Rwerere)	1/2 day
National Agric. Res. Inst. (Rubona)	1/2 day
ISAR (Butare Arboretum)	1 day
CARE Gituza Forestry Project	1.5 days
Ruhengeri Res. Mgt. (RRAM)	0.5 days
Kenya	
AFRENA (S. Nyanza)	0.5 day
Small Ruminant CRSP (S. Nyanza)	0.5 days
Kenya Woodfuel Development Project	1.5 days

Official formalities should be taken care of in Malawi and adequate time must be given to USAID/Rwanda and USAID/Kenya to set up appointments (two months minimum).

\* It is recommended that if AFCT is to continue to support soil conservation research on steep slopes that alternative grass species and configurations, based on work conducted in several places in the African Highlands, be emphasized with a significant decline in expensive (to farmers) buffer strips and less effective tree-only technologies.

\* AFCT should seek assistance from AGREDAT immediately to begin reviewing different identified technologies for cost-benefit implications. Determination of minimum areas, break-even production quantities, labor input efficiencies and realistic farmer benefits required to foster adoption should be investigated. AGREDAT should also be requested to look into seedling production constraints and opportunities.

\* AFCT should make every effort to communicate the content of ongoing trials and results to the professional agroforestry research community at large. Increased attendance to international conferences (IUFRO and ICRAF sponsored events particularly) and publication of information in recognized journals should become part of AFCT's and the MARE-sponsored TAP's recognized responsibilities. Present restrictions on conference attendance are counterproductive.

\* If AFCT is to maintain a substantial emphasis on Leuceana it is recommended that accessions of L. diversifolia and leucocephala X diversifolia hybrids be acquired from William Macklin at NETA. It is also suggested that Janet Stewart of Oxford Forestry Institute be contacted for OFI's Gliricidia accession plasm trials for testing in Malawi's highlands.

Training: Realization of agroforestry potential in Malawi will require concerted efforts in research and development over an extended period time. "Improved" agroforestry systems have not yet "blossomed" or been popularly embraced over extensive areas anywhere in Africa but Malawi seems to offer unique potential in this regard. The essential ingredient remains well trained and properly placed individuals capable of bringing smallholder concerns and agroforestry solutions together. MARE has made a significant contribution to development of this qualified cadre in several respects.

Findings/Conclusions:

\* Two apparently qualified individuals were competitively screened and selected for long-term training as follows:

Ms. Y. Mbekeani	MSc/Silviculture (12/89)	Wash. St. Univ.
Mr. O. Itimu	MSc/Agronomy (12/89)	Wash. St. Univ.

\* Under the tutelage of Dr. A. Saka and the CID-provided Technical Assistant, these two individuals will be responsible for following the implementation of the National Agroforestry Research Development Program upon return.

\* Both participants returned to Malawi to conduct their research which has received field support from their senior professor at WSU, ARC and AFCT. This practical approach and guidance should greatly increase the value of these individuals upon MSc completion.

\* There is every indication that Mbekeani and Itimu will find immediate placement in AFCT and fulfill the training time-in-service covenant.

\* The present number of qualified agroforestry researchers is likely to remain insufficient for the foreseeable future although AFRENA/CIDA anticipate supporting another three MSc-level students within the next year.

Recommendations:

\* USAID should consider using alternative training resources (HRDA II) for support of additional MSc-level natural resources participants.

Collaboration with MARE and MOA: The guiding design theorem that "the whole of MARE is greater than the sum of its parts" has not yet evolved within AFCT although signs are encouraging. Training and concurrent establishment of the other Commodity Teams, Women's Programme and Adaptive Research has precluded adequate interaction between AFCT and necessary partners. While most of these missing linkages are due to simple personnel

constraints a few have been due to benign neglect. Concerted efforts between adaptive research, extension and AFCT are prescribed if agroforestry is to achieve its place within smallholder farming systems.

#### Findings/Conclusions:

\* The MARE Project Paper specified several areas of AFCT-ART complicity: (1) Identify and diagnose smallholder problems; (2) design and monitor on-farm trials based on successful interventions developed elsewhere; and (3) improve the current agroforestry practices of farmers. With the exception of recent linkages in the Mzuzu Pilot Communication Project, these linkages have not occurred on a significant scale.

\* AFCT did implement several trials with the Liwonde ADD ARTs. Oddly, this is the only ART not receiving MARE support due to GTZ's historic involvement in Liwonde.

\* Because of the lack of ART support AFCT forged linkages with a variety of players including Land Husbandry Officers, RDP Program Directors and others to obtain farmer input. While these linkages are excellent, they have been unsystematic, time consuming and have relied exclusively on personal interest and support from AFCT and individual collaborators.

\* Interaction between AFCT and other Commodity Teams has been inadequate. Annual meetings provide the only forum and often Team Leaders are the only members to attend.

\* Useful collaboration with the Horticulture Commodity Team, initiated on deciduous fruit tree-grass buffer strip combinations, has ceased since depart of TAP/horticulture.

\* The Training Unit has provided good logistical support to AFCT participants attending ICRAF, IUFRO and IITA (8/89) workshops and are facilitating the ADD/Land Husbandry Officers' seminar scheduled for March 1989.

\* AGREDAT's Production Economist has not assisted AFCT to begin the important task of financial/economic analysis of different agroforestry configurations under investigation.

\* Not due to the fault of AFCT, collaboration with other agroforestry research projects has been deficient. Communication and efficient division of research responsibilities with the ICRAF AFRENA project have been particularly poor.

### Recommendations:

- \* Upon return from training ARTs should receive some systematic introduction to agroforestry and AFCT activities. It is recommended the Training Unit be responsible for implementing a series of short courses for ARTs in agroforestry sensitization.
- \* Existing links with LHOs, RDPs and other agroforestry partners probably should be assumed by the ARTs to the extent possible to limit research duplicity and confusion.
- \* Future ART survey work should be coordinated better with AFCT to assure that the maximum information on gender-disaggregated, tree-related land-use practices is acquired.
- \* Future collaboration between the HCT and AFCT should concentrate on tropical fruits with emphasis on screening the best cultivars and collaborating on grafting/budding programs aimed at increasing production of fast/high yielding fruit trees.
- \* AFCT should solicit immediately support from AGREDAT to begin analysis of promising agroforestry technologies to determine farm-level financial and economic impacts and identify potential constraints to farmer adoption.
- \* The National Agroforestry Task Force should assure that agroforestry research is as practical and coordinated as possible and that regular meetings between agroforesters and other Commodity Teams occur on a regular basis.
- \* In coordination with other donors USAID/Malawi should discourage the GOMs policy of free seedling distribution in order to increase smallholder participation in production as a commercial activity, increase total availability to farmers, and encourage improved management/maintenance of planted trees.

#### 4.3.2.2 Horticultural Crops

Background: At the time of the review the TAP in horticulture had departed, his replacement had not arrived, and all the counterparts were away for training. Team members visited the station, talked with a number of personnel associated with the project and reviewed the well-organized documentation of this component of MARE that was provided.

Findings/Conclusions: During his two-year stay the TAP listed some solid achievements in research management, extension and adaptive research linkages. With counterpart staff in temperate fruits, tropical fruits, potatoes, vegetables (several), coffee, tree nuts, and root crops, he was overextended in providing research continuity during study leaves. This problem could have been reduced by using MARE resources exclusively for crops of potential benefit to smallholders.

The emphasis on temperate fruits is misplaced for all categories of growers and the front-end cost for tree nuts is too large for smallholders. The opportunity costs of the land combined with the risk of loss over the several years before a return is realized, means that even one or two trees are beyond the reach of most smallholders.

The horticulturist departed at a critical juncture, with all counterpart staff absent, and has yet to be replaced. This is an unfortunate situation that should be corrected at the earliest opportunity. Years of work in the form of valuable germplasm and long-term experiments could be lost in the absence of qualified supervisory staff. By sending all counterpart personnel for off-shore training in a short time-frame, MARE is actually eroding the institutionalization of horticultural research in Malawi in the near term.

There is clear evidence that inadequate propagation and distribution (of improved potato or cassava varieties, for instance) is the greatest limitation in extending the benefits of horticultural research to smallholders. But we did not find any evidence that this problem is receiving appropriate attention by MARE.

#### Recommendations:

\* USAID/Malawi should take all possible steps to replace the horticulturist at the earliest possible date. Meanwhile, a short-term consultant (preferably the previous or the prospective horticulturist) should be employed immediately to assist in maintaining continuity of the programs.

