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PROCEEDINGS
OF THE
INDUCTION WORKSHOP
FOR
NATIONAL RURAL DEVELOPMENT PROGRAM
TECHNICAL ASSISTANCE PERSONNEL

CLUB MAKOKOLA
MANGOCHI, MALAWI
OCTOBER 12-16, 1986

MALAWI AGRICULTURAL RESEARCH AND EXTENSION PROJECT

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WORKSHOP PROCEEDINGS

On October 12-16 a workshop was held at Club Makokola, Mangochi, Malawi, to induct and orient National Rural Development Program technical assistance personnel, as well as to formally launch the project. The workshop participants included officials from Ministry of Agriculture Headquarters, Research Stations, Agricultural Development Divisions and USAID and the technical assistance personnel from the Consortium for International Development and the Office of International Cooperation and Development of the U.S. Department of Agriculture.

The following workshop proceedings were prepared to review and summarize the presentations, results of small working groups, and portions of the discussions which occurred during the workshop. The proceedings are intended to form a reference document for use by the technical assistance personnel and Malawian colleagues for continuing action planning.

The proceedings were prepared by the Consortium for International Development management team in collaboration with the Training Unit of the Ministry of Agriculture. Handouts from the meetings are included in the appendix.

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- H. The Role of Subject Matter Specialists at the Headquarters
- I. The Role of Extension Aids Branch in Supporting Technology Transfer
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- K. Financial Procedures Including Procurement of Stores

ACRONYM LIST

ACAO	Assistant Chief Agricultural Officer
ACPO	Assistant Chief Personnel Officer
ACVO	Assistant Chief Veterinary Officer
ADB	African Development Bank
ADD	Agricultural Development Division
AID	Agency for International Development
ARC	Agricultural Research Council
CAO	Chief Agricultural Officer
CARO	Chief Agricultural Research Officer
CAS	Controller for Agricultural Services
CSU	Colorado State University
CTrO	Chief Training Officer
CVO	Chief Veterinary Officer
CID	Consortium for International Development
DAHI	Department of Animal Health and Industry
DAR	Department of Agricultural Research
DCARO	Deputy Chief Agricultural Research Officer
DOA	Department of Agriculture
EPA	Extension Planning Area
IADS	International Agricultural Development Service
IDA	International Development Association
IFAD	International Fund for Agricultural Development
ISNAR	International Service to National Agricultural Research
MAEPS	Malawi Agricultural Extension and Planning Support Project
MARE	Malawi Agricultural Research and Extension Project
MOA	Ministry of Agriculture
NARP	National Agricultural Research Program
NRC	National Research Coordinator
NRDP	National Rural Development Program
OICD	Office of International Cooperation and Development (USDA)
OSU	Oregon State University
RDP	Rural Development Project
SADCC	Southern African Development Coordinating Conference
SMS	Subject Matter Specialist
TA	Technical Assistant
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WSU	Washington State University

INDUCTION WORKSHOP:

Agenda

Monday, October 13, 1986

Morning Session - Chair, Mr. P. Mulawu

- 8:30 Official Opening and Welcome - Mr. L. Muwila, CAS (NRDP)
- 8:45 Remarks by Mr. A. Radi, USAID and Dr. E. Kellogg, Consortium for International Development (CID)
- 9:00 Expectations, Workshop Objectives, Norms and Agenda - Dr. J. Noel and Mr. P. Mulawu
- 9:20 Tea Break
- 9:45 Past, Present and Future NRDP - Mr. L. Muwila, CAS (NRDP)
- 10:45 Department of Agriculture Research: Past, Present and Future Policies and Operations - Mr. D. Manda, DCARO
- 11:45 NRDP and DAR Research Programs: Review and Analysis by Working Groups - Dr. J. Henson
- 12:30 Lunch

Afternoon Session - Chair, Mr. P. Mulawu

- 14:00 Overview of Commodity Research Programs - Dr. P. Sibale, Dr. J. Munthali, Mr. P. Panje, Mr. D. Manda, Mr. A. Chirembo
- 15:00 Overview of Adaptive Research Programs - Mr. F. Nyirenda
- 16:00 Tea Break
- 16:45 Adaptive and Commodity Research Working Groups - Dr. J. Noel
- 17:30 Adjourn

Agenda, Continued

Tuesday, October 14, 1986

Morning Session - Chair, Mr. D.R.B. Manda

- 8:00 Review of Monday's Sessions - Dr. J. Noel
- 8:15 Role of Planning Division in NRDP Planning, Operations and Monitoring - Mr. S.S. Banda, Senior Economist
- 9:15 Agricultural Extension in Malawi: Background, Present and Future Strategies/Operations Under NRDP V, Including Role of SMSs at National Level - Mr. F. Kangaude, CAO
- 10:15 Tea Break
- 10:40 Organizations and Operations of ADDs, Including the Role of the SMSs - Mr. E. Kabuye, CTrO and Mr. D. Yiwombe, Program Manager, Mzuzu ADD
- 11:45 Women's Programs - Mrs. C. Chibwana
- 12:30 Group Discussion on Extension and Research/Extension Linkages - Mr. D. Acker
- 13:00 Lunch

Afternoon Session - Chair, Mr. D. R. B. Manda

- 14:15 Workplans, Budgets, Monitoring and Reporting Systems - Mr. D. Bisika, ACAO (Planning and Monitoring)
- 15:15 Tea Break
- 15:45 Workplans - Small Group Discussions and Reports - Dr. J. Noel
- 16:30 Role of Training Unit in MOA - Mr. E. Kabuye, CTrO
- 17:30 Assignment to Identify Outstanding Training Issues
- 18:00 Extension Aids Films - Mr. F. Kangaude, CAO
- 18:30 Adjourn

Agenda, Continued

Wednesday, October 14, 1986

Morning Session, Chair - Dr. T. Trail

- 8:00 Review of Tuesday Sessions, Collection of Training Questions - Mr. D. Acker and Mr. E. Kabuye
- 8:15 Extension Aids Branch - Mr. M. Mphepo
- 8:45 Animal Health and Industry: Role Within NRDP - Dr. R. Mkandawire, ACVO
- 9:30 Tea Break
- 9:45 Executive Working Group Report from Tuesday afternoon on Relationship of NRDP Subcomponents - Dr. E. Kellogg, CID
Review of Outstanding Training Questions - Mr. E. Kabuye, CTrO
- 10:15 Overview of MOA Administration and Personnel Procedures - Mr. E. Chogawana, ACPO
- 11:15 Financial Procedures, Procurement and Stores - Mr. C. Nyirenda, Principal Accountant
- 12:00 Review and Discussion of Expectations and Outstanding Issues - Dr. J. Henson
- 12:30 Lunch

Afternoon Session - Chair, Dr. T. Trail

- 14:00 Monitoring and Evaluation Overview - Dr. J. Noel
- 14:30 Small Working Groups on Monitoring and Evaluation Indicators and Data Needs for NRDP
- 16:30 Tea Break
- 16:50 Next Steps - Dr. J. Henson and Mr. L. Muwila
- 17:15 Workshop Evaluation - Mr. E. Kabuye, CTrO
- 17:30 Closing Remarks - Mr. L. Muwila, CAS (NRDP)
- 17:45 Adjourn
- 18:00 Reception and Banquet

INDUCTION WORKSHOP: OBJECTIVES

The workshop was planned and conducted by the Training Unit of the MOA in collaboration with the participating MOA officials and the management team of the Consortium for International Development. The workshop was designed to integrate the efforts of the incoming technical assistants from the MARE component of NRDP (CID TAs and OICD/USAID training personnel) into the ongoing programs of the NRDP V.

This workshop is the next step in a continuation of ongoing efforts within the MOA for design and implementation of the various components of the NRDP. As such, the workshop is neither the first nor the last step in this process and draws heavily on the previous activities, while attempting to move forward in the process of present and future program implementation.

The purpose of the workshop is stated as:

For Malawian and technical assistance personnel to plan together for an effective and efficient NRDP V.

Specific objectives include:

- To understand the purpose and content of NRDP V and its various components;
- To create common expectations for what is to be done, how and by whom (organizations and individuals);
- To understand MOA organization, structure, policies and procedures;
- To develop common expectations for recognizing and measuring progress and success;
- To further develop implementation tasks and processes; and
- To get to know each other as individuals and organizations.

TITLE: OFFICIAL OPENING AND WELCOME

SPEAKER: Mr. Lyson Muwila, Controller for Agricultural Services, NRDP V

Mr. Muwila welcomed the group to Mangochi and indicated that this was one of the first times that a workshop has been used to launch a technical assistance project in this manner.

Mr. Muwila outlined agricultural developments in Malawi. He indicated that the Ministry of Agriculture is divided into the Departments of Agriculture, Agricultural Research, and Animal Health and Industry

Agricultural research focused in the past on the estate sector. The present focus is on both the estate and small holder sectors. Research is presently enjoying a higher priority relative to past periods. The current emphasis is on research with direct application to the farming community. As such, it is result and client oriented. The national research program is currently supported by USAID and the World Bank to assist in making structural and manpower improvements.

Extension services are provided through the Department of Agriculture. This department has provided leadership in the development of settlement schemes, crop authorities and in the National Rural Development Program. Settlement schemes were initiated to encourage farmers to intensify agricultural production.

Livestock and veterinary services are provided by the Department of Animal Health and Industry. Achievements have been relatively low to date. Concentration has been on beef, poultry, and small ruminants.

A few problems have confronted agricultural development in Malawi.

- 1) Inputs have become expensive. A question was raised: How can Malawi increase productivity in the face of a problem such as increased cost of inputs. Malawi does not produce fertilizer. Purchasing fertilizer places a drain on national resources. All alternatives should be explored.

- 2) There has been increased pressure on land resources due to increased cultivation caused in part by population increases. This cultivation has been carried out even in some unsuitable areas. The Ministry has determined that 12% is the maximum slope for cultivating row crops. However, farmers have been moving into areas with greater slopes unsuitable for cropping. At present, Malawi lacks the appropriate technology for combatting this problem.

- 3) Suitable irrigation technology has not been developed for widespread use in Malawi. However, the irrigation potential in Malawi is great.

- 4) There is a lack of trained manpower in subject areas appropriate to agricultural development.
- 5) Malawi is a small country with a large and increasing population base. The land area is limited and with population density increasing, there is a need to intensify land productivity with a goal toward food self-sufficiency.
- 6) There are only three months of rainfall per year; thus, the farmer only has one opportunity to utilize this resource. Rainfall is unreliable in certain areas of the country. Agricultural enterprises need careful planning, quick decisions, and time-tested actions.
- 7) World terms of trade are unfavorable for agricultural producers such as Malawi at present. What do we need to do to maintain export earnings? The answer may lie in increased production of existing cash crops, increased production of manufactured goods, import substitution, and possibly the exploration of new crop areas. What crops should be introduced for marketing abroad?
- 8) There are currently budget deficits. What is required is increased budget efficiency. We need to produce results utilizing one kwacha where ten kwacha used to be required. Technical assistants should not come forward and say "I can't do anything because of limited funds."

Purpose of the Seminar

This seminar is for the benefit of the incoming technical assistance personnel. We will examine the role of technical assistants and the controversies contained therein. Many TAs have come in the past as advisors, consultants, etc., with their own way of operating. We cannot have TAs operating in their own way as in the past.

The TAs role is threefold:

First, the TA is here as an operator to assist Malawi in implementation of its programs. If Malawi has no trained manpower, TAs will help to fill in to implement the Government of Malawi's programs. We will ask you to join us to operate our program. In this role, you will be asked to do what Malawi needs most and supplement that with your own experience.

Secondly, the TA is here as a trainer to train Malawians to maintain the program when the TA departs. You will be asked to use your background and expertise to train your Malawian counterparts. A firm indication of failure will be that everything collapses once you leave.