\* Future MARE efforts in horticulture should focus exclusively on crops of potential benefit to smallholders, specifically excluding temperate fruits and tree nuts.

\* Propagation and distribution of improved horticultural crops should be the focus of efforts to strengthen research/extension/farmer linkages in the area of horticultural crops keeping in mind that good farmers are the most capable seed producers.

#### 4.3.2.3 Maize

Background: The agricultural research component of MARE was to assist the MOA to be more responsive to the constraints of smallholders by generating technologies to improve the productivity of traditional crops. Even though maize is of overwhelming importance as a traditional crop the project has not provided any support except through adaptive research trials (see below).

Findings/Conclusions: The needs for hybrid maize are being addressed through the maize commodity research program and through collaboration with the private sector. Cargill, Inc. has purchased an interest in the National Seed Corporation and is said to be developing a flint hybrid that might redress some of the deficiencies (from the smallholder standpoint) of the currently available dent hybrids.

Needs for open-pollinated (non-hybrid) varieties are met by the maize commodity research program. Flint types appropriate to the needs of smallholders have been emphasized and new composite varieties have been released. One problem encountered is that credit is available to farmers only with the initial purchase of seed. Even though it is quite appropriate from an agronomic standpoint for a farmer to save seed for the next season, credit cannot be obtained without the purchase of new seed.

Maize is grown mostly in mixed cropping systems in Malawi and the maize commodity program is attempting to develop technology appropriate for mixed cropping. A workshop on intercropping sponsored by MOA, CIMMYT (maize), and CIAT (beans) is scheduled for this month. Experts from around the world will assemble in Lilongwe to discuss approaches to this complex problem.

#### Recommendations:

\* A portion of the resources under the agricultural research component of MARE should be directed toward the improvement of maize varieties for cultivation in mixed cropping systems used by smallholders in Malawi.

\* USAID/Malawi should allocate additional funding in support of research on maize in mixed cropping systems used by smallholders in Malawi.

#### 4.3.3 Adaptive Research Program

Background: MARE has contributed to the Adaptive Research Programme (ARP) by providing funds for training and two technical assistants assigned to the ART coordinating unit located at Chitedze. One TAP was an agronomist and the other was designated as a socioeconomist although his skills were mainly those of an economist. The role of the agronomist is more clearly defined than that of the socioeconomist. The agronomist provides direction in helping to set up and monitor on-farm trials of new varieties, fertilization practices, cropping mixtures, etc. The socioeconomist helps to direct surveys among farmers to identify constraints and to obtain information on the cost and availability of inputs, including credit. Current data on the cost of major inputs and the prices of commodities sold by smallholders must be obtained to determine the profitability of

proposed new technology. The function of the adaptive research teams is to test new technology and, if necessary, to modify recommendations to suit local conditions. The teams serve as links between scientists at the research stations and farmers.

Findings/Conclusions: The degree to which the program has achieved its objectives is difficult to determine. Turnover of personnel has been high as individuals were recruited and then sent off for training. At the time of the evaluation, there were five agronomists and four agricultural economists on study leave. This has meant that some ADDs have only one member of a team and some have none. With the return of those trained abroad, the situation obviously will improve, but the short-run consequences have been to limit what can be done.

The technology tested on farmer's fields varies from district to district. Decisions as to what kinds of technology to test and on what crops are strongly influenced by local ADD administrators. This is to be expected because one of the objectives of the program is to adapt recommended practices to suit local conditions. One result of this diversity in field trials is that data are not always comparable between districts. The analysis of data reveals a great deal of variance which complicates the task of making recommendations.

Despite the shortage of staff and high rates of turnover, agronomic data are being collected in the current year from over 100 plots on farmer's fields. In addition, data are being collected on labor use, the cost of capital and other inputs. Thus, the program is performing the functions for which it was designed. Measuring results or achievements is much more difficult. Quantitative data are not adequate to determine whether the rate of adoption has changed or whether total output and incomes have improved. Even if such data were available, it would be impossible to determine how much was attributable to the Adaptive Research Program and how much was due to weather and other exogenous factors.

One of the purposes of creating the ARP was to provide researchers with information that would be useful in establishing research priorities. The program undoubtedly has helped make researchers more aware of the constraints under which smallholders operate and may have resulted in some new initiatives in research although the degree of influence on research priorities is extremely difficult to determine.

Both of the technical assistants attached to the coordinating unit at Chitedze have performed creditably in their own area of responsibility; however they have not operated as a unit. Each has pursued his own agenda. The agronomist has worked with his counterparts in the ARTs attached to ADDs, while the socioeconomist has done the same with his counterparts. As a

result, there has been vertical but not horizontal coordination. The failure to achieve the latter is a function of the personalities of the two individuals and differing expectations regarding their role in administering the program.

Recommendations:

\* Support should be continued for technical personnel attached to the coordinating unit to avoid a serious loss of momentum and to make more effective use of those returning from study abroad. They will need guidance and help in becoming integrated into the system.

\* Longer term commitments to the program should be deferred until the MOA has completed its evaluation of the entire Adaptive Research Program, an evaluation now scheduled to take place in March 1989.

## 5.0 SUMMARY OF RECOMMENDATIONS

### 3.0 General

#### 3.1 Institution Building

##### 3.1.1 Effectiveness of Technical Assistants

\* The integrated approach to technical assistance should be continued in MARE and utilized in future AID projects in Malawi.

\* Every effort should be made to assure contractor continuity over the long term.

##### 3.1.2. Research and Extension Linkages

\* Regular meetings and collaboration between Adaptive Research and Commodity Research and between these and extension must be created and/or strengthened. The DOA and DAR should provide leadership. Existing meetings (e.g. annual workshops) should include representatives of all groups. The proposal in the draft Masterplan to establish a coordinating unit is a further option.

\* Innovative arrangements to link research to extension should be devised. An illustration is to propagate plants on selected farmers' fields, linking plant breeders, extension and farmers.

\* Greater use should be made of consultants from international centers who have substantial experience with adaptive and commodity research and extension and, preferably, a knowledge of Malawi. They could help identify the most productive channels for collaboration.

#### 3.2 Appropriateness and Effectiveness of Technology Transfer

##### 3.2.1 New Crops for Smallholders

\* Restrictions on growing burley tobacco should be relaxed to permit smallholders to take advantage of the current buoyant market.

\* Technical assistance should be continued for a horticultural specialist to help with the development of improved cultivars and appropriate production practices for locally produced fruits and vegetables.

\* Research should be continued on other crops adapted to production on small farms. Low priority should be given to research on deciduous temperate-zone fruits.

\* An economist (perhaps reassigned from DAR headquarters) should be attached to AGREDAT to work on marketing problems related to crops that offer potential income earning opportunities for smallholders.

### 3.2.2 Demands for High Yielding Varieties (HYVs)

\* Commercial companies should be encouraged to invest in the seed industry in Malawi. To encourage the development of pest resistant varieties suitable for smallholders, pesticides should never be licensed for use on important smallholder food crops such as maize.

\* USAID/Malawi should facilitate the involvement of appropriate IARCs in Malawi. CIP and IRRI, for instance, would probably send staff members to assist with rice and potatoes if financial support were provided. IRRI has a budget of about 15 cents (US) for each hectare of rice in the world and it is difficult for them to justify active collaboration with Malawi unless additional financial support is provided.

\* USAID/Malawi should support efforts to increase the availability of seed to smallholders. CIP has had outstanding success in working with groups of smallholders to rapidly produce seed potatoes sufficient for their needs. There are other source of expertise as well, perhaps among the CID universities.

### 3 2.3 Environmental Impacts

\* USAID/Malawi should request the Regional Pesticide Advisor (REDSO/ESA) to schedule semi-annual visits to revise pest guidelines and assist MARE team members to become familiar with and adhere to pesticide-use guidelines.

\* USAID/Malawi and CID should re-emphasize the use of the accepted USAID/EPA guidelines.

\* USAID/Malawi and CID should encourage all MARE researchers (Adaptive Research and Commodity Teams) to be more cognizant and supportive of smallholder pest problems and identification of alternative controls. A short seminar or series of technical notes should suffice.

### 3.3 Management

#### 3.3.1 Agricultural Research Masterplan

\* Institutional arrangements within the DOA need to be modified to insure more direct involvement of adaptive research and extension personnel in setting research priorities. This can be done by formalizing ARP and Extension participation in Annual Commodity Research meetings.

\* The MOA should be encouraged to be more selective in funding projects. The returns to Malawi from additional expenditures on research are likely to be higher if they are concentrated on a smaller number of projects and a more limited array of crops.