Third, and least important, the TA will be providing advisory assistance. If we had people to advise, we wouldn't need you to be an advisor. We don't have the people for you to advise. Your advice is welcome as a member of the unit, but advice in itself is not very useful. We need people who are willing and able to take action directly.

Objectives of the Seminar

The seminar is the first of its kind. It marks the beginning of positive contributions to the project. The objectives include:

- 1) To establish friendships and get to know each other and understand each other's operating styles.
- 2) To get to know and be acquainted with Malawian programs and to identify how we play our roles in the program. In the course of this, we will learn how each other feels about certain issues.
- 3) To become acquainted with what is going on in the government of Malawi so you can learn where you fit in.
- 4) To provide an opportunity for clarification and for asking questions.
- 5) To develop ideas for strategies for our work programs. What are we going to do next and how?

Mr. Muwila thanked the organizers of the seminar including the Training Unit, USAID, and the Consortium for International Development. He indicated that this type of seminar should be repeated for new incoming local staff.

TITLE: OPENING REMARKS

SPEAKER: Mr. Arnold Radi, Agricultural Development Officer, USAID Mission to Malawi

Thanks and credit should go to the Ministry of Agriculture Training Unit and to the Contractor for organizing this workshop.

The key to understanding the MARE Project is to understand that it is a subproject of a Malawi government program called NRDP V. NRDP V is the focus, not the donor's project. AID is involved with other donors in supporting NRDP V. Key areas of support by USAID include extension, research and manpower training, including off-shore and in-country training.

This project has moved more expeditiously than almost any other. Discussions were held at the top to reach agreement among all parties. Now the understanding is being spread throughout the Ministry of Agriculture ranks.

The technical assistants are part of the Ministry of Agriculture. Donors too often concentrate on their own objectives. This is an experiment. CID/OSU is well aware of the Ministry of Agriculture's desire to integrate the TAs into the Ministry structure.

It is important to understand the funding picture associated with the project. Donors are often looked at as being a bag of money and able to fund anything. In this case, the funding is a shared arrangement between the Ministry of Agriculture and USAID. The Ministry of Agriculture is providing recurrent expenses. AID is providing technical assistance and basic commodity support.

AID is also involved in other sectors in which the government of Malawi has priority programs. AID is working hard to work within the system in Malawi to focus on problems perceived by Malawi.

TITLE: OPENING REMARKS

SPEAKER: Dr. Earl Kellogg, Associate Executive Director, Consortium for International Development

The Consortium for International Development (CID) considers it a privilege to be working with colleagues from Malawi and USAID in this project. Essentially, this workshop is a continuation of the collaborative working relationship which began several months ago at the site visit to Oregon State University.

CID is committed to agricultural development in Malawi for a number of reasons:

- 1) At a minimum, we are committed because of the contract between CID and USAID for delivery of technical assistance services in Malawi.
- 2) We are interested in a broader sense, because CID member universities have a commitment to strengthening agricultural development, research and extension not only in the U.S., but in other countries of the world.
- 3) We are optimistic about the future of this project because Malawi places a high priority on agriculture.
- 4) Chances of success are good because Malawi has well-trained personnel.
- 5) The structure and organization in the agricultural public sector in Malawi is well developed.
- 6) We are also interested in this effort because AID has excellent leadership in Malawi, namely Arnold Radi, who we hope will stay in Malawi for several years.

CID has recruited an excellent group of young, yet experienced and professionally-recognized technical assistants (TAs). All of the TAs are faculty members of the CID member universities. In addition to these technical assistants, other resources of CID universities are available to assist in working on priority problems in Malawi. Three of our best universities are involved: Oregon State University, Washington State University, and Colorado State University. As representatives of these institutions, I would like to introduce to you the CID Management Team, including David Acker from OSU, and Jan Noel and Jim Henson from WSU. This CID Management Team has collaborated on the preparation of this workshop with the Malawi Ministry of Agriculture Training Unit.

We realize that this is not the beginning of agricultural development in Malawi. We are here to work as colleagues and collaborators in an ongoing process within your system to accomplish the objectives that you have established for agricultural development. But these are only nice words. Someone once said "don't tell me about your philosophy, let me observe it." We plan to demonstrate our philosophy of working as colleagues within the Malawian system.

Because we must operate within the limits of a formal legal contract with USAID, it is useful to know what we can and cannot do under this contract. CID is to provide technical assistance personnel to the MARE project. We are not to be involved in procurement of commodities. We can not provide recurrent expenses for research nor extension activities.

Long-term relationships that are effective must recognize differences among the institutions involved. We will all have to learn to work together. Even though this workshop will be very helpful, we from the U.S. will not fully understand initially how your system works nor what has already been done nor what the most important problems are that need to be addressed. You may not fully understand the constraints we have to work under nor our need to keep in touch with our faculty who are working in Malawi. What we must have is a commitment to communicate problems with each other and work in good faith toward solutions.

We, in CID, sincerely appreciate this opportunity to work with you to strengthen the Malawian agricultural technology system. We look forward to assisting in the successful implementation of the NRDP V that will improve the lives of the people in Malawi.

Expectations

The participants reviewed their personal expectations and hopes for the workshop as a follow-up to the expectations set forth by the CAS in his opening address. These are summarized as follows:

- Technical assistants get to know their role and the Ministry of Agriculture personnel to understand how to work with technical assistants;
- Technical assistant personnel become fully aware of the programs they will be working in;
- Clarification of sources of funds for various components;
- Know the relationship of MARE, MAEPS, and ARC within NRDP V;
- Technical assistants should understand working procedures, including limitations;
- Develop rapport and working relations between host country personnel and technical assistants;
- Discussion about dealing with relations at different levels - know the procedures and system;
- Actual research/extension operational linkages;
- Overview of NRDP, MOA and expectations of MOA;
- Technical assistants' expectations - how they see their role/participation;
- Awareness by the technical assistants of their interaction with smallholder farmers;
- Discuss short- and long-term training needs;
- Understand integration of commodity research, adaptive research, and extension;
- Understand linkages and interactions between technical assistants and local staff, and how close this relationship should be;
- Understanding problems/constraints and relating these to priorities;
- Frank, open discussion at all levels and implications on how to tackle problems; and
- Relate the roles of the various individuals, units, and organizations to the overall NRDP V strategy.

A discussion was held relating the workshop objectives and proposed agenda to the expectations of the participants. It was felt that the activities set forth in the agenda had the potential to address all the expectations, but that restructuring would be done, if necessary, by the Training Unit to accommodate all items set forth.

Norms

The chair presented a list of norms to be observed during the workshop:

1. Open, honest, candid;
2. Informal, ties can come off!!
3. Because of the very full schedule and long days, will try to start and end on time;
4. Participate fully in all sessions; and
5. Lunch together, relax together, and learn together

TITLE: PRESENTATION ON NRDP V

SPEAKER: Mr. Lyson Muwila, Controller for Agricultural Services, NRDP V

Background

At independence in 1963, Malawi inherited a shortage of food, low rural incomes, and negligible reserves of foreign exchange. Therefore, the Malawi Congress Party focused initial development efforts on alleviating these problems.

Objectives for national development emphasized:

- 1) Self-sufficiency in food; and
- 2) Expansion of export income.

At this time, most exports were derived from estate crops. The government of Malawi then chose to focus on rural small holders. In 1966, 30 settlement schemes were established. Half of these schemes were irrigated, while half of them were rain fed. A great deal was learned about intensified agricultural production from these settlement schemes. The schemes gave small farmers an opportunity to participate in high value crops such as tea, coffee, and tobacco.

In 1966, the government of Malawi worked to establish an integrated rural development program. Under this program four schemes were established:

- 1) Shire Valley;
- 2) Lilongwe Land Development Program;
- 3) Central Region Development Program (Salima); and
- 4) Karonga Rural Development Program.

Their purpose was to train manpower and to expand export crops. Two lessons were learned from this experience:

- 1) That integrated rural development is an expensive approach, and
- 2) That it is not replicable in all geographical areas.

National Rural Development Program (NRDP)

In 1978, after approximately 10 years of experience with integrated rural development programs, NRDP I was funded by a World Bank loan. This program had fewer activities, fewer expatriates, and involved a number of ministries with projects spread across several geographical areas. Phase I was the pre-investment phase in which infrastructure was established and staff was recruited. Phase II was the production phase in which investments were made in highly productive areas (example: extension and credit). Phase III was a phase in which intensive agriculture, soil conservation and irrigation were emphasized. Phase IV was a phase in which previous efforts were consolidated.

In 1980, NRDP Phase II concentrated on wood energy projects. In NRDP Phase III, Karonga ADD was a focus. In NRDP Phase IV, Lilongwe and Dedza were areas of emphasis. In NRDP Phase V, concentration is placed on management and organizational issues in addition to support for Mzuzu ADD (new design and structure focusing at a different level). NRDP VI will likely have a credit and training focus and is just being designed.

NRDP V

NRDP I-IV provided few opportunities to improve management and supervisory capacities. It was recognized that training is important as a means for compensating for limited supervisory capacity. It was also recognized that reorganization of research and extension were necessary to make them both more effective.

The Government of Malawi views NRDP V as a combination of the National Agricultural Research Project (NARP), Malawi Agricultural Research and Extension Project (MARE), and the Malawi Agricultural Extension and Planning Support Project (MAEPS) also includes Kasungu Complex (IFAD) and work in Mangochi and Shire Highlands (ADB), as well as other projects.

The IDA-assisted National Agricultural Research Project provides reorganization costs, training costs, and funding of the research programs. The IDA-supported Malawi Agricultural Extension and Planning Support Project focuses on the Mzuzu ADD Projects, Department of Agriculture reorganization and Department of Planning reorganization costs. The Malawi Agricultural Research and Extension Project (MARE) focuses on research, extension and training.

Other bilateral aid efforts, including support from Canada, the United Kingdom, Germany, Holland, and France, are assisting various projects within the Ministry of Agriculture. The funding is complex because of the various donors involved. World Bank and IFAD fund over 75% of the effort. There is a plan to organize based on an integrated approach. 26 out of the 30 planned projects have been funded. By next year 29, will have been funded.

Future strategies include:

- 1) A focus on intensive production to increase production from limited land resources;
- 2) An emphasis on the most productive elements for an immediate impact (for example: credit and extension); and
- 3) To continue the present integrated approach.

(Note a summary of projects and their funding source can be found in the appendix.)

TITLE: PAST, PRESENT AND FUTURE POLICIES OF THE DEPARTMENT OF AGRICULTURAL RESEARCH

SPEAKER: Mr. D. R. B. Mandia, Deputy Chief Agricultural Research Officer.

Introduction

The Department of Agricultural Research (DAR) is charged with the authority to carry out most crop research. Exceptions include very high value crops, such as tea and tobacco. Cash crops must be self-supporting so research is often conducted by agencies other than the Department of Agricultural Research. For example:

- 1) The Tea Research Foundation of Southern Africa at Mt. Mulanje; and
- 2) Tobacco Research Authority.

Research by the Tree/Nut Authority is being organized and sugar research may be organized in a similar fashion in the future. In addition, the national research program on beans is based at Bunda College, where researchers are seconded to the college in order to support the program. Bunda College also conducts contract research.

In the past, research was organized on a project basis, by crop or discipline. However, too much money was spent on overhead. The officer in charge channeled the funds to each project. This led to high overhead and to low efficiency. The situation was studied, and a reorganization was initiated. Funds are now streamlined and earmarked for specific applications.

Until recently, there were 12 research stations. Much of the work was conducted on farmers' fields. Research was organized on an agro-ecological basis.