#### 3.3.2 GOM Steering Committee

\* The GOM Steering Committee should become more active in determining research, extension and training priorities and in improving linkages among the components of NRDP-V by scheduling regular meetings involving the designated representatives (no substitutes) from each organization.

#### 3.3.3 Financial Management of MARE Activities

\* In the future, USAID should spell out more clearly at the beginning the kinds of documentation and audits required. The plan to place a CPA in the MOA should be implemented as soon as possible.

\* USAID should draw on the experience of other donors and try to develop a less cumbersome method of funding projects.

#### 3.3.4 Administration of Technical Assistance Team

\* The "integrated approach" to technical assistance should continue to be utilized in Malawi.

#### 3.3.5 USAID and Contractor Management

\* USAID/Malawi should take all possible steps to extend appropriate TAP contracts and assure continuity of MARE supported programs.

\* In future contracts of this nature, operating expenses, vehicle purchases, etc., should be a part of the technical assistance contract.

### 3.3.6 Monitoring and Evaluation

\* USAID/Malawi should review present information flow and determine if it is adequate to gauge project performance as specified in the Project Paper.

\* In the event development of a system appears to be too costly USAID/Malawi should provide an administrative remedy which releases CID from this obligation. The Mission should also outline the rationale for not fulfilling this design function, taking into account the impact on the final evaluation.

\* If, on the other hand, USAID/Malawi and MOA feel the Monitoring and Evaluation component is useful and feasible they should require that CID and ARC/MOA develop and submit for USAID review specific methodologies and associated costs. Short-term TAP and/or assistance from REDSO/ESA could be solicited to help determine the optimal type and methods of data collection.

## 3.4 Institutional and Financial Sustainability

### 3.4.1 Pilot Communication Project

\* MARE, EAB and MZADD leadership should give full support to completion of the follow-up evaluation activities planned by the MZADD Evaluation Unit for the first quarter of 1989.

\* Appropriate GOM, MARE, USAID and CID personnel should develop terms of reference for and begin recruitment of a Design/Evaluation Consultant to carry out the required end-of-pilot evaluation as soon as possible. It is essential that the effort be completed while the TAP is still in Malawi.

\* MOA leadership should encourage and support participation of management and communication personnel from all ADDs in the upcoming Diffusion Workshop to convey their thoughts and concerns about adapting the PCP approach to their areas.

\* MOA planners, in cooperation with MARE advisors, should use the information gained to develop a comprehensive plan to phase those aspects of the PCP approach that are determined to be most cost-effective into the ongoing extension/communication programs of the other seven ADDs.

\* To provide continuity and benefits of experience gained over the past two-plus years, USAID/Malawi should extend the contract of the MARE Agricultural Communication Specialist until the above steps have been completed.

### 3.4.2 Financial Support and Recurrent Expenditures

\* USAID/Malawi should move up the final evaluation of the project to determine whether it would be desirable to extend the contract before funds run out. Additional support may be required to capitalize on the initial investment in training.

\* Research projects aimed at solving the problems of smallholders should be designed in such a way as to attract outside support. USAID/Malawi should try to identify areas where external assistance may be needed and to work with other donors in seeking such assistance.

## 4.0 Focus Areas

### 4.1 Training

#### 4.1.1 Establishment of Training Unit

\* USAID should move at once, in concert with other donors and MOA, to appeal the OPC ruling. If the Training Unit is established as covenanted, by April 30, 1989, the project and associated TAP should be extended.

#### 4.1.2 Staffing of the Training Function

\* The establishment of a training branch is essential to the continuity and quality of the training function. USAID must make its establishment an issue in negotiating any extension of the project.

\* If establishment cannot be secured, and the project is continued, it is imperative that staffing and promotion practices within MOA be adjusted to assure continuity of staff and recognition of accomplishment in training assignments.

\* MOA should keep long-term training staff small and supplement it by one- or two-year secondments from other positions within the service. This will help to assure that training staff are in tune with the reality of the staff they are training.

\* One training officer should be scheduled for PhD-level training in adult education and/or human resource development.

#### 4.1.3 Training of Trainers (TOT)

\* The planned TOT cycle should be completed, with adaptations as needed to meet the problems and time constraints encountered. While the TOT strategy is not perfect, changing it now would be disastrous both to continuity and to morale.

\* The Training Unit should take steps at once to determine how long the final stages of the cycle will require. This final stage can best be carried out under the leadership of the current training specialist because of his intimate involvement in the adaptation of the program to needs and conditions and the high regard he enjoys among the staff.

\* If it appears that the TOT cycle cannot be completed before the end of the current contract, MOA and USDA should first seek extension of the current training specialist for the period needed. If that is not possible, the approach now in use should be adapted for execution by local staff. Introduction of a new training specialist at this stage would be counterproductive and is not recommended.

\* The Training Unit and the Department of Agriculture (DOA) should consider redesigning the Field Agricultural Training of Trainers (FATOT) cycle to fit within the training component of the Block Visit System. A portion of the days currently allocated to training (one/week) could be devoted to this purpose without seriously cutting into other vital training. Each ADD will have adequate numbers of competent trainers when the MATOT stage has been completed. This approach, if adopted, should be piloted carefully in the time remaining.

\* Professional trainers need more depth of training than is possible under this approach. Once the training has been stabilized through the establishment of a Training Branch, the Branch should move to enhance the professional competence of the core training group through further study and professional contact. This might well be done in conjunction with training personnel in other divisions of government.

#### 4.1.4 Off-Shore Staff Development and Phasing of Training

\* The in-country research policy should be continued, but should be examined to make sure that it does not conflict with responsibilities of the training institutions or put the trainee at risk.

\* Serious attention must be given by MOA to the posting of returnees. Except in extreme emergency, they should return to the posts selected for strengthening and remain in those posts for long enough to have an effect.

\* It is essential that new and attractive career structures be developed by MOA, and implemented by GOM, to provide incentives for the new class of specialist-trained officers to remain in the work for which they are fitted.

#### 4.1.5 Other In-Country Training

\* There should be no increase by MOA in the overall investment of staff time in training.

\* Before initiating any extensive new program, the Training Unit and MOA should study the current and affordable levels of training investment, factoring the opportunity costs of staff time investments into the decision. Priorities and trade-offs need to be assessed.

\* If analysis favors introduction of new programs, the Training Unit should build on the momentum created in management and program development to develop sustainable programs.

### 4.2 Extension

#### 4.2.1 Communications

##### 4.2.1.1 Mzuzu ADD Pilot Communication Project

\* MARE, EAB and MZADD leadership should give full support to the follow-up evaluation planned by the MZADD Evaluation Unit so that it can be completed during the first quarter of 1989.

\* Appropriate GOM, MARE, USAID and CID personnel should develop terms of reference for and begin recruitment of a Design/Evaluation Consultant to carry out the required end-of-pilot evaluation as soon as possible. It is essential that the effort be carried out while the TAP is still in Malawi.

\* MOA planners, in cooperation with MARE advisors, should use the information gained to develop a comprehensive plan to phase those aspects of the PCP approach that are determined to be most cost-effective into the ongoing extension/communication programs of the other seven ADDs.

\* To assure sufficient overlap between the Design/Evaluation Consultant's work and the continuing efforts of the TAP, USAID/Malawi should extend the TAP's contract, as has been requested, through July 30, 1989.

\* MARE, EAB and the MZADD VAU, in coordination with the Training and Evaluation Units, should develop a comprehensive training plan to reinforce training that VAU staff, SMSs and others have already received in communication processes and

skills and to upgrade those skills as needed. A comprehensive training plan also will be critical for the successful introduction of PCP concepts and processes throughout other MZADD EPAs and other ADDs throughout the country.

\* MOA planners should give careful consideration to finding ways to alleviate transportation problems that limit contacts between farmers and field staff, as well as between supervisory/support personnel and field staff. Regular contact is critical to the successful operation of the infusion-diffusion approach of the PCP.

\* MOA management must continue to allocate funds to provide basic consumable materials and supplies (paper, marking pens, etc.) that field staff need to produce communication-aids to support and enhance the teaching-learning process. VAU staff must also have adequate supplies of film, film processing chemicals, paper, and audio and video tapes needed to develop, produce and distribute educational and mass communication materials to support and complement the field staffs' direct farmer and group contacts. Management must also be prepared to address issues related to upgrading VAU positions so that professionals in these roles can function as equals with SMSs and others.