After the season, results were obtained and analyzed by AGREDAT and the results were presented to a forum of research and extension specialists and discussed. At this forum, proposals for future research were reviewed. Recommendations were also formulated to develop packages used in NRDP IV but rate of adoption was very, very low (partly due to the high cost of inputs). Therefore, reorganization is also intended to increase the adoption rate. Suggested further reading includes: "Agricultural Research Strategy," and "Agricultural Research in Malawi" (see appendix).

Present System

There are a variety of factors affecting the performance of the Department of Agriculture Research.

- 1) Limited land resources in Malawi require that intensive agriculture research be conducted to give better production per unit of water and land.
- 2) Levels of research funding are limited.
- 3) Inadequate staff, both in numbers and in quality.

- 4) Research staff instability. 1975-1980 was an active period of agricultural growth in the private sector and numerous research staff were attracted to private enterprise.
- 5) Poor research facilities, including old and obsolete buildings and equipment. Research materials and equipment need to be replaced.
- 6) Limited management capability. There were few people trained in the present management system.
- 7) A lack of effective delivery system of research results.

The Ministry asked for help from ISNAR. They were not successful in putting together any meaningful documents. IADS provided assistance in the development of a master plan. The purpose of the reorganization was to make the Department of Agricultural Research effective enough to "deliver the goods." The research component contribution within NRDP V is designed to include the following objectives:

- 1) To generate technology for intensive production;
- 2) To identify crops for diversification of smallholders;
- 3) To develop institutional and human resource bases; and
- 4) To link research and extension, and farmers.

The Agricultural Research Council (ARC) was formed as a high level policy board on research priorities. The Controller for Agricultural Services serves as the chairman. The ARC approves budgets and programs, and releases funds.

The DAR, in its reorganized form, is set up in multidisciplinary commodity teams. There are seven teams. Funds are channeled through the National Research Coordinator of each group.

Under NRDP V, training for researchers has been intensified so that more personnel will be qualified at higher academic levels. This training includes both in-country, in-service training, and long-term, off-shore training.

Also under NRDP V, effective information networks are being established. These networks include contact with International Agriculture Research Centers, as well as contacts among research and extension participants within Malawi. This information exchange also facilitates the process of obtaining component technologies from other countries for modification and use in Malawi. The establishment of adaptive research has also helped to improve the research/extension/farmer links which in the end will improve adoption rates. Concern has also been expressed over increased environmental degradation. Therefore, DAR will be involved in the new area of agroforestry.

The following timetable applies:

Period	Activity
Late October to April/May	: Rainy season
Mid-August	: Research results are available : Commodity team leader convenes a meeting to review : past season results and review plans for next : season
Late August	: A meeting of the entire National Commodity : Group is convened
September	: A National Research Coordinators meeting is convened : to hear work programs and budgets prior to : presentation to the Agricultural Research Council
Late October	: The Agricultural Research Council, the Chief : Agriculture Research Officer, and several of the : National Research Coordinators meet
November-May	: National Research Coordinators circulate the country : reviewing programs

The ARC is composed of the:

Chairman-Controller for Agricultural Services
Chief Agricultural Research Officer
Chief Agricultural Officer
Chief Project Officer (Head of Planning Unit)
Bunda College Representative
Chief Veterinary Officer
Chancellor College Representative
Secretary of the National Research Council
Representative of the Estate Sector
Representative of the Tea Growers
Representative of the Sugar Industry
Representative of the Tobacco Research Authority.

The objectives of the ARC include:

- 1) Research policy
- 2) Update priorities
- 3) Research strategy consistent with national objectives
- 4) Expenditures
- 5) Approval of research programs for DAR
- 6) Approval of research outside of DAR
- 7) Accounting functions

This is the second AID-funded research program. Under the first program, few TAs had counterparts. This present program is different in that TAs will have a trained counterpart to interact with.

The in-service training strategy in DAR focuses on instruction relating specifically to job requirements. All training is coordinated at the national level by the Office of President and Cabinet. The National Research Coordinators identify needs and make application to the Ministry Training Committee. The Ministry of Agriculture Training Committee accepts or rejects proposals submitted by National Research Coordinators. Training sessions should be part of a work program and submitted with the budget and training plan to the Training Unit. The Training Unit ensures that all programs are coordinated. No department shall mount training without approval of the Training and Management Committee.

MONDAY SMALL GROUPS

Small working groups were established to allow for additional interaction and discussion among the participants. For Monday morning and afternoon sessions, the groups were as follows:

Group 1 (Executive Group)

- Muwila
- Manda
- Radi
- Kellogg

Group 2

- Mulawu
- Sibale
- Hilleman
- Gillard-Byers
- Chirembo
- Trail
- Mbekeani
- Soza
- William
- Cusack

Group 3

- Yiwombe
- Nyirenda
- Panje
- Tinsley
- Zimmerman
- Pathy
- Culler
- Bunderson
- Munthali

MONDAY MORNING WORKING GROUP MEETINGS
FOR REVIEW AND ANALYSIS OF NRDP AND DAR RESEARCH PROGRAMS

GROUP 1

Task

1. Identify up to six of the most important characteristics of a successful NRDP V.
2. Identify up to six of the most important characteristics of a successful research program within the context of NRDP V.

Results for Task 1 - Characteristics of a Successful NRDP V:

1. Well-defined objectives based on important problems in Malawi and consistent with national priorities, goals and objectives.
2. Clear identification of and relationships with clients, target groups, beneficiaries, etc.
3. Clear statement of strategies for implementation:
feasible objectives;
expectations, criteria and procedures established; and
resource base and organization identified.
4. Built-in flexibility for management effectiveness (sufficient flexibility, within defined limits, for revising activities as necessary for effective performance in light of evolving conditions).
5. Effective evaluation and monitoring plan/mechanism in place for the system.
6. Effective coordination and communication system established.
7. Efficient and productive.

Results for Task 2 - Characteristics of a Successful Research Program Within NRDP V:

1. Identifies, addresses, and answers client problems.
2. Consistent with national goals and policies.
3. Allows continuity of career development for staff.
4. Allows some individual creativity and professional development.
5. Research results and research productivity evaluated, analyzed and communicated to clients (farmers, etc.), resource allocators, and decision-makers.
6. Sufficient finances allocated and available.

GROUP 2

Task

1. Identify up to six characteristics of a successful research program within the context of NRDP.
2. Given the above, develop a list of up to six actions (things that need to be done) to ensure that the research program contributes to NRDP success.

Results for Task 1 - Characteristics of Successful Research Program:

1. Proper planning and budget.
2. Two-way client feedback.
3. Integrated multidisciplinary, multicommodity perspective.
4. Realistic researchable goals and priorities in line with NRDP goals and objectives.
5. Effective diffusion and dissemination plan and activities.
6. Effective monitoring and evaluation mechanisms.

Results for Task 2 - Required Actions:

1. Ensure that researchers are aware of NRDP goals.
2. Integrate research/extension systems.
3. Develop procedures for ensuring that researchers are aware of farmers' situations and resources.
4. Apply the scientific method (much discussion about this, but agreement that relevant hypotheses and methodologies must be applied, rather than academic approaches without situation relevance).
5. Improve communications within the research system and between applied and adaptive research, extension and farmers.
6. Discuss, define and implement linkages between the training unit and other departments of the MOA and how these linkages might be strengthened.
7. Define resources available to technical assistants in order to do their jobs.
8. Counterparts and TAs meet together to chart out start-up plan.
9. Discuss the evaluation and monitoring of the programs.

GROUP 3

Tasks

1. Identify up to six most important characteristics of a successful NRDP.
2. Given these important characteristics, list up to six actions that need to be taken to ensure NRDP success.

Results for Task 1 - Characteristics of a Successful NRDP:

1. Understand NRDP objectives and develop (further clarify) well-defined objectives and goals of subcomponents.
2. Involvement of farmers in planning process, identification of farmers' needs, farmer-oriented problem solving.
3. Research and extension integrated.
4. Focus on national development needs.
5. Human resources developed, including effective management needs.
6. Means of measuring the achievement of goals in place.

Results for Task 2 - Actions Necessary to Ensure Success:

1. Build on past experience (do not re-invent wheel).
2. Ensure adequate logistical, administrative and funding support in place.
3. Establish structured dialogue with farmers.
4. Plan and carry out effective monitoring and evaluation.
5. Define and implement management plan including consensus on goals, objectives and priorities.
6. Establish effective research and extension communication systems.
7. Develop other conditions external to research and extension but necessary for success (marketing and infrastructural development, etc.).

TITLE: OVERVIEW OF COMMODITY RESEARCH PROGRAMS

SPEAKER: Drs. Sibale, Munthali, Mr. Panje, Mr. Chirembo, representing Grain Legumes, Oil Seeds and Fibers, Range and Pastures, Land Husbandry and Soil, and AGREDAT, respectively.

The reorganized agricultural research system allows for interdisciplinary interaction. The following commodity groups are included in this reorganization:

Cereals including maize, wheat, barley, sorghum, and millet;

Horticulture (fruits, vegetables and tree crops) including temperate, tropical, tree-nuts, coffee, vegetables, spices, and roots and tubers;

Groundnuts, Legumes, Oilseeds, and Fibers including groundnuts, oilseeds, cotton, beans, and other grain legumes;

Livestock and Pastures including nutrition and management, pastures and fodder crops, and reproduction and physiology;

Engineering and Land Husbandry including soils, agroforestry, irrigation and drainage, soil and water conservation and farm machinery;

Technical Services including crops, storage, plant protection and quarantine, seed services, soil and plant analysis, library and information systems; and

Adaptive Research including on-farm, client-oriented agronomic and economic research.

Each commodity group is headed by a National Research Coordinator assisted by commodity team leaders. Responsibilities of the National Research Coordinators include:

- 1) Forward Planning and Budgeting; and
- 2) Evaluation of results.

Roles and Directions for TAs:

- 1) National Research Coordinator knows problems that need to be researched in his commodity group. The National Research Coordinator learns about these problems from adaptive research teams, etc. The TAs can be asked to help to research these problem areas (operator role).
- 2) Training/Assisting Counterparts (training role).
- 3) Advisory/How to plan, carry out and write research. TAs will take leadership from the National Research Coordinators (advisory role).

Dangers of Technical Assistance: (by Dr. Sibale)

TAs must remember that this is a two-way learning process and a close working relationship must be maintained with counterparts. Counterparts may not have a comparable education degree, but have a great deal of local knowledge. Relationships between counterparts and TAs should be one of sharing experiences. If any problems arise between TAs and counterparts, first see the National Research Coordinator. However, if problems or friction arise between technical assistants, they should be referred to the Project Coordinator at CID, not the National Research Coordinator.

Livestock and Pastures: (by Dr. Munthali)

In pastures research, there are two areas being emphasized:

- 1) Screening pasture crops for livestock use with special interest paid to high, dry matter potentials and high protein content; and
- 2) Utilization of crop residues. For example food legumes intercropped in maize for the benefit of the intercrop and for the residue crop.

Livestock research focuses on breeding and feeding, including Malawi Zebu selections within breed and crosses with exotics particularly for milk. Also, sheep and goat breeding work with an emphasis on meat production is another example. For dairy and poultry, feeding research is emphasized. Local formulation of rations is being emphasized in poultry research.

Mr. Anderson Chiremba's Presentation: Head of AGREDAT, Chitedze Research Station

AGREDAT provides advisory services to research in statistics, economics, and data management. AGREDAT serves all of the research groups, as well as those in the planning unit of the Ministry. Specifically, the unit assists in:

- 1) Analysis of research work for commodity groups
- 2) Establishes and maintains a socio-economic data base
- 3) Supplies data to assist research planners in prioritizing research

This section has had no TAs in the past.

AGREDAT was established to advise the Ministry on why farmers adopt or do not adopt a given technology. AGREDAT should serve as a major planning and information service in the Ministry. Economic analyses now follow all research results.

Comments by Mr. Muwila:

Clarification: If an administrative problem arises, the TAs should go to the officer-in-charge. This would include issues regarding vehicles, etc. In the case of a program-related research problem, the TAs should go to the commodity team leader or the National Research Coordinator. If the problem is of a management or administrative nature relating to TA's, then CID should be contacted.

How Can TA's Avoid Problems?

- 1) Without a Chief of Party, a number of problems that arose during the previous project will not arise.
- 2) The situation is different under this contract in that the TA's will be working closely with senior Malawi scientists rather than junior Malawi scientists, as was the case under the previous contract.
- 3) Under the previous contract, most of the problems were among TA's, not between TA's and counterparts.

TITLE: OVERVIEW OF ADAPTIVE RESEARCH PROGRAMS

SPEAKER: Mr. Francis Nyirenda, National Coordinator, Adaptive Research

The purpose in establishing the Adaptive Research Unit was to focus all research on priority farmer problems. This unit ensures that research is farmer-oriented and includes the farmers' perspective. The unit attempts to ensure that recommendations on crops are locale-specific. Concepts that are important to the unit include:

- 1) Research requires a thorough understanding of the farmers' circumstances;
- 2) Adaptive research is conducted on farmers' fields with farmers' participation;
- 3) Adaptive research complements commodity research and does not compete with commodity research; and
- 4) Agronomic and socio-economic team members are involved in adaptive research.

The program is implemented through the adaptive research teams in the ADD's. The teams are composed of an agronomist and a socio-economist. Each adaptive research team has a team leader; presently each is an agronomist.

There are three adaptive research teams currently operating in Lilongwe, Kasungu and Blantyre. In addition, there is adaptive research activity at Liwonde.

Training of the ART's is being assisted by CIMMYT. Seven intensive training sessions have been conducted. The ART's are technically responsible to the Deputy Chief Agricultural Research Officer through the National Commodity Coordinator and they are also responsible administratively to the program manager of the ADD. Expansion is expected to occur in a step-wise fashion and is presently limited by staff resources. By 1991, all ADD's will be included in the program. The main function of the adaptive research unit is to service commodity researchers. It also provides linkages with extension by having them involved in on-farm trials. Extension is involved in planning, implementation and evaluation of the trials. Guidelines were established at a workshop last year for adaptive research in Malawi. The philosophy states that the adaptive research unit should:

- 1) Help to strengthen research/extension linkages; and
- 2) Improve adoption of research.

Methodology of the adaptive research approach includes:

- 1) Planning;
- 2) Implementation evaluation by commodity and adaptive researchers in all aspects of technology development; and

3) Problem analysis including participation by ADD management, commodity and ART members. Surveys are conducted by extension and ART staff. The job of the National Adaptive Research Coordinating Unit is to plan and design research which focuses on farmers' problems and to assist commodity research to focus only on work related problems which are considered real to farmers.

Comments by Mr. Muwila:

Of all the programs, the adaptive research program is the most difficult. There are problems associated with the Adaptive Research Unit because:

- a) Not all of the senior Ministry of Agriculture Officials are convinced of the approach;
- b) Some principles are not well understood by Malawians and others. (The approach must be tailored to Malawi, not borrowed from somewhere else.); and
- c) Those participating in adaptive research activities often lack the scientific recognition normally associated with researchers.

However, this can be overcome if one focuses on the goals of technology transfer rather than focusing on the methodology it uses. A situation at the ADD level should be monitored in order to assess the effectiveness of the programmatic structure. Young generations of scientists should learn that we value the results of the paper and not simply how "scientific" it looks.

There are so many different approaches to FSR. Malawi needs a hybrid of approaches. The challenge is to make it work for Malawi and to answer Malawi's problems. Our research is not solving this problem. The reward system must be based on objectives achieved, not on papers produced. How do we convince our young scientists that adaptive research is an acceptable career path, a good alternative, and worthwhile to do?

What achievements have been made since adaptive research started?

- 1) Personnel have been posted in the ADD's.
- 2) Field work has involved problem diagnosis.
- 3) Legume pasture intercropping has been successful.
- 4) Blantyre ADD focus in intensive cultivation in an area where the average land holding is approximately .4 hectares.
- 5) Relaying problem areas to commodity researchers.
- 6) Organic fertilizers.

MONDAY AFTERNOON GROUP SESSIONS - COMMODITY AND ADAPTIVE RESEARCH

GROUP 1

Tasks

1. Identify up to five key problems or constraints related to integrating commodity and adaptive research activities.
2. Propose plans and mechanisms for overcoming these problems.

Results for Task 1 - Key Problems/Constraints:

1. Lack of clear definition of adaptive research.
2. Lack of definition of roles in the technology process.
3. Separation of commodity and adaptive research as a continuum in the technology generation and transfer process.
4. Mutual mistrust and misconceptions among the various groups.
5. Lack of conviction with the MOA (senior staff) that adaptive research program is the "way to go."
6. Differences in training and experience (commodity researchers are more highly trained and experienced).

Results for Task 2 - Mechanisms to Alleviate Constraints:

1. Well-trained and experienced staff should be involved in adaptive research.
2. Develop mechanisms for professional recognition in adaptive research work.
3. Integrate commodity research and adaptive research including joint authorship of papers and/or rotation of assignment.
4. Conduct seminars and workshops for management staff and policy makers to understand the various aspects and potentials of adaptive research and its relationship to commodity programs.
5. Define a better (what, how, why) technology development and transfer system appropriate for Malawi, including incentives, rewards, and sanctions.
6. Include concepts of adaptive research and its relationship to other research and extension activities in training at B.Sc., M.Sc., and Ph.D. levels for better understanding of an integrated program.

GROUP 2

Tasks

1. Define benefits to adaptive research from an effective working relation with commodity research.
2. How can these benefits be realized? Be specific!!

Results for Task 1 - Benefits to Adaptive Research:

1. Commodity research teams have an available bank of knowledge, experience, off-the-shelf technology and development of technology.
2. Avoid repetition, duplication and mistakes in planning.
3. Linkages can save time and effort on behalf of adaptive research.
4. Input of commodity teams in development of adaptive research team's work programs can strengthen understanding of problems and potential solutions.
5. Commodity researchers can provide in-service training, as well as technical backstopping/assistance to the adaptive research team.
6. Integration of technology development and testing with on-farm trials.
7. Working together can contribute to understanding of adaptive research's potential leadership role in identification of priority problems and potential solutions.
8. Adaptive researchers become more aware of national policy objectives.

Results for Task 2 - How Can These Benefits Be Realized:

1. Collaborative planning and responsibility for meeting NRDP objectives (joint work plan).
2. Commodity research team members work in the farmers' fields with extension and adaptive research teams.
3. Establish effective linkages between/among extension, commodity researchers, adaptive research teams and producers to provide an opportunity for fine tuning research programs.
4. Co-publish research results.
5. Establish a shared, strong mandate to carry out cooperative activities and to coordinate activities, leading to the institutionalization of an adaptive research process closely linked to commodity research activities.
6. Improve contacts through periodic meetings between commodity teams, adaptive research and extension.
7. Involve commodity research teams of many disciplines in all stages of adaptive research from planning to implementation.
8. Increase sensitivity to and understanding of farming systems (through training and experience) for use in both commodity and adaptive program planning.

GROUP 3

Tasks

1. Define benefits to commodity research from an effective working relationship with adaptive research.
2. How can these benefits be realized? Be specific!!

Results for Task 1 - Benefits to Commodity Research:

1. Improved flow of information from farmer to commodity researchers and vice versa.
2. Realization in on-farm rewards of efforts invested in technology development.
3. Could assist development of integrated farm research projects such as flint/dent maize, legume pastures, etc.
4. Identification of actual farmer problems.
5. More effective prioritization of research towards specific farmer needs (better focused).
6. Contributes to better understanding of problems farmers have in adopting technologies, modifying technologies and measuring the extent of adoption.
7. Provides a systems perspective which broadens commodity perspectives.

Results for Task 2 - Mechanisms to Realize Benefits:

1. Focus more commodity research on problem solving oriented research such as legume intercropping or maize huskers.
2. Include commodity researchers on adaptive research teams (and vice versa).
3. Expand the scope of adaptive research teams to include broader spectrum of problem expertise.
4. Add more disciplines to adaptive research teams as appropriate, such as agricultural engineers for maize mills. This could be on permanent or ad hoc consultancy basis.
5. Develop farm records illustrating interaction of all farm enterprises.
6. Improve satisfaction of personnel by:
 - Developing a reward structure for commodity researchers based on addressing real farm problems.
 - * Royalties on improved seed (far-fetched illustration)
 - * Recognition and promotions
 - * Provide resources for adaptive research
 - * Joint presentation of work, field days, reports
 - * Training opportunities
7. Change name of the adaptive research program.
8. Clarify roles of all researchers.

Session Chaired by Mr. D. R. B. Manda, Deputy Chief Agricultural Research Officer

TITLE: Role of Planning Division and NRDP V

SPEAKER: Mr. Banda, Planning Division, Ministry of Agriculture

A planning division was first organized in 1968 in Zomba. Its organization includes seven sections: (see Appendix for Organogram)

- 1) Project Preparation;
- 2) Project Processing, Planning and Budgeting;
- 3) Marketing Section;
- 4) Agricultural Economics Survey;
- 5) Central Evaluation Unit;
- 6) Data Processing Unit; and
- 7) Agricultural Statistics Unit.

The division is headed by a chief project officer and assisted by a principal economist. The following are brief descriptions of the seven sections.

- 1) Project Preparations Section, Headed by a Senior Economist Role - Identifies projects, conducts feasibility studies, prepares projects, participates in negotiations with donors.
- 2) Project Processing, Planning, and Budgeting Section - Monitors project implementation; monitors allocation of funds, including local counterpart funds; prepares local budgets in preparation for donor phase-out; participates in budget negotiations with financier.
- 3) Marketing Section, Headed by a Senior Economist - Deals with smallholder crop prices; under NRDP V this section governs price policies, uses price policy model developed by the World Bank.
- 4) Agro-Economic Survey Section - Responsible for the production of farm management data.
- 5) Central Evaluation Unit/ADD Evaluation Section - Responsible for the evaluation of ADD's and on-going development projects, preparation of project completion and interim reports for donors, supervise annual crop projections.
- 6) Data Processing Unit - Manages the storage of existing data. (Computer is currently under-utilized)
- 7) Agricultural Statistics Unit - Develops and maintains a data bank on agricultural production.

Under NRDP V, the division will be strengthened. The division has a collection of project appraisal documents available for review. Pricing policy is developed using the computer model (without labor data). The results are then presented to the price committee for approval.

Economists are part of a common pool called the Economic Service of the Office of President and Cabinet. Currently, there is no link between the Planning Division's data processing unit, which is very young, and the AGREDAT Unit of the Department of Agricultural Research.

TITLE: AGRICULTURAL EXTENSION IN MALAWI

SPEAKER: Mr. Francis M. Kangaude, Chief Agricultural Officer

Before 1961, extension services did not exist. The only work which might be construed as agriculture extension work prior to 1961 was, in fact, agricultural regulatory work. The NRDP V strategy and the strategy of extension in Malawi is to spread development to all parts of the country as a whole, providing agricultural inputs necessary to increase production. The aims of the Government of Malawi in agriculture are:

- 1) Promote self-sufficiency in food production;
- 2) Expand and diversify cash crop production;
- 3) Increase opportunities to all smallholder farmers to grow cash crops;
- 4) Raise the economic and social welfare of the population; and
- 5) Conserve natural resources, especially the soil, for improving and maintaining productivity of the land.