#### 4.2.1.2 Extension Aids Branch

\* EAB leadership should identify areas where additional or follow-up/reinforcement training is needed and work with the Training Unit to develop a plan to meet those needs. A highly competent EAB staff, with experience and skills in training others, will be critical to sustaining the efforts begun under MARE and in extending the PCP concepts to other areas. Priority should be given to providing additional training for EARS staff.

\* EAB should designate a staff person to be responsible for communication activities as soon as possible so that the TAP can assist her/him in developing an action plan for further diffusion of the PCP experience and turn over to her/him all training materials developed during the MARE project.

\* EAB staff need MOA understanding, support and encouragement as they make the transition from primarily a production role to one that places greater emphasis on providing technical training and backstopping for communication staff in the VAUs at the ADD level.

\* MOA management, in coordination with other appropriate units and bodies, should give careful consideration to developing and instituting an incentive/motivation system to encourage staff who have demonstrated competence in communication processes at skills within the various sections at EAB to move into

leadership/coordinating roles in the ADD VAUs. The EAB would, in effect, become a "proving ground" for junior communication staff who, after gaining skills and experience, would have an opportunity to advance to more responsible positions as VAOs. This would help to assure a continuing supply of competent, experienced professionals that will be needed to sustain the decentralized communication-support system.

#### 4.2.1.3 Technical Assistance

\* USAID/Malawi should extend the contract of the TAP, as has been requested, through July 30, 1989.

#### 4.2.2 Addressing the Needs of Female Smallholders

\* More emphasis should be given by WPS, using funds made available through the MARE project, to providing basic principles and practices of assessing feasibility, establishing simple systems of financial accounting and record-keeping for FHA, WFO, FA, and group leaders.

\* WPS should ensure that the basic information that is presently being collected about IGA groups by local extension agents is recorded in a simple but consistent format at ADD and HQ levels to provide a basis for decisions on future direction of program effort.

\* Given the high demand on staff resources and the present level of staffing, especially at field level, it is recommended that GOM encourage non-governmental organizations to support some of these activities. While government, in the form of the WPS and operating with MARE funds, can play the important part of initiator in income generating activities, the hands-on, iterative and creative role needed in guiding IGA groups over a longer term is more appropriate for decentralized organizations. The suggestion made by certain bodies outside government that government play a coordinating role in IGAs is not considered appropriate. Representation by the WPS on a coordinating body is probably worthwhile, but a coordinating role is not the appropriate work for an already overloaded extension staff or HQ staff in these small group activities.

\* Because the IGA initiative makes heavy demands on staff time it is suggested that some of the demonstration funds be made available to WPS for a broader sweep of extension effort directed to women farmers. Some examples might be: (a) several large meetings conveying the message to women that is apparently held by ADD staff but that is not reaching many low-resource farmers that modern varieties of maize can be intercropped and do not require fertilizer to be worth trying; (b) information and, possibly, distribution of seeds of other productive crops being developed in other sections (such as vegetables); (c) show the

demonstration film (about a broiler project) and have women from successful groups explain the project to large groups of women.

\* Present efforts directed to increasing women's participation in block meetings, groups, clubs and credit programs should be continued. Collection of basic data to monitor progress is needed (see below). Ways of providing incentives and training to (male) FAs to work with women farmers and with the WPS staff should be discussed with the director of extension and ADD staff.

\* Field staff need more transportation support. The provision of bicycles, if not motor vehicles, is urgent.

\* The inclusion of gender analysis in adaptive research is critical because many of the constraints facing low resource farmers (shortage of land, labor supply, cash and/or credit for inputs, information) are particularly severe for many women farmers. Careful monitoring by the WPS in collaboration with the coordinating unit of Adaptive Research is needed to ensure that all data collection and analysis are disaggregated by sex.

\* It is essential that more effort be given to ensuring an appropriate representation of women farmers in the AR surveys and trials.

\* The existing initiatives involving WPS and CR should be carefully followed by WPS. Results should be presented at the annual meetings of the AR and CR teams. The DAR and DOA need to lead in this task and the leaders of the various commodity teams and the AR coordinating unit should meet with WPS to set up a regular channel of collaboration.

\* Efforts should be continued to provide training (in both specific subject matter and methods) to WPS staff, both in service and pre-service, that addresses women's agricultural role and income needs.

\* There should be an aggressive recruitment drive for candidates for the FHA course at NRC and a revised course to provide the necessary training to equip them to act as effective agricultural extension staff.

\* The NRC training curriculum for FAs/FHAs should be revised. It should be focussed around a common core, including agriculture and nutrition, to help both FAs and FHAs work more effectively with women farmers and provide common ground for collaboration between them. Directives and incentives should be provided for them to work more effectively with groups of women farmers.

\* Two posts should be established (or, minimally, borrowed for the short term) for the WPS office at Headquarters.

\* If the MOA wishes to see the WPS sustain its present directions and achievements and, in particular, if it wishes the program to reach a larger proportion of the female farming population, then the present or another experienced TAP should be assigned to headquarters to work with the Malawian counterparts for a period of two and a half years. If the present TAP is unable to remain, a replacement should be sought immediately.

\* A task for the next phase of work of the WPS should include an attempt to provide guidelines on the gender disaggregation of data. These should be publicized and promoted particularly among those sections of government already engaged in collecting, compiling and/or analyzing agricultural data. It should be pointed out that constant attention has to be paid to these matters at this stage of development of the women's program. One example demonstrates this: the report on the Mzuzu Pilot Project Baseline Survey provides basic data that are not disaggregated by gender. And this is in a project that stresses the importance of women farmers.

\* The current activities of the WPS itself should be carefully monitored. This can only be done if there are good baseline data. The information being provided by FHAs and WPOs on the new IGAs, for example, should be put on standardized forms from which the data can be easily put into a personal computer and subjected to fairly simple analysis.

\* The WPS officers need to screen carefully the requests for their participation in general women/gender-related activities to ensure that their program directions are not diverted. Until there are more officers in the MOA competent to speak to issues of women in development, both the WPS and their superior officers need to decline some requests.

\* WPS and CAO/DOA should continue to put staff and other resources into developing appropriate training courses and materials for WPS staff and for their work with women farmers.

\* WPS should continue with its efforts to assure basic data collection to enable it and DOA/MOA to monitor the effectiveness of the Ministry in reaching women farmers and incorporating gender-related factors into its ongoing research and services.

\* WPS should consult with other government agencies engaged in the collection, compilation and analysis of data to ensure gender-disaggregation is routine. This is particularly important for the research and development groups.

\* More systematic effort needs to put into developing regular ways of consultation and collaboration of WPS with research teams in adaptive and commodity research. This needs support from the DAR.

\* The costs of the IGA program are high, given especially the low staff-farmer ratio. Careful attention needs to be paid to this program to make a judgment on its costs and benefits.

\* Current directions of WPS seem appropriate to MOA goals and should be consolidated in the next few years.

\* In the next phase of work of the WPS, effort needs to be directed towards devising more effective ways of reaching the low-resource farmer. Although WPS has taken the low-resource farmer, including the poorer female-headed households, to be a major target audience, reaching the low-resource farmer is proving to be as difficult for the WPS as for the extension service in general.

\* In the next phase of work, the WPS should encourage the GOM to address gender issues in agricultural research more directly. As noted, the present strategy is to stress extension services and within those, income generating activities. This makes sense. However, the progress of agricultural production by women farmers depends on their constraints and opportunities being more centrally placed in ongoing research. A further reason that is not recognized at present is that the more productive smallholder male farmers (who are current or potential surplus producers of maize, and who grow cash crops such as tobacco, cotton, groundnuts, etc.) depend on the labor of their wives. Women in these households, which do not fall within the low-resource target group, are nonetheless critical to the present and future success of attempts to increase both food production and export crops. These should be a central focus of adaptive research in its mandate to identify constraints and opportunities among smallholders and to work out in collaboration with farmers the most appropriate means of increasing productivity through new technologies or the readjustment of existing factor ratios.

#### 4.2.3 Effectiveness of Block Visitation System

\* MOA should monitor the Block Visitation System carefully to determine which local extension needs it meets effectively. If it is not serving the full range of farmers, or of farmers' information needs, it should be modified or dropped. It is too demanding of time and resources to be continued unless it will accommodate the full range of extension activities.

\* FAs should receive training and support in both content and process. Much of the success of the system will depend on the quality of the information to be delivered and the ability of the FAs to present it. DOA, the Training Unit and EAB share responsibility in this area.

\* Consideration should be given by the Training Unit and DOA to using the system and the training days it provides as the medium for the FATOT round of training.

#### 4.3 Research

##### 4.3.1 AGRE DAT

\* The contract of the AGRE DAT economist should be extended or a replacement recruited to continue the type of work he has initiated. Such an individual is necessary to provide continuity and to help in integrating returned scientists into the program.

\* The mandate to establish a data bank should be deferred until there is more general agreement on the need for such a facility and more clearly defined objectives.

##### 4.3.2 Commodity Research

###### 4.3.2.1 Agroforestry

\* The Agroforestry Technical Assistant's contract should be extended for 18 months beyond its present October 1989 expiration date.

\* At completion of the 1988-89 research campaign the TAP should be encouraged to consolidate geographic and thematic research to focus on a program which would be sustainable after his departure. It is recommended that the TAP concentrate on strengthening existing links with ARTs, ADDs, the Women's Programme, and the Maize Commodity Team within the ADDs of highest potential.

\* DAR and the Agroforestry Task Force should limit costly duplication of agroforestry research by identifying priority land-use zones and tasking lead projects/institutions for conducting research in specific geographic areas. The Task Force should also be responsible for the development of standardized performance measurement methodologies so that research results can fit a framework for transferability and transposition of results obtained elsewhere.

\* Upon completion of the 1988/89 planting and research campaign, AFCT should continue the consolidation of its agroforestry research portfolio decreasing trial locations and refocussing on priority geographic locations and the two or three most promising technologies.

\* Upon consolidation of ongoing research, MARE/AFCT should undertake a study of alternative seedling propagation technologies designed to stimulate on-farm multiplication through vegetative propagation and direct seeding. Trials to screen species for these two techniques should be conducted in direct collaboration with ART.

\* DAR should encourage increased collaboration and usefulness of AFRENA-sponsored research through establishment of a regular inter-project visitation and meeting schedule. Establishment of a professional society and a journal should be investigated and supported by MARE.

\* CID and USAID/Malawi should facilitate and actively support execution of the Rwanda/Kenya study tour to the maximum extent possible. REDSO/ESA will assist in developing an itinerary and provide appropriate contacts. This tour should be conducted in May 1989. The following tour participants are suggested: Dr. B. Manda, leader; Dr. A Saka, AFCT; Mr. G.P. Sakenda, Ministry of Forestry and Natural Resources; Dr. W.T. Bunderson, AFCT; Mr. L.D. Ngirwa, DAR; Mr. R.J. Twakalogho, MOA/DOA; Dr. S. Chiyenda, Bunda College; and a Women's Programme Section representative.

Suggested projects to be visited and approximate time to be allocated to each are listed below:

<u>Suggested Projects</u>	<u>Time</u>
PAP Project (Nyabisindu)	1 day
FSR (USAID/Rwerere)	1 day
BiModal AFRENA (Rwerere)	1/2 day
National Agric. Res. Inst. (Rubona)	1/2 day
ISAR (Butare Arboretum)...	1 day
CARE Gituza Forestry Project	1.5 days
Ruhengeri Res. Mgt.(RRAM)	0.5 days
Kenya	
AFRENA (S. Nyanza)	0.5 day
Small Ruminant CRSP (S. Nyanza)	0.5 days
Kenya Woodfuel Development Project	1.5 days

Official formalities should be taken care of in Malawi and adequate time must be given to USAID/Rwanda and USAID/Kenya to set up appointments (two months minimum)

\* It is recommended that if AFCT is to continue to support soil conservation research on steep slopes that alternative grass species and configurations, based on work conducted in several places in the African Highlands, be emphasized with a significant decline in expensive (to farmers) buffer strips and less effective tree-only technologies.

\* AFCT should seek assistance from AGREDAT immediately to begin reviewing different identified technologies for cost-benefit implications. Determination of minimum areas, break-even production quantities, labor input efficiencies and realistic farmer benefits required to foster adoption should be investigated. AGREDAT should also be requested to look into seedling production constraints and opportunities.

\* AFCT should make every effort to communicate the content of ongoing trials and results to the professional agroforestry research community at large. Increased attendance to international conferences (IUFRO and ICRAF sponsored events particularly) and publication of information in recognized journals should become part of AFCT's and the MARE-sponsored TAP's recognized responsibilities. Present restrictions on conference attendance are counterproductive.

\* If AFCT is to maintain a substantial emphasis on Leuceana it is recommended that accessions of L. diversifolia and leucocephala X diversifolia hybrids be acquired from William Macklin at NFTA. It is also suggested that Janet Stewart of Oxford Forestry Institute be contacted for OFI's Gliricidia accession plasm trials for testing in Malawi's highlands.

\* USAID should consider using alternative training resources (HRDA II) for support of additional MSc-level natural resources participants.

\* Upon return from training ARTs should receive some systematic introduction to agroforestry and AFCT activities. It is recommended the Training Unit be responsible for implementing a series of short courses for ARTs in agroforestry sensitization.

\* Existing links with LHOs, RDPs and other agroforestry partners probably should be assumed by the ARTs to the extent possible to limit research duplicity and confusion.

\* Future ART survey work should be coordinated better with AFCT to assure that the maximum information on gender-disaggregated, tree-related land-use practices is acquired.

\* Future collaboration between the HCT and AFCT should concentrate on tropical fruits with emphasis on screening the best cultivars and collaborating on grafting/budding programs aimed at increasing production of fast/high yielding fruit trees.

\* AFCT should solicit immediately support from AGREDAT to begin analysis of promising agroforestry technologies to determine farm-level financial and economic impacts and identify potential constraints to farmer adoption.

\* The National Agroforestry Task Force should assure that agroforestry research is as practical and coordinated as possible and that regular meetings between agroforesters and other Commodity Teams occur on a regular basis.

\* In coordination with other donors USAID/Malawi should discourage the GOMs policy of free seedling distribution in order to increase smallholder participation in production as a commercial activity, increase total availability to farmers, and encourage improved management/maintenance of planted trees.

#### 4.3.2.2 Horticultural Crops

\* USAID/Malawi should take all possible steps to replace the horticulturist at the earliest possible date. Meanwhile, a short-term consultant (preferably the previous or the prospective horticulturist) should be employed immediately to assist in maintaining continuity of the programs.

\* Future MARE efforts in horticulture should focus exclusively on crops of potential benefit to smallholders, specifically excluding temperate fruits and tree nuts.

\* Propagation and distribution of improved horticultural crops should be the focus of efforts to strengthen research/extension/farmer linkages in the area of horticultural crops keeping in mind that good farmers are the most capable seed producers.

#### 4.3.2.3 Maize

\* A portion of the resources under the agricultural research component of MARE should be directed toward the improvement of maize varieties for cultivation in mixed cropping systems used by smallholders in Malawi.

\* USAID/Malawi should allocate additional funding in support of research on maize in mixed cropping systems used by smallholders in Malawi.

#### 4.3.3 Adaptive Research Program

\* Support should be continued for technical personnel attached to the coordinating unit to avoid a serious loss of momentum and to make more effective use of those returning from study abroad. They will need guidance and help in becoming integrated into the system.

\* Longer term commitments to the program should be deferred until the MOA has completed its evaluation of the entire Adaptive Research Program, an evaluation now scheduled to take place in March 1989.

## 6.0 APPENDICES

## 6.1 Appendix 1: Terms of Reference

### MARE - Mid Term Evaluation

#### 1. Objectives of Evaluation

The evaluation team will produce a mid-term evaluation of the Malawi Agricultural Research and Extension project. The evaluation itself will consist of a substantial, thorough, yet concisely written report which addresses a series of key issues outlined in the succeeding section and informs joint USAID/Malawi and GOM decisions regarding the future implementation of the project. As such, the analytical work of the evaluation should yield a series of results, conclusions, and recommendations for the continuation or modification of the project's original design and implementation. The evaluation will take place during January, 1989.

#### 2. Background

The central role of agriculture in the scheme of economic development of Malawi has not changed -- the agricultural sector continues to be the foundation of the national economy. Malawi has a clear comparative advantage in agriculture as a result of its favourable endowment of fertile land, diverse topography, reliable rainfall and stable workforce. Likewise, the agricultural sector is already providing the raw materials which fuel processing industries for export and import substitution, and more can be produced. Finally, the agricultural sector holds the most promise for employing the large number of people who are just entering the labor force and who are unable to find a livelihood elsewhere.