The approach used is a group approach including the use of Farmers' Clubs. NRDP V strategies include a focus on major and minor crops, land husbandry, opportunities for farmers in diversifying into spices, tree-nuts and horticulture, and addresses the problems of the lower strata of household and women. Future strategies of the Department of Agriculture include:

- 1) Address local food needs;
- 2) Increase and expand present cash crops in line with local and export demands;
- 3) Provide alternative crops;
- 4) Expand and increase import substitution crops;
- 5) Improve quality of produce;
- 6) Increase yields to optimal levels;
- 7) Improve land use practices in farming systems (including fertilizer use);
- 8) Increase participation of women;
- 9) Introduce less labor-intensive means of production and primary processing; and
- 10) Encourage and promote rural industries.

Subject Matter Specialist

What is the Subject Matter Specialist? What is his function? Title? Is he a link person? Technical Consultant? The Subject Matter Specialist is knowledgeable and collaborates with scientists in information generation.

The SMS is an expert in resources, information, organizing, managing, and transferring to users at different levels. Most Subject Matter Specialists are trained to train others. The real strength lies in the fact that they have had field experience before assuming the position of the Subject Matter Specialist. Subject Matter Specialists must also be former trainers.

1. Organizational hierarchy: Extension Management

Chief Agriculture Officer (CAO)

Deputy Chief Agriculture Officers (DCAO)
Planning and Monitoring
Technical Administration

Assistant Chief Agriculture Officers (ACAO)
Extension and Training
Crops
Land Husbandry
Extension Aids

2. Food crops

i. Maize

ii. Rice

iii. Wheat

iv. Sorghums and Millets

v. Tuber and root crops

Cassava
Sweet Potatoes
European Potatoes

vi. Tropical and Temperate
Vegetables and Fruits

Cash crops

i. Groundnuts

ii. Tobacco

iii. Cotton

iv. Pulses

Beans
Cowpeas
Chickpeas
Grams
Soybeans
Subtropical beans, etc.

v. Sunflowers and sesame

vi. Chilies

vii. Other:

Spices:
Coconuts
Cardamom
Cinnamon
Black Pepper
Ginger

3. Strategies

Past

- i. Food crop production for major crops of maize, rice, and wheat.
- ii. Credit
- iii. Cash crops production for the major cash crops of tobacco, cotton and groundnuts.
- iv. Land husbandry.

Present

Major and minor food crops and major and minor cash crops.

4. Future: NRDP V.

-Major and minor crops

-Land Husbandry

-Provide opportunity to all farmers for:

More diversification including spices, tree nuts, horticulture.

Address problems of lower strata of households and women.

TITLE: ORGANIZATION AND OPERATION OF ADDs INCLUDING THE ROLE OF SUBJECT MATTER SPECIALISTS

SPEAKER: Mr. E. Kabuye, Chief Training Officer

There are eight ADD's. Each ADD has two to five RDP's (Rural Development Projects). Each RDP administers two to five Extension Planning Areas (EPA's). Each EPA is headed by a Development Officer. Each Development Officer has five to ten village extension workers or field assistants who report to him. Each field assistant has 500 to 700 farm families that he or she serves. Each family has approximately five members. Each section is subdivided into modified T and V blocks. Within the blocks, there is further subdivision into Farmers Groups and Farmers Clubs for purposes of facilitating message and input delivery.

Problems and Critical Issues at the ADD

- 1) Inadequate funds limit staff mobility.
- 2) Inputs have increased in price. Price incentives are low. There is a low adoption of technology.
- 3) Rapid staff turn-over from ADD to ADD. Limited stability.
- 4) Subject Matter Specialists are not adequately trained (MS level training would be most appropriate training).
- 5) Subject Matter Specialists and other staff are not present in adequate numbers.
- 6) Unsuitable staff employed as Subject Matter Specialists.

The Training Unit at the ADD is not a department as such, but performs the service of training for all departments. Adaptive research is not a separate department. It is now included under the Project Officer.

Guide to Agricultural Production in Malawi

This publication is updated annually by crop coordinators and specialists. It includes new recommendations, opportunities, and policies. It serves as a guiding document for extension agents.

Credit can flow to individuals, but flows more commonly to Farmers Clubs. These clubs serve an additional purpose of providing peer pressure to leverage pay back of loans. For example, the group is said to default if an individual defaults. Ward Councilors and other traditional leaders also play important roles. A food and nutrition unit is an inter-ministerial activity. Monthly or quarterly meetings are held at ADD, RDP and EPA levels.

Role of Subject Matter Specialist

The role of the subject matter specialist includes:

- 1) Production of technical information;
- 2) Training of staff;
- 3) Training of farmers;
- 4) Attendance at RDP and EPA meetings;
- 5) Production of ADD newsletter; and
- 6) Production of visual aids and radio interviewing.

TITLE: WOMEN'S PROGRAMS

SPEAKER: Mrs. Catherine Chibwana, Women's Program Officer

In the Women's Program Section, there is a change in focus towards supplementing the traditional home economics orientation with an agriculture and economic development orientation. This is in recognition of the fact that women, in addition to being homemakers, provide 60-70% of the agricultural production labor. This labor is provided in areas such as production, processing, and storage. The strategies for mainstreaming women into the NRDP V include the following:

- 1) Re-orient female staff and home economists toward agricultural production.
- 2) Train women in improved techniques through residential and day-training centers. Currently, the number of women involved in such training sessions is low. The Ministry goal is to increase that to 30% of the intake.
- 3) Encourage women to join Farmers Clubs, and to increase access to credit and information. If this is not possible, then women should be encouraged to form their own clubs.
- 4) Encourage men to allow women to participate in Farmers Clubs and to encourage husbands to bring their wives.
- 5) Increase the number of women participating in credit programs.
- 6) Link home management training with agricultural production training.
- 7) Encourage agricultural income-generating activities.

Some observations include:

- 1) There has been an increase in women obtaining credit.
- 2) Although there have been a large number of women's groups, they tend to be unstable.
- 3) Another strategy has been to encourage male extension workers to be in contact with women.

Each women's group is encouraged to have an income-generating activity; for example, an agricultural production scheme for profit and for purposes of learning new skills. Income generating activities include production of tobacco, cotton, soy beans and dairy. A National Commission for Women in Development was recently established.

Problems include:

- 1) Inadequate understanding of women's programs by the ADD;
- 2) Inadequate number in training of staff;
- 3) Many of the personnel are of home economics training only; and
- 4) The program is new and it is just getting started.

TUESDAY MORNING GROUP DISCUSSION

Task

List the characteristics of a system for Malawi in which research and extension are linked effectively.

Responses

1. Mechanisms exist such that research and extension either become or function as a single department.
2. Publications and information flow effectively between and within research and extension.
3. Research and extension workers have joint appointments.
4. Joint planning and implementation of activities occur.
5. Joint participation in needs assessment and training.
6. Joint participation in field activities such as on-farm trials and diagnostic surveys.
7. Monitoring and evaluation in place including links between research and extension activities.
8. Equal benefits and career ladders.
9. Extension personnel have higher degree training and respect of researchers, able to interact with researchers effectively.
10. Researchers and extension workers publish jointly.
11. Give both research and extension personnel a single name, such as Agricultural Development Agent.
12. Research and extension personnel share common goals.
13. Research and extension personnel officed together in same building at field level.
14. Regularly scheduled research extension dialogue meetings held.

TITLE: WORKPLANS, BUDGETS, MONITORING AND REPORTING SYSTEMS

SPEAKER: D. Bisika, Assistant Chief Agricultural Officer

(See Appendix for Paper)

TUESDAY AFTERNOON SMALL GROUP DISCUSSIONS

WORKPLANS (PLANNING AND IMPLEMENTATION)

Task

What steps (activities) should each incoming technical assistant undertake to plan and implement (i.e. integrate into) the workplan for this year and who is involved at each step. Suggest a matrix showing what needs to be done, with whom and the roles of various individuals.

Group 1: Commodity and Adaptive Researchers

Group Participants

Tom Gillard-Byers
Francis Nyirenda
Ray William
Percy Panje
Anderson Chirembo (Presenting)
Dick Tinsley
Tom Cusack
Trent Bunderson
D. Manda
Y. Mbekeani
R. Mkandawire

Activities	Individuals	Role
1. Acquaint TAs with DAR programs and program reviews	All TAs NRCs	Collaborating
2. Repeat #1 but specific to dept/unit TAs work with	NRCs	Collaborating
3. Review workplans and associated budgets immediately	All TAs	
4. Prepare workplan and anticipated budget (for integrating TAs up to March this year, subsequent TA budgets fully integrated with regular MOA budgets)	TAs & NRC DCARO/CARO	Collaborating Approving
5. Identify training needs	Depts, TAs & NRC CTrO, etc.	Collaborating
6. Identify and prioritize operational activities	NRC, TAs,CTL CARO and DCARO	Collaborating Approving
7. Identify and prioritize operational activities between groups	NRCs & TAs CARO and DCARO	Collaborating Approving

GROUP 2: Extension and Training

Participants

Daniel Yiyombwe (Presenting)
 Carol Culler
 Catherine Chibwana
 Bob Zimmerman
 Tom Trail
 Edward Kabuye

Activity	TA	Head of Dept.	Counter-part	Section Head
1. Meet head of department		x	x	x
2. Arrange office		x		
3. Develop job description		x	x	x
4. Review existing plans and programs	x		x	
5. Familiarization visit to meet relevant parties.	x		x	
6. Prepare next year's plan and budget	x	x	x	x
7. Assist with placement of training candidates and identification/orientation of replacements	x	x	x	x

GROUP 3: ADMINISTRATORS

Task

Identify the relationships among three of the major subcomponents of NRDP V, i.e. MAEPS, MARE, and NARP:

Participants

Earl Kellogg (Presenting)
 Roberto Soza
 Francis Kangaude
 Denis Bisika
 S. T. Pathy
 Arnold Radi

Results

NRDP Sub-unit	-----Ministry of Agriculture Units-----			
	Extension	Research	Training	Planning
MARE (5 years, USAID, US \$ 14,000,000)	X	X	X	
Tech. Asst. \$7,600,000	x	x	x	
Training \$4,600,000	x	x		
Commodities \$532,000	x	x	x	
Other cost \$968,000	x	x	x	
Fert. Demo. \$300,000	x			
MAEPS (5 years, IDA, US\$11,900,000)	X			X
Technical Assistance	x			x
Training	x			x
Commodities	x			x
Operating cost	x			x
NARP (5 years, IDA, US\$23,000,000)		X		
Tech. Asst. \$2,400,000		x		
Training \$4,600,000		x		
Commodities including civil works \$14,300,000		x		
Operating cost \$2,500,000		x		

For all three subcomponents, the Government of Malawi contribution is US\$ 33,057,000 for five years for a total donor plus GOM commitment of US\$ 83,000,000

Note: a summary of discussions regarding the relationships between and among the three major subcomponents follows:

1. Local salaries and recurrent (operating) costs are primarily financed from GOM contributions. Exceptions include a very small amount under MARE for vehicle operations and fertilizer demonstrations, some resources from MAEPS for extension/planning and some for research under NARP.

2. Clarification of funding sources and/or outstanding issues are to be addressed by the Management (Steering) Committee.

TITLE: OPERATIONS OF THE TRAINING UNIT IN THE MINISTRY OF AGRICULTURE

SPEAKER: Mr. Edward Kabuye, Chief Training Officer

At the national level, the Secretary for Personnel Management and Training (SPM&T) in OPC coordinates all training activities. National broad objectives of training are:

1. Equip employees in both the public and private sectors to perform tasks of development;
2. Training should be closely tied to needs of plan implementation; and
3. Respond to problems and needs of people, especially rural people, so that they positively contribute to development.