Within the agricultural sector, the smallholder subsector is especially important with regard to Malawi's economic development. This sub-sector meets the country's demand for food staples (maize, beans, groundnuts, sweet potatoes, and rice), provides agricultural raw materials for domestic industries (cotton and fire-cured tobacco), sells agricultural surpluses which represent 25% of the total national exports, and provides the major source of income for 85% of all Malawians. Because of this major role, the performance of smallholder agriculture must be improved if corresponding levels of economic growth at the national level are to be expected. Specifically, the smallholder subsector will need to: (1) provide higher incomes and levels of employment; (2) maintain national food staple self-sufficiency; (3) generate additional foreign exchange earning; and, (4) diversify the export base.

However, a number of interrelated constraints affecting the development of the smallholder subsector have been identified. These include:

- a) input and output price relationships;
- b) lack of technologies that are suitable for smallholders, particularly the 90% who have limited cash incomes;
- c) untimely and limited availability of fertilizer;
- d) lack of an effective research-extension linkage;
- e) excessive cost of agricultural service delivery;
- f) shortage of skilled agricultural personnel; and
- g) an extension cadre which has too many functions.

In response to these constraints, and in conjunction with an IDA financed program of support to the agricultural sector, MARE was authorized in July, 1985. Its purpose is to improve the Ministry of Agriculture's institutional capacity to increase productivity of traditional crops and to identify the most viable crops for diversifying smallholder production. In order to meet this purpose, the MARE project was designed with three distinct, though interrelated, components:

Training Component to establish and institutionalize a training system providing the opportunity for MOA staff to develop new skills and to upgrade their present ones. Central to this system is the Training Unit within the Ministry of Agriculture which is guided by a Training Advisory Committee. The Training Unit utilizes a variety of long - and short-term training to: (1) upgrade the technical skills of researchers and extensionists; (2) transfer adult education training methods to trainers; (3) improve Department of Agriculture (DOA) and Department of Agricultural Research (DAR) skills in planning, administration, management, and implementation; (4) strengthen the linkages required for effective technology transfer between the DOA and DAR at all levels; and (5) continue to ensure that the mix of staff skills is appropriate for the MOA's smallholder development program, institutional structure and development priorities.

Agricultural Research Component to assist the MOA agricultural research institution to be more responsive to the constraints of smallholders. Specifically, this component assists the DOA to generate technologies which will improve the productivity of traditional crops and identify new crops for diversifying smallholder production by developing technologies that will improve the productivity of smallholders. This task has two aspects: first, to increase the returns to land and labor employed on traditional crops (especially maize); and, second, to identify crops for diversifying smallholder production which can provide higher incomes, employment levels, and increased foreign exchange. Project assistance includes: (1) support of an Agricultural Economics and Data Processing Unit (AGREDAT) which conducts economic, financial, and statistical analyses of research results and proposals used by the Agricultural Research Council in setting Malawi's research priorities; (2) support of commodity research programs by strengthening National Commodity Research Coordinating Units (Horticulture and Agricultural Engineering/Land Husbandry/Agro-Forestry); and, (3) support of development of the Adaptive Research Program which, once fully established, will consist of a National Coordination Unit and eight Adaptive Research Teams located at the Agricultural Development Division (ADD) level.

In order to be fully integrated with MARE's other components, the Research Component supports extension by providing relevant localized technology for dissemination to smallholder farmers. Linkages with training are forged through the provision of technical and scientific information, and by the participation of research personnel in the training program. Also, joint planning sessions to set research priorities should be conducted between the research and extension institutions.

Extension Component strengthens agricultural extension, both in terms of its institutional links with agricultural research and in its ability to disseminate research recommendations to smallholders, by:

- utilizing communication support to more effectively extend coverage of the smallholder population;
- responding to the needs of female smallholders; and,
- linking extension with the applied adaptive research systems.

Both the mass communications and women's program activities offer the potential for significantly expanding the range of people contacted by the DOA and for improving the effectiveness of the extension staff in transferring agricultural technologies. In terms of its links with other project activities, the Extension Component supports research by actively participating in agricultural research programs and by serving as the mechanism for the feedback of information from the farmer to the researcher. In the area of training, this component provides training personnel and facilities and develops training materials through the extension aids branch of the MOA.

Although all four AID development themes, policy dialogue, institutional development, technology transfer, and private sector development, were important in the original design of MARE, two dominate. These are institution building, especially the institutionalization of linkages among the training, research, and extension components, and technology transfer, particularly to female farmers and smallholders in general.

More specific than the purpose, components, or themes of the project are the results which the design team expected to be achieved by the end of the project. These include:

- fully operational research and extension staff training program established;
- establish an Agricultural Research Council whose purpose is to set priorities for research and allocating funds according to these priorities;
- eight Adaptive Research Teams established which are capable of using technologies from the Commodities Research Teams;

- five National Commodity Research Coordinating Units (NCRCUs) established to undertake research on priority traditional and non-traditional crops;
- extension units modified to be more effective in transferring technologies to a greater number of smallholders; and,
- Women's Program section strengthened to increase participation of women in agricultural research, extension, and training activities.

Progress to date in achieving the end of project objectives will be assessed by the evaluation team. In addition, the next section, Key Issues, highlights the specific concerns which USAID/Malawi would like addressed within the context of the more broad mid-term evaluation.

### 3. Key Issues

With as large and complex a project as MARE, a variety of concerns arise during implementation. These seemingly disparate concerns have been grouped into four key issues which should structure the evaluation. These issues are: institution-building, appropriateness and effectiveness of technology transfer, management, and sustainability. Each issue, with examples of the concerns which constitute the issues, is discussed below.

A. Institution Building: One of the most important aspects of the MARE project is institution building - for training, research, and extension, and the linkages among these components. There are several points at which institution building should be well underway at this time, and the mission would like an assessment from the team as to how well institution building is progressing, and what actions may be undertaken to enhance the process. The areas of special concern include:

- overlap between counterpart trainees and technical assistance. While there has been some overlap between trainees and TA, it has occurred at the beginning, before the trainee leaves, during the time the trainee returns to conduct research, or once the trainee returns and before the TA leaves. The Mission and GOM are concerned about the relative efficacy of the different overlap modes, as well as whether or not the overlaps are of sufficient duration. The intent of the overlap period is to ensure that the trainee acquires skills useful to the MOA, and that the trainee becomes a fully productive MOA professional within a short time of returning from overseas.
- effectiveness of technical assistance. One assumption of the project design is that the technical assistance provided would be fully productive from the time they arrived in county, that their skills and orientation would be what the MOA required, and that they would develop the necessary bridges between research and adaptive research, and extension components of the project. The Mission and MOA now wish to assess the validity of those assumptions, and to learn whether or not efforts at developing feed back mechanisms between adaptive research and extension have been forged.

- phasing of training. Beyond the question of the relationship between overlap between trainees and TA is the general pattern and phasing of training. In particular, it will be important to know whether: the pattern of training, which required most trainees leaving early in the project's life, resulted in an optimal mix of skills for the MOA over the medium term, and whether the departure of so many trainees limited either the effectiveness of the MOA or TA in carrying out their research and extension functions.

- training unit. During project design, it was expected that the training unit would become a separately staffed, functional office within the MOA charged with coordinating training, selecting trainees, establishing training priorities, and implementing in-country training plans. The unit has not yet been established in the manner that was anticipated. It remains to be determined, however, whether or not it is able in its current form to carry out the activities expected of it, and to suggest modifications to the unit, if required. Has it been active in strengthening DOA/DAR linkages and assessing institutional development needs or reactive in programming training?

- women's program. It had been recognized in the design stage that smallholders, and especially female smallholders, had been overlooked by previous MOA research and extension activities. In order to remedy the situation, the design suggested ways in which the female smallholder and her farming needs could be addressed through the training, research, and extension components. It is important at this time to assess whether the efforts have been successful first in reaching the female smallholder, in addressing her needs, and then in enhancing her income earning opportunities and productivity.

- linkages between research, adaptive research, and extension. The concern is to establish feedback loops between the adaptive research and extension, research and adaptive research, and research extension, to ensure both that the research is appropriate and results are as expected. In this way, both the research and extension programs can be modified, as necessary.

**B. Appropriateness and Effectiveness of Technology Transfer.** These concerns principally address the project's research and extension components. Project implementation has the opportunity to benefit from the mid-term evaluation to make mid-course adjustments.