Within the above broad objectives, each ministry or department is charged with the following role:

1. Training needs estimation and assessment, and identification of relevant persons to undertake training within the context of their career development;
2. Organization and conducting of induction, specialist technical and professional training of its employees;
3. Appoint suitable officers as link between ministry or department and DPM&T in OPC; and
4. Each October every year submit to DPM&T training requirements for the following year.

Within the framework of the national training policy objectives, the MOA has established a Training Unit (TU). The main objectives of the Training Unit are:

1. Strengthen the skills in the DOA, DAR, and DAH&I including the support division of finance, administration, personnel and planning;
2. Develop appropriate evaluation systems for training and manpower development in MOA;
3. Develop planning system for long- and short-term training programs;
4. Develop training capability of Training Unit staff;
5. Coordinate and/or run workshops, courses and seminars to strengthen linkages of the the technical departments; and
6. Strengthen linkages with training institutions within Malawi for in-country training programs.

Organizational Structure of Training in MOA
(organizational chart presented)

Activities so far:

1. Long-term training through:
 - a. NRDP
 - b. UNDP/FAO/ etc.
 - c. EDF
 - d. SADCC
 - e. Bilateral aid from Britain, Canada, etc.
 - f. Commonwealth
2. Short courses
Overseas for weeks, months (up to six months).
3. Training advisory committee establishment, approve training submissions within MOA
4. In-Country training programs
 - a. Technical and professional
 - b. Management seminars
 - c. Action planning workshops
 - d. Teaching methods courses

Problems and critical issues facing the training unit:

1. NRDP V leaves out DAH&I, and Natural Resource College (NRC).
2. Training need assessment of departments and MOA.
3. Training for the sake of training; not looking at career development:
No career development after training; and
Short courses and seminars.
4. Lack of long-term training projections for DOA, DAH&I, planning division, finance and administration.
5. Common service system vs. departmental career development in staff training programs.

Last: Training needs proposals from specialist to upgrade or disseminate new technologies in specific fields will be considered.

TITLE: THE ROLE OF EXTENSION AIDS BRANCH IN SUPPORTING TECHNOLOGY TRANSFER

SPEAKER: Mr. M.M.A. Mphopo, Assistant Chief Agricultural Officer

(See Appendix for Paper)

TITLE: DEPARTMENT OF ANIMAL HEALTH AND INDUSTRY

SPEAKER: Mr. R. Mkandawire, Assistant Chief Veterinary Officer, Department of Animal Health and Industries

Policies

1. To control animal diseases of:
 - Economic importance, and
 - Public health importance.
2. Achieve self-sufficiency in meat, milk and eggs.
3. Increase incomes of small holder farmers through mixed farming.
4. Provide efficient marketing organizations for livestock and animal products.
5. Provide draft power.

Implementation Operations

1. Major animal disease control operations include:
 - A. Establishment of dipping tanks throughout Malawi.
 - B. Control foot and mouth disease by:
 - Vaccinations; and
 - Movement restriction.
 - C. Control Rinderpest by vaccinations.
 - D. Control rabies by vaccinations, destruction and meat inspection.
 - E. Vaccinate against Blackquarter, Brucellosis, Newcastle Disease, and Lumpy Skin Disease.
 - F. Trypanosomiasis and tsetse control.
 - G. Maintenance of diagnostic services for:
 - Central Vet Lab (CVL) research and vaccine production, and
 - Regional labs.

2. Livestock improvement operations

a. Increase national herds:

- Direction of imports
- Establishment and maintenance of livestock and poultry centers.

b. Breeding of improved strains of:

- Dairy
- Beef
- Poultry

c. Establishment of milk collecting, processing and distribution centers.

d. Teach small holder farmers better livestock and poultry management practices (breeding, nutrition, etc.).

3. Marketing operations

a. Cattle market establishment and maintenance:

- Weighing scales
- Auctions
- Collaboration with Cold Storage Corp (CSC)

4. Training

a. TA level

b. Middle level

c. Professional level

5. Organizational Chart

Flows from Ministry to Department to the three field units (Veterinary, Field Services, and Animal Husbandry and Industry).

6. Constraints

a. Financial

b. Manpower at professional and middle levels

TITLE: ADMINISTRATION AND PERSONNEL

SPEAKER: Mr. E. E. Chogawana, Acting Chief Personnel Officer

(See Appendix for Paper)

Comments

If not satisfied with head of department's orders or performance, TAs can appeal decisions but must copy appeals to head of department.

If TAs want to spend leave outside of Malawi, they need to give 30 days notice to allow for necessary clearance. This notice should be addressed to the Secretary of Agriculture.

TITLE: FINANCIAL PROCEDURES, PROCUREMENT, AND STORES

SPEAKER: Carlson M. G. Nyirenda, Principal Accountant, speaking on behalf of the Chief Accountant.

(See Appendix for Paper)

Comments

It is illegal to overspend your budget.

For supplies and various stores, TA's must speak to the officer-in-charge through the unit or department head. TA's should not go to local suppliers for supplies because they will not be reimbursed. The general rule is that for those items costing less than 500 Kwacha, private vendors can be used. For those purchases costing over 500 Kwacha, the central stores must be used.

Regarding imported goods, the National Computer Committee must approve all computers. The Chief Accountant is a member of the committee. Requests to the National Computer Committee for approval of importation of computers should include serial number and specifications. Inventories on project purchased equipment should be copied to the Department Head, the Chief Accountant, and to USAID.

Operating funds to supplement existing budgets of participating units will be handled as follows:

A special budget will be prepared by each unit to delineate those costs (over and above the existing budget) which are the result of the participation of the new technical assistant in the unit. This will allow the unit to carry on until March. Operating costs for the project are being provided by the Government of Malawi via its normal revenue sources rather than donor resources.

TITLE: MONITORING AND EVALUATION

SPEAKER: Dr. Jan Noel, Washington State University/CID

1. As individuals and organizations, our performance will be evaluated by:

- Units and Departments
- CARO/CAO
- CAS
- Donors
- Home Institutions

2. Basic components

Monitoring - Progress toward completing approved activities and producing planned products (accepts approved plans and designs - activity and process-oriented).

Evaluation - Are the activities and products producing the desired results? Is there a better way? Why or why not? Impact-oriented.

3. How do or should we measure success?

Benchmarks or Indicators

- Conditions that signal success
- Tells us how we will recognize success
- Forces us to clarify what we really mean by our objectives
- Provides implementation targets
- Provides objective basis for monitoring and evaluation

4. How many needed?

Minimum necessary to measure what is important.

5. Attributes of good indicator

Plausible - measures what is important

Independent - measures change, not cause

Targeted - How much

How well

By when

For whom

Objectively verified - can be measured - data available (both supporters and detractors can agree)

6. Information and data needs? To make available the information/data necessary to verify the indicators through design of the monitoring, reporting and evaluation system.

WEDNESDAY AFTERNOON WORKING GROUPS

MONITORING AND EVALUATION FOR NRDP V ACTIVITIES

Group 1. Administrators

Tasks:

1. List up to six indicators of a successful NRDP
2. What data will be necessary and how should it be collected

Participants

Earl Kellogg (Presenting)
Arnold Radi
Lyson Muwila
Danwell Manda
Francis Kangaude
Ezra Chogawana

Results

A. Indicators

B. Data

- | A. Indicators | B. Data |
|---|--|
| 1. Increase in real income for rural people. | 1. Real per capita net income in rural population increases between 1978 and 1991. |
| 2. Increase in food and cash production and productivity. | 2a. Increase in yields per unit of land (need to measure land area in agric. production).
2b. Purchases by marketing organizations. |
| 3. Increase of exports of agricultural products | 3. Export from agriculture at constant prices from 1978 to 1991. |
| 4. Development of improved infrastructure. | 4a. Change in number of roads, markets, etc.
4b. Utilization of 4a. |
| 5. Increased adoption of technology. | 5. Number of farmers adopting improved technology. |
| 6. Improved institutional development and efficiency, and evaluation training, etc. | 6. Timely and efficient delivery of agricultural institutions' outputs (research, extension, etc); quality/quantity measures to be determined. |

7. Improved standard of living.
8. Increase in non-farm employment, esp. of agriculture-related industries (processing, marketing, etc.).
7. Pre- and post-literacy rates, death rates, no. of radios, bicycles, better housing, less onerous labor/drudgery.
8. Labor and employment changes in rural census divisions between 1978 and 1991.

Group 2. Commodity Researchers

Tasks

1. List up to six Indicators of a successful commodity research program within NRDP.
2. What data will be needed and how will it be obtained?

Participants

Ray William
Yanira Mbekeani (Ms.) (Presenting)
Roberto Soza
Percy Panje
S. T. Pathy
Tom Cusack
Carlson Nyirenda
Trent Bunderson

Results

A. Indicators of Success

1. Adoption of technology within target groups.
2. Research programs prioritized based on:
ARTs survey data, baseline information and experience;
NRDP goals; and
Available technology.
3. Commodity groups are generating appropriate technology.
4. Increase in productivity in terms of kg/unit area or per unit labor.
5. Improved:
 - a. Rural welfare in terms of income, nutrition, labor efficiency, health, education, etc.; and
 - b. Foreign exchange generation increased.
6. Career development system improved and satisfaction of researchers improved.
7. Commodity research groups cooperating with ARTs.

B. Needed Data

1. Technical benchmarks, e.g. amount of fertilizer sold/used, credit records, ADMARC.
2. Records of process for research program planning, prioritization and implementation, based on identified criteria.

- 3a. Records of types of commodity research projects conducted (i.e. related to perceived production constraints of producers/high priority problems).
- 3b. Records of adaptive research team trials implemented (technical reports, publications, farmer responses).
4. Productivity/practices benchmark surveys.
5. Welfare data base.
 - a. Income, nutrition, etc.
 - b. Tons exported, Malawi Kwacha saved, imports substituted by local production.
6. Professionally satisfied researchers (smiles, decreased turnover, surveys).
7. Number of joint planning meetings and joint activities.

GROUP 3: Adaptive Researchers

Tasks

1. List up to six indicators of a successful NRDP adaptive research program.
2. What data will be necessary and how should it be collected

Participants

Francis Nyirenda (Presenting)
Tom Gillard-Byers
Dick Tinsley
Dave Acker

Results

A. Indicators of Success

1. Number of "successful" trials and surveys conducted.
2. Increased farmers' adoption of improved technology.
3. Increased/improved identification of constraints to farmer adoption of desired (improved) technology.
4. Increased participation of extension and commodity researchers with adaptive research activities.
5. Increased participation of adaptive researchers in commodity research planning.
6. ARTs programs expanded to additional ADDs and expanded scope of work (more disciplines and commodities).

B. Data Needed

1. Number of successfully completed trials including research-managed, researcher/farmer-managed and farmer-managed.
2. Percent of farmers adopting new technologies and percent of land under improved technology.
3. Number of priority farmer constraints identified and relevance to production/productivity increases.
4. Number of extension, commodity, and adaptive personnel jointly involved in field and other activities.
5. Number of on-station trial responding to constraints identified by adaptive research teams.
6. Number of ARTs established and expanded scope of work (disciplines and numbers of researchers involved).

GROUP 4: Extension and Training

Tasks

1. List up to six indicators of a successful NRDP extension and training program.
2. What data is necessary and how should it be collected?

Participants

Denis Bisika (Presenting)
Catherine Chibwana (Mrs.)
Bob Zimmerman
Tom Trail
Dan Hilleman
Carol Culler
Edward Kabuye
McKey Mphepo
Daniel Yiwombe

Results

A. Indicators of Success

1. Presence of effective trainers in the MOA at the end of NRDP V.
2. New "technology" adopted by clients (farmers, trainees, managers, researchers, etc.).
3. Increased participation of women in programs, such as credit.
4. Increased number of successful income-generating activities, especially for women.
5. Increased number of academically qualified and skilled extension SMSs.
6. Increased crop and livestock productivity.