It is generally accepted that the current research, extension and credit systems benefit the largest farmers (only about 20% of all smallholders) while a large number of small farmers are unable to meet their own family food requirements. Given this situation, how might research on food crops, especially maize, be refocussed? What is the efficacy of the currently utilized T and V extension system? What aspects of the Mzuzu ADD Pilot Program might be replicated elsewhere? How can the R and E program on the newly introduced high analysis

fertilizers be improved? What is the feasibility of smallholders moving into a new crop(s) which would increase the likelihood of attaining household food security and what are the implications for the technology transfer system as currently focussed?

Other specific areas of concern include:

- effectiveness of adaptive research. Adaptive research is a new approach to research in Malawi. Is it working well, responding to farmer needs, and resulting in increased adoption of more productive varieties?
- need for adaptive research on maize. Much of the attention of the adaptive research program has been on crops other than maize. Should maize, as the country's principal cash and food crop, also be the subject of adaptive research efforts, or are sufficient adaptations already available for farmer use?
- demand for HYVs and implications for research and extension. HYVs, especially for maize, are more input dependent than traditional varieties, and are subject to greater post harvest losses. Does this situation characterize HYVs for other crops, and does this limit farmer demand for the improved seed? How is this problem dealt with in other countries, and what might be done in Malawi? It will also be important to investigate the range of crops subject to the adaptive research program in order to determine whether or not the range coincides with farmer demand.
- integration of farmer demands into research and extension. The impact of research and extension programs is enhanced by the extent to which research and extension address needs which farmers themselves feel and articulate. What efforts have been made to solicit farmer demands, and how have these demands been successfully integrated into research and extension programs?

C. Management. As with all aspects of development, management is a key concern and often a binding constraint to the development process. Through this evaluation, USAID hopes to better understand the effectiveness of the GOM and MOA in managing and directing project activities, and the extent to which they've been able to learn from their experiences in implementing the project. Specifically,

- agricultural research masterplan. A masterplan only recently been developed and is not yet approved. To what extent does this limit the achievement of the project to date? Does the process of developing the masterplan take into account MOA experience with respect to the adaptive research program?
- GOM Steering Committee. Has this Committee become an effective unit in determining research, extension, and training priorities? Is it able to help forge linkages among the components? What functions does the Committee fulfill, and which others might they fulfill?

- financial management of MOA activities. Is the MOA able to provide the requisite support to component activities in a timely manner?
- administration of TA teams. Is the MOA able to coordinate efforts between the research and extension components, and are they able to provide useful guidance to the TA teams in carrying-out their responsibilities?
- USAID and contractor management of project. Have there been omissions or oversights in implementation and equally have there been particularly strong aspects of the management of the project?

D. Sustainability. As with other projects, USAID/Malawi is vitally concerned with GOM capacity to sustain projects where the Government has articulated a clear need for, and a desire to continue, the project. In addition to the questions raised in the other sections, especially institutions building, other specific questions arise:

- effectiveness and replicability of pilot communication efforts. To what extent have the mass communication efforts succeeded in disseminating information to rural smallholders and to what extent have these smallholders modified their behavior or technologies in light of increased information? Does the mass communication effort result in a one way flow of information, or can it also be used monitor information use and solicit farmer reactions?
- financial support and recurrent expenditures. To what extent is the MOA able to meet recurrent demand for project support, including financial, vehicular, equipment, and logistical support? To what extent is the MOA developing a capacity to improve its capabilities in these areas?

#### 4. Methodology

The evaluation team will conduct a mid-term evaluation which assesses the design and implementation of MARE to date, identifies its accomplishments and problems meeting its purpose and end of project status, and suggests modifications in design or implementation, if necessary, by which it can more effectively meet these targets. In this, the approach of the team will be thorough and practical in describing the analysis undertaken, presenting the results and attendant conclusions following from the analysis, and arguing their recommendations for the future of the project.

In the conduct of the evaluation, the team will review all existing project documentation, including design documents, interim reports, audits, and the proposed project evaluation system designed earlier by the contractor in conjunction with the GOM. They will meet with USAID/Malawi staff, resident technical assistants, contractor home office personnel present in Malawi, and MOA staff. To the extent possible, they will interview returned and prospective trainees, and those returned to

Malawi to conduct research. In addition to the research and extension officers themselves, the team will interview male and female smallholders residing in different areas to determine whether or not they are serviced by the extension program and whether or not the information so disseminated is useful to them. Finally, active participation in the evaluation by a limited number of GOM professional staff will be solicited by USAID; details of this participation will be communicated to SUNY/TSM when known.

#### 5. Team Composition

The evaluation team will consist of six members, four of whom will be made available through the SUNY led Technical Support to Missions (TSM) facility, one from AID/Washington, and one from REDSO/ESA in Nairobi. The specific skills requested include:

- A) **Team Leader.** The person proposed as team leader will have strong skills within agriculture (e.g. farming system research, agronomy, horticulture, etc.), combined with extensive experience with adaptive research and extension programs. This person will have broad evaluation experience, including leading a team composed of diverse professional skills. In addition to managing the operation of the evaluation and production of the report, the team leader will have principal responsibility for assessing the strength and quality of linkages established among, and institutionalization of, project components. Following the assessment, the team leader, working with the team, will identify a series of practical measures that can be implemented over the next two years to strengthen those linkages and enhance the institutionalization of the components. Finally, the team leader will be responsible for submitting the final report to USAID before departing from Malawi.
- B) **Agricultural Economist.** The agricultural economist will have a good understanding of the economics of agricultural production, including the distorting incentives resulting from market imperfections. In addition, the agricultural economist will be familiar not only with the production and economic analysis of agricultural data, but also with the practical uses of such data to ensure that it becomes a useful information input to decision making. The tasks which the agricultural economist will perform include, inter alia: assessing the data collection and analysis function of AGREDAT (the crop data collection unit at MOA); analysing the costs and benefits of the research conducted by the Adaptive Research Teams, including relative returns by crop; and determining the use to which the information generated has been useful to, and incorporated into, decision making within the MOA, particularly with respect to setting research priorities.

- C) **Training and Extension Specialist.** This person should have extensive experience in training and extension methodologies, including in-country training programs, training of trainer programs, and incorporation of farmer feedback into extension programs. The individual should be familiar with techniques for reaching groups of individuals who have traditionally been overlooked in extension and training programs, including male and female smallholders. This person will pay special attention to the process of establishing an operational and sustainable training unit within MOA, and the difficulties existent in establishing feedback mechanisms between research and extension, farmer and extension, and farmer and research.
- D) **Pilot Communications Specialist.** This person should have broad experience using print, video, group and radio techniques for disseminating information, particularly with respect to agricultural technologies. Additionally, familiarity with information feedback from extension recipients would be useful. Finally, the individual should be familiar with techniques specifically designed for reaching isolated and previously overlooked groups.
- E) **Women's Specialist.** This person will be provided by AID/Washington and will be either an agricultural economist or anthropologist. The person will also have broad experience in designing and implementing projects where emphasis has been placed specifically on integrating female smallholders and their needs into agricultural research and extension activities.
- F) **Forester.** This person will be provided by AID/REDSO/ESA in Nairobi. Most of skills provided by the CID technical assistance team are accounted for by the other five team members. Two skills, however, remain uncovered. These are the horticulturalist and the agro-forester. The services of a forester to evaluate the agro-forestry component of the project is, therefore, considered useful.

## 6. Administration of Evaluation

A. **Level of Effort.** The complete SUNY team will be in country for three full weeks, from 4-24 January 1989, with the team leader remaining for an additional week. Travel time to and from Lilongwe, Malawi, will fall outside these weeks. The team leader will work for four six-day weeks, for a total of 24 days. The remaining three SUNY team members will be expected to work three six-day weeks, for a total of 18 working days each. In addition, the AID/W professional will supply a minimum of 15 work days and the REDSO Forester 10 work days.

Team Leader	24 days + travel
Ag. Economist	18 days + travel
Train & Ext. Spec.	18 days + travel
Mass Commun. Spec.	18 days + travel
AID/W Women's Specialist	15 days + travel
REDSO/ESA Forester	10 days + travel
	<u>103 work days</u>

B. Deliveries. The team will present to USAID's Agricultural Development Officer, Mr. A. Radi, and to the Program and Evaluation Officer, Mr. R. Day, the following:

<u>Item</u>	<u>Day/Week</u>	<u>Quantity</u>
Orientation Briefing	Day 1	N/A
Evaluation Outline	Day 3, Day 7	4
List of Interviewees	Day 3, Day 7	1 to ADO
Verbal Report of Findings	Day 12	N/A
Draft Report for Mission Review	Day 15	4
Exit Briefing	Day 18	N/A
Final Report	Day 23	10

C. Timing. Three to four six-day work weeks, as specified above, first day of work on or about 4 January 1989. While most of the first week will be spent in Lilongwe, by the second week some team members will travel up country to interview the extension target audiences and to view and interview those involved in adaptive research, horticulture, agro-forestry and women's programs.

D. Mission support and supervision. Principal guidance for the evaluation will come from the Mission's Agriculture Officer, with additional guidance from the Program Office. The team leader will provide the day to day supervision of all team members. Initial appointments for interviews with MOA personnel will be arranged by the Mission's Agriculture Office prior to the team's arrival. Subsequent appointments will be communicated by the team to secretarial support in the Agriculture Office. However, neither general secretarial services nor office space within the USAID/Malawi offices will be available to the evaluation team during their stay in Lilongwe.

The team will be responsible for procuring transportation services while in Malawi. Finally, team members should arrive with their own computer and printing equipment. The Mission has a WANG OIS system and one stand alone WANG PC with wide carriage ITOH printer. The stand alone PC does not have an IBM emulation board. Thus, the evaluation team will find it convenient to have two printers of their own. All support equipment for the personal computers, including transformers, adapters, and cables necessary to use Malawi's 3-point, British type, 240V electricity, should be brought by team members.

## 6.2 Appendix 2: Members of the MARE Mid-Term Evaluation Team

Robert L. Bruce  
 Professor of Extension Education  
 492 Roberts Hall  
 Cornell University  
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W. Ronnie Coffman (Team Leader)  
 Professor and Chairman  
 Department of Plant Breeding & Biometry  
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 Regional Forestry & Natural Resources Advisor  
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 Harvard Institute for International Development  
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 Liberty Hyde Bailey Professor Emeritus  
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 Ithaca, NY 14853 USA

P.K. Sibale  
 Deputy Chief Agricultural Research Officer  
 Department of Agricultural Research  
 Ministry of Agriculture  
 Government of Malawi  
 Lilongwe, Malawi

Raymond A. Woodis  
 Assistant Head for Communications Services  
 Agricultural Communications and Education  
 67 Mumford Hall  
 1301 W. Gregory Drive  
 University of Illinois  
 Urbana, Illinois 61801 USA

### 6.3 Appendix 3: Schedule of the Evaluation Team

#### Tuesday, 3 Jan

- 1430 Bruce, Coffman, and Robinson arrive
- 1730 Lilongwe Hotel: Briefing by A. Radi

#### Wednesday, 4 Jan

- 0800 USAID: Briefing by A. Radi and S. Shumba
- 1400 Ministry of Agriculture (MOA): H. Mwandemere
- 1600 USAID: C. Peasley
- 1900 Woodis arrives

#### Thursday, 5 Jan

- 0800 USAID: Briefing for Woodis
- 0900 MOA: Review and formalize scope of work  
Develop schedules; Sibale joins team
- 1330 MOA/Department of Agricultural Research (DAR)  
Briefing and schedule development
- 1600 USAID: C. Peasley, R. Day and A. Radi

#### Friday, 6 Jan

- 0800 MOA/Department of Agriculture (DOA)  
Briefing and schedule development
- 1330 Coffman and Robinson with Shumba to Chitedze  
Station; hosted by Sibale; tour of station;  
evaluation of AGREDAT development of schedules for  
remainder of week.
- Bruce with Zimmerman to NRC
- Woodis to Extension Aids Branch (EAB)

Saturday, 7 Jan

Morning Rent vehicle

1200 Lunch with R. Tinsley

Afternoon Development of report outline

Sunday, 8 Jan

Bruce to Mzuzu with Zimmerman

Monday, 9 Jan

Robinson and Coffman-- AGREDAT

Bruce--TOT Training/MZADD and KRADD

Woodis--Travel to Mzuzu with Hilleman and  
Chimphonda

Gibson and Peters arrive

Tuesday, 10 Jan

Bruce--Interview ADD officers and trainees

Woodis--Mzuzu Pilot Communication Project

Others--Review documentation

1500 Peters to MOA with Culler

Wednesday, 11 Jan

0745 Peters to Yiwombe, Extension, MOA

1000 Gibson, Coffman, and Robinson--Agroforestry  
with Bunderson at Chitezde

1530 Coffman, Peters, Robinson--Adaptive Research Teams  
with Tinsley and Gillard-Byers at LADD

Woodis--Mzuzu Pilot Communication Project at  
Bolero

Bruce--RTC training center and return to Lilongwe

## Thursday, 12 Jan

0830 Coffman and Robinson--Travel to Blantyre with Shumba  
visiting adaptive research trials en route.

Woodis--Pilot site at Chintheche

Gibson--Visit agroforestry sites

0700 Peters--Travel to Zomba with Culler; visit IGA  
project in Zomba RDP.

## Friday, 13 Jan

Coffman and Robinson--Visit Horticultural station and  
return to Lilongwe.

Woodis--Return to Lilongwe; meeting at DOA.

Gibson--Visit agroforestry sites.

Peters--Visit projects in BLADD with Culler and  
return to Lilongwe.

## Saturday, 14 Jan

1100 Coffman, Gibson, Robinson and Peters--Lunch and  
discussion with Tinsley at his residence.

Report writing

## Sunday, 15 Jan

Free

## Monday, 16 Jan

Dave Acker, CID/OSU, arrives

0900 Peters, Coffman, Robinson, Bruce--DOA to discuss  
Women's Programme.

1030 Peters to Manda, CAR, MOA

1330 Robinson, Peters, and Coffman--Discussions with Tom  
Gillard-Byers

Report writing

**Tuesday, 17 Jan**

- 0830 Dennis Bisika
- 1300 Dave Acker
- 1430 Francis Kangaude
- 1530 World Bank
- 1630 A. Radi--USAID Management
- 1800 Group Meeting

**Wednesday, 18 Jan**

- 0700 Coffman, Robinson and Peters--Discussions with Pat Isman, OICD/USDA.
- 1500 Deadline for 1st draft, including Executive Summary for MOA presentation.
- 1530 H. Mwandemere
- 1800 Team meeting--exchange drafts  
Report writing

**Thursday, 19 Jan**

- 1100 Team meeting to discuss drafts
- 1500 Deadline for final copy of Executive Summary for MOA presentation  
Report writing  
Jean Kearns, CID/AZ, arrives
- 1700 Team meeting to discuss presentation to MOA
- 1900 Dinner with Dave Acker (OSU), Jean Kearns (CID/AZ), and Pat Isman (OICD/USDA)

**Friday, 20 Jan**

- 0900 Presentation of report to MOA (3 hours)
- 1600 Discussion of report with USAID/Malawi
- 1900 Buffet Dinner--A. Radi

Saturday, 21 Jan

1700 Bruce, Peters, and Robinson depart

1800 Deadline for draft report

Sunday, 22 Jan

Gibson departs

Monday, 23 Jan

Review of draft report by concerned parties

Tuesday, 24 Jan

Woodis departs

Coffman--Report preparation

Wednesday, 25 Jan

Coffman--Submission of final report

Thursday, 26 Jan

Coffman departs

#### 6.4 Appendix 4: Documents Reviewed

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## 6.5 Appendix 5: Persons Contacted

MOA Staff and Others

Chief Fukamapiri		Chinteche EPA
Beza, Mrs.	FHA	Bolero EPA
Bezhad, Mr.	Sr. Eval. Advisor	MOA
Bisika, Mr. Dennis	Actg. CAO	MOA
Bongwe, Mr. Wilford E.	Chief Tutor (PO)	NRC
Buunthwe Ms. Martha	Asst. TO	MZADD
Bwanthi, Mr. Philip A.D.	Chief Tutor (CTO)	NRC
Chandza, Mr. Harris	PM	KADD
Chanika, Mr. C.	Agronomist	BLADD
Chawinga, Mrs.	Asst. WPO	BLADD
Chikagwa, Miss. I.C.	Women's Programme	MOA
Chimphonda, Mr. Stanley M.	ACAO	EAB
Chipeta, Mrs. V.A.	Credit/Mktg Off	KADD
Chirambo, Mr. S.Y.	DAO	KADD
Chirambo, Mrs. Ivy T.	Training Officer	MOA
Chisui, Mr. J.I.	Land Husbandry Officer	LADD
Chitungu, Mr.	FA	Bolero EPA
Clough, Mr. Richard	Agr. Country Officer	World Bank
Gadabu, Dr. Afete D.	CSO	Lunyangwa RS
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