B. Data Required

1. a) The trainees improved their academic performance and on-the-job performance (records, surveys, etc.).
b) the participants gave their trainers high marks on various criteria.
2. Surveys of technologies introduced and adopted.
3. Number of women and amount of credit received, repayment performance.
4. Number of rich women, number of women participating in successful income-generating activity.
5. Pre-test and post-test of SMS degrees obtained; surveys of effectiveness in relating to researchers, farmers, other colleagues.
6. Yields and net profit for the smallholder farmers increases per farm/market surveys.

NEXT STEPS

What	Who
1. Preparation workshop proceedings	Training Unit & CID team
2. Familiarize with Malawi Programs*	TAs with Malawi colleagues
3. Another (follow-up) workshop to address issues identified in past 3 days **	All participants & others
4. Begin program participation (see also Tuesday P.M. working group products).	TAs and Malawians together

* Familiarization with program includes past and present activities, introduction to on-station units, tours as part of unit programs and definition of job descriptions and others as per Tuesday afternoon working groups.

** Examples include the definition of adaptive research in the context of Malawi; research/extension linkages and others.

TITLE: Closing

SPEAKER: Mr. Muwila, Controller for Agricultural Services/NRDP V

Mr. Muwila thanked the Training Unit, the Consortium for International Development, USAID and others for assisting in promoting and organizing this workshop. He indicated that the workshop was quite useful for both the TA's and Malawians. Observations included:

- 1) Evaluation of workshops such as these should be done formally and carefully;
- 2) Malawians were able to give their own personal views during this session. TA's should see that we are all free to make contributions to the Ministry efforts. Suggestions are welcome on all aspects of the Ministry of Agriculture;
- 3) Whatever you should encounter as individuals should not be construed as representing government, policy or a higher authority; and
- 4) Accept that you will be working with individuals and you must build strong working relationships with them in order to increase output.

The objectives of the workshop were reached. We have become well acquainted with each other and gathered an understanding of how the Government of Malawi functions. Discussions were lively. We learned a lot about each other's operating styles.

TA's should have had more of an opportunity to express themselves.

A P P E N D I X

A P P E N D I X A

INDUCTION WORKSHOP

List of Participants

Government of Malawi Personnel

Solister S. Banda - Senior Economist

Denis J. Bisika - Assistant Chief Agricultural Officer (Planning and Monitoring)

Catherine Chibwana (Mrs.) - Women's Program Officer

Anderson M. Chiremba - Head, AGREDAT

Ezra E. Chogawana - Assistant Chief Personnel Officer

Edward S. Kabuye - Chief Training Officer

Francis M. Kangaude - Chief Agricultural Officer (CAO)

Danwell R. B. Manda - Deputy Chief Agricultural Research Officer (DCARO)

Yanira Mbekeani - Agricultural Research Officer (Agroforestry)

Ronald C. J. Mkandawire (Dr.) - Assistant Chief Veterinary Officer

McKey M. A. Mphepo - Assistant Chief Agricultural Officer (Extension Aids)

Patrick M. Mulawu - Principal Training Officer

James T. Munthali (Dr.) - National Research Coordinator, Livestock and Pastures

M. Lyson Muwila - Controller of Agricultural Services (CAS), NRDP

Carlson M. G. Nyirenda - Principal Accountant

Francis M. Nyirenda - National Research Coordinator, Adaptive Research

Percy Panje - Team Leader, Soils, Bvumbwe Agricultural Research Station

Pickford K. Sibale (Dr.) - National Research Coordinator

Daniel D. Yiwombe - Program Manager (Mzuzu ADD)

Technical Assistance Personnel

USAID MARE

Trent Bunderson (Dr.) - Agroforestry
Tom Cusack (Dr.) - Production Economist (AGREDAT)
Tom Gillard-Byers (Dr.) - Agricultural Economist (Adaptive Research)
Dan Hilleman - Agricultural Communications Specialist (Extension Aids)
Dick Tinsley (Dr.) - Agronomist (Adaptive Research)
Ray William (Dr.) - Horticulturist
Carol Culler (Dr.) - Women's Programs (Candidate)

USAID Training

Tom Trail (Dr.) - Training Advisor
Bob Zimmerman - Training Specialist

World Bank

Roberto Soza - Agricultural Research Council Advisor, Department of
Agricultural Research
S.T. Pathy - Financial Controller, Department of Agricultural Research

CID/USAID Management Team

Dave Acker - CID/Oregon State University
Jan Noel (Dr.) - CID/Washington State University
Jim Henson (Dr.) - CID/Washington State University
Earl Kellogg (Dr.) - CID/Executive Office
Arnold Radi - Agricultural Development Officer, USAID Malawi

A P P E N D I X B

AGRICULTURAL RESEARCH IN MALAWI

(A brief review of research work done over the past several years and plans for the future)

In Malawi the Department of Agricultural Research of the Ministry of Agriculture has mandate to carryout both crops and Livestock research. However, Research on tea is done by the Tea Research Foundation of Central Africa, Tobacco Research is now under the Tobacco Research Authority of Malawi, though it was under DAR until 1980. The University of Malawi Bunda College of Agriculture also carries out research on beans, rabbits and pigs.

Agricultural Research in Malawi is mostly project oriented or applied. We cannot afford research, such things as pure research or academic research.

In these few pages, an indication is made of the research done by the DAR in the past, present and some indication on the future strategies. The activities being many and varied full coverage in a paper of this type is not possible. This paper came out of a directive by the Agricultural Research Council which stated that the DAR should prepare a detailed review showing what research has been done, what results have been obtained and leading from there what new research to be done.

In order to tackle this request we asked the National Research Coordinators to write the review for their respective commodities or services. This is therefore a condensed summary of these reviews.

Administrative organisation

Up until last year, administratively the activities of the DAR were organised under research stations which in turn have substations and district posts or sites. The main research stations are Chitedze and Lifuwu in the Central Region; Evumowe, Makoka, Makanga and Kasinthula in the Southern Region; and Mbawa, Lunyangwa and Baka in the Northern Region. Chitais is a large substation in the Central Region, while Bembeke, Tsangano and Lisasadzi are minor substations.

Limphasa, Bolero, Lufita, Hara, Woywe and Kafikisila are small substations or experimental sites in the Northern Region; and Thuchila, Liwonde, Masenjere and Maperera in the Southern Region. In order to cover the whole country the majority of trials have been carried on many shifting experimental sites in the district where trials are conducted on farmers' gardens.

The siting of research station depends mainly on agro-ecological factors, the main stations being sited to represent major agro-ecological zones in Malawi. The present station network now cover all major agro-ecological zones of Malawi.

Chitedze is the main research station in the country and its activities include crops as well as animal research. Adaptive Research and biometrics units have also been included. Major research projects at the station involve maize, wheat, groundnuts, pasture, livestock, seed services, crop storage, rotations, soil fertility and farm machinery. Chitedze also produces mother seed of several crops for the National Seed Company of Malawi, performance tested bulls and fertilizer recommendations as well as various agricultural technical advice. It has large laboratories for livestock, soils, plants, seed technology, crop storage and also houses a large library.

Bvumbwe is mainly a horticultural research station and investigations on various fruit crops, tree nuts and vegetables are conducted. Work on tung nuts, coffee, essential oils, potatoes, spice crops, pyrethrum, pharmaceutical crops, silk worms and crop storage is carried at Bvumbwe. In addition, Bvumbwe is the main base of the Plant Protection Services and has facilities for plant quarantine which might soon be raised to regional status in East and Southern Africa under the auspices of the OAU - STRC Inter-African phytosanitary Commission. Bvumbwe has a large horticultural nursery and produces the planting material a range of crops including macadamia, potatoes, coffee fruits, along with advice on fruit and vegetable production, as well as soil fertility advisory services.

Makoka is the main centre for cotton research, the main activities being breeding, entomology and agronomy. The biometric unit was also at Makoka until last year. It maintains the production of cotton seed and tests new spraying equipment, insecticides and pesticides. The biometrics unit provides advice to other research officers on experimental design and analysis. It also process experimental data for them. Root and tuber crops research is also centred here.

Makanga has been the main irrigation research station in Malawi for various crops. Irrigation facilities were developed in 1955. Sugarcane, rice, cocoa, cotton and kenaf, among many others, have been investigated there. The station has lost importance in recent years because of the frequent floods which spoil long term experiments.

Kasinthula research station, has been developed for irrigated as well as rainfed crops research. The soils at Kasinthula are more representative at many soil types in the Shire Valley, and all being well, it has become a more important station than Makanga. With a full staff compliment it is hoped that some of the uniquely difficult problems of this part of Malawi will be tackled more intensively.

Lifuwu research station has been developed as a rice research centre doing both breeding and agronomy on rice testing both local faya and exotic varieties. Rice seed production inspection and certification are monitored from Lifuwu.

Chitala is basically a substation to Chitedze and though originally it was built for cotton research it is now a general purpose experimental station looking at the cropping regimes of the central region lakeshore areas.

Mbawa has been the regional research centre for the South Rukuru Valley and related areas. Some research on Oriental tobacco, Ninde Oils has been conducted at Mbawa. Work on maize, groundnuts and livestock and pasture has also been centred here. The future will see Mbawa more as a livestock centre.

Lunyangwa does general crops research including coffee as well as dairying. With Limphasa, Bolero and a number of district sites it manages to do work in the appropriate environment.

Baka at Karonga is a relatively new station though it has been a substation for Lunyangwa for a long time. Because of KRADD Baka's importance has been greatly enhanced. In order for better coverage of KRADD a smaller research centre has been opened at Meru to take care of Eulambya plain in Chitipa. Work in Karonga include rice, maize, cotton, groundnut, cassava and livestock.

Scientifically agricultural research has been organised under research projects based on crops or discipline. Each research project had a project coordinator so that any research work done anywhere in Malawi under that project was done in consultation and with the knowledge of the project coordinator. In this way duplication and waste of resources and manpower are minimized. A brief summary of each project is given below. In some of these projects a lot of work has been done or is being done while in others only a limited amount of work is involved, mainly to investigate the possibilities of local production or for export.

Research Project Brief Comments

Maize:

Maize is the staple food of the people of Malawi. More than 75% of land under cultivation each year is used for maize in pure stand or mixed with other crops. Over 90% of the crop is grown for domestic consumption on the farm while the rest is sold to ADMARC and other marketing channels. Malawi's policy is to increase maize production through higher grain yield per unit area of land, rather than by expanding the maize acreage. In this way land would be released to other crops.

The overall objectives of the maize research programme has been:

(a) To develop maize varieties and hybrids of high yielding potential which respond better to fertilizers, hence find replacement to the then imported hybrids such as R200, R201 and SR52 which were all from Zimbabwe.

(b) To determine the best cultivation methods of newly developed maize varieties. This includes determining the optimum fertilizer levels, types and time of fertilizer application, optimum plant population, time of planting and weed control.

The maize research work which consists mainly of breeding and agronomy has been centred at Chitedze and Chitala in the Central region, Evumbwe and Makanga in the Southern region and Mbawa and Baka in the Northern region.

In terms of activities, the maize breeding programme has in the past devoted its efforts to the development of synthetic varieties. However, from about fifteen years ago, maize composites and hybrids have been given more attention than synthetics.

(A) Maize breeding aims at:

(a) The maintenance, improvement and manipulation of the maize breeding stocks at Chitedze with a view to the production of higher yielding varieties of white seeded maize with as much resistance as possible to Puccinia polysora, Puccinia Sorghi, Helminthosporium turcicum and H. Maydis.

(b) The development of high yielding white dent hybrids and varietal crosses.

(c) The development of high yielding open pollinated maize composites.

(d) The development and maintenance of a germplasm bank with materials of diverse origin to be used for composites development as well as isolation of inbred lines.

(e) To co-operate with a number of foreign institutions and international organisations in order to facilitate a full exchange of breeding materials for global maize improvement. Also to evaluate foreign materials in this country with a view to identify entries of promise to Malawi.

(f) To maintain and multiply breeders seed and inbred lines for issue to National Seed Company for large scale bulking and production of hybrid seed.

(B) Maize Agronomy aims at:

(a) Investigating the response of standard as well as promising maize varieties to applied fertilizers and plant densities in different parts of Malawi.

(b) Investigating the optimum time of planting to stop cob-rots caused by *Diplodia* and *Furarium* spp. in areas of late season high rainfall (Northern Region) where the crop matures before the end of the rains.

(c) Investigating the spacing and fertilizer of two new promising composites, C.C.A. and U.C.A. in different parts of Malawi.

(d) Determination of the response curves for Nitrogen and Phosphorus in the main maize producing areas of Malawi.

(e) Examining the effectiveness of simple cultural techniques in the control of witchweed *Striga asiatica*.

(f) Screening out those herbicides which show promise in maize production and investigating the economics of their use.

Maize Breeding:

A lot of research work has been conducted with maize, both breeding and agronomy. Experimental work on maize varieties in Malawi has been recorded for the past sixty years. Until 1950 the work consisted mainly of the evaluation of introduced varieties in comparison with local maize. After 1950 a definite breeding programme emerged and many synthetic varieties and hybrids were developed and tested in extensive trials throughout the country. As a result, some of the synthetic varieties (SV17, SV28, and SV Mlonda) and hybrid variety (LH11 = Local Hybrid 11) were selected and recommended for Lakeshore, Shire Valley and plateau areas. These varieties were grown for some time. Thus the breeding programme had two aims;

- to produce white flint grain superior open pollinated varieties (synthetics) for the smallholder farmer and to produce white flint higher yielding hybrids for the progressive farmers. Varieties were also screened for disease and pest resistance.

In 1967, the Maize Breeding Programme was reviewed and it was decided to change from synthetic to composite varieties. The yields of composites are more stable than synthetics against climatic variations due to wider genetic base. It was also decided at that time to include development of semi flint/semi dent composites since pure flints have genetically low yield

potential. Synthesis of Chitedze Composite A (CCA) was then initiated using twenty seven varieties which included local synthetics and hybrids with a few exotic materials. Recombination in CCA was for three generations. In 1971, recurrent selection was started in CCACQ. Another composite, Chitedze, Composite B (CCB) was synthesised using exotic materials and was broad based. At that time hybrid programme had been suspended and hybrid seed was being imported into the country.

Other populations, Ukiriguru Composite A (UCA) and Ukiriguru Composite B (UCB) were introduced at about the same time from Tanzania. Both of these populations underwent selection to improve them on grain yield. The selection criteria was grain yield, grain characteristics (flint/semi flint/semi cent), ear and plant height. The S2 selection method was chosen and was later changed to S1 selection method to reduce the time. In mid 1970s, UCA and CCA were released for high and low altitude areas.

Hybrid programme was rejuvenated in 1977 in order to satisfy the country's hybrid seed demand which arose due to an increase in hybrid maize growing. Importing seed was a big drain on foreign exchange reserves. Development of inbred lines from local and exotic lines was therefore initiated and selections made in CCA, UCA, Equador 573, Cortazar and TL 738. New lines were also obtained from other countries. In 1979, Malawi hybrids 12 and 13 (MH12 and MH13) were released for high and low altitude areas respectively. MH13 was later withdrawn due to technical reasons. Also MH15 and MH16 were released in 1984/85 as a result of this programme. There are several promising hybrids in the pipeline which are being tested in the National variety trials alongside recommended varieties. Composites such as Chitedze composite C (CCC) and Chitedze Composite D (CCD) are also in advanced stages of testing and will be released to farmers in the near future.

Work has started on breeding synthetic varieties with flint grain type. This work is in its second season. Breeding for three-way and double cross hybrids was started last year at the request of the National Seed Company. Seed of 3-way and double cross hybrids is cheaper than of single cross hybrids like MH12.

Future breeding work will continue developing better and higher yielding maize hybrids, composites and synthetic varieties suitable to all agroclimatic zones of the country. The emphasis will be placed on developing varieties with hard grain to reduce storage losses, and short plant stature to reduce yield losses due to lodging. However, production of dent hybrids for Estates and progressive farmers who grow maize as a commercial crop will continue because of their high yield potential.

Maize Agronomy

A small Maize Agronomy programme was initiated at Chitedze research station in the late 1950's to develop improved cultural practices for the new synthetic and hybrid varieties coming out of the breeding program. The Agronomy work at that time concentrated mostly on time of planting, spacing and plant populations with very little work on fertilizer rates, mostly for a few estate farmers growing maize at that time. Almost all maize agronomy work was being done at major research station and yet management and soil conditions in farmers fields were very different from those of research stations.

Due to increased maize production by smallholder farmers especially hybrid maize LH11 and later SR 52 and synthetic varieties which resulted in increased fertilizer use detailed agronomic work started in the late 1960's. Work concentrated on time of planting, spacing, use of manure and mineral fertilizers.

From the combined maize breeding and maize agronomy work the following conclusions were made by 1984-85 season.

Fertilizer investigations aimed primarily at determining the fertilizer requirement of maize in the main production areas, particularly for nitrogen and phosphorus. Breeding was directed towards setting up a programme for production and improvement of composites, hybrids and to determine response of varieties in various areas of Malawi. A vast country-wide trials network was set up, administered from Chitedze where most of the varietal improvement work is centred. District trials ran into many hundreds and as the work was based on the needs of the majority of Malawi farmers who grow maize for subsistence, sites were nearly always chosen in fields of progressive farmers so as to represent soil conditions in the area.

Findings

1. The highest yielding and most responsive cash crop maize varieties have been hybrids which have been released over time such as LH 11, SR 52, R201, MH 12, MH13, MH14, MH15, MH16 and NSCM 41. These are all dent (except LH.11 now withdrawn) and are not however recommended for storage.
2. The recommended medium to high altitude composite is Ukirigure Composite A (UCA).
3. The recommended lower altitude composite is Chitose Composite A. These two composites store well and are palatable.
4. No variety recommendation can be made for the Shire Valley area although it has been possible to recommend for brief period Ilonga Composite and a hybrid Pioneer 93 (PNR 93). CCCO has also performed well and will be released next season.

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5. The maize research programme has therefore identified the new composite varieties as being superior to the earlier synthetics and early local hybrids. The breeding programme has been flexible so as to adjust it according to the needs of the day. The synthetics have been dropped and the new composites are in a programme designed for continuous improvement.
6. After carrying out an analysis of genotype-environment interactions it was found that 20 to 25 National maize variety trials sites, when well sited are adequate to represent the range of altitudes and environments in the country efficiently, provided they are chosen to sample this range evenly.
7. The standard plant spacing of 90cm x 30cm = 37,000 plants per hectare is adequate for all areas and all varieties under normal circumstances. Under good conditions, the population of MH 12 could be increased to 45,000 or 50,000 plants per hectare. The tall composites may benefit from a population up to 40,000.
8. In all years the greatest yield responses were obtained from nitrogen application although responses were also found to phosphorus and sulphur. Nitrogen and sulphur must always be included in the fertilizer and phosphorus when high levels of nitrogen are being used. MH12 gave good responses to nitrogen applications of 100N kg/ha or more. The composites gave reasonable responses up to about 80N kg/ha.

The synthetics seldom gave responses to over 60N kg/ha. Phosphorus applications of over 20 kg/ha are unlikely to be of value. But the best way to use fertilizer is through soil testing.
9. The new composite varieties are more responsive than the old synthetics and that in line with the breeding programmes on composites, agronomic research should continue to concentrate on determining their agronomic requirements.
10. Urea appears to be an adequate substitute for ammonium sulphate provided that sufficient sulphur is present.
11. The economics of fertilizer application cannot be determined now because of fluctuating and rapidly increasing prices, leading to constant changes in the ratio of grain value to cost of fertilizer.
12. The response patterns to applied fertilizer on research stations and sub-stations were often atypical to those obtained from adjacent farmers fields confirming the yield gap technology.
13. The work programme showed that while natural regions (ecological zones) influenced fertilizer response patterns, responses to fertilizer were primarily controlled by season,

altitude and variety. The influence of soil type and the previous cropping history of the land is however of importance when actual rates of fertilizer application are being considered.

14. Yield levels recorded in the absence of fertilizer inputs in most trials were often much higher than that quoted as the national average. While some of this difference might derive from experimental (small plot) error, it must reflect the improvement in yields that could be obtained by improved husbandry; namely early planting at the recommended plant population followed by effective weed control. These results serve to emphasise the need to concentrate extension effort on improving maize husbandry before placing emphasis on the use of improved seed and fertilizer. To maximize the return from cash inputs (i.e. seed and fertilizer) it is imperative that maize husbandry is of a high standard.

Proposals for the future

(a) To continue the breeding programme and varietal evaluation, especially recurrent selection in the composite populations leading eventually to varietal hybrids.

(b) To continue the trials that compare the performance of promising new varieties with current varieties at varying inputs of fertilizer and different plant populations.

(d) To carry out investigations aimed at increasing the efficiency of use of fertilizers.

(e) To study the effect of cropping history on fertilizer responses.

(f) To investigate the influence of 'pan' formation in yields and the benefit of sub-soiling or ripping soils with pronounced 'pan'.

(g) To investigate the suitability of Urea and DAP as replacement for CAM, SA, and 20:20:0

Rice

After maize, rice has become the most important cereal crop in Malawi both for local consumption and also for export. In some parts of Malawi rice has been grown for a very long time under rainfed conditions, but after independence several irrigation schemes have sprung up all over the country in rice growing potential areas.

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Rice research started in the late 50s after the development of irrigation facilities at Makanga. Considerable breeding and agronomy research has been conducted. As the programme expanded the research was concentrated at Makanga, Kasinthula, Dwangwa, Limphasa and Baka. Research plots were also established at all major rice schemes. In 1975 rice research station was established at Lifuwu in Salima to act as the main research station and also a coordinating centre for research as well as seed bulking of basic seed.

After Lifuwu was established research on rainfed rice was also started. This was in realisation that over 80% of rice in Malawi is grown as rainfed crop.

Rice research has concentrated on three areas:- Variety introduction and selection, Agronomy and quality studies.

(A) Variety Introduction and Selection

Work was concentrated on:

(i) A variety of high grain quality acceptable on our export markets (of Blue Bonnet type) for either a single wet season crop alone or a variety of the same type suitable for both the wet and dry season crops with minimal harvesting and drying problems in the rain.

(ii) A short duration variety for a single dry season crop only which can be cold tolerant and photo period insensitive to mature well before the rains begin and again of acceptable grain quality.

(iii) From the mixed populations of the local Faya rice variety select strains of short plant height, with long grains, homozygous character for flowering for optimum paddy and milling yields.

(B) Agronomy

(i) Investigating on the time of planting of the latest and promising introduction to find the optimum time of sowing for both the dry and wet season crop.

(ii) Investigating on spacing of the promising introductions to find optimum spacing and relate it to components of yield in rice.

(iii) Investigating on the responses of rice variety to NPK and soil reaction.

(iv) Investigating of the time of Nitrogen application for optimum yields.

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(v) Chemical weed control investigations to find a cheap and most effective chemical for later use by small holders on rice estates.

(C) Quality of Paddy

(i) Investigate on parboiling of all promising varieties for high milling yields.

(ii) Investigations on cooking and eating quality of all potential commercial varieties.

(iii) Paddy milling tests on all potential commercial varieties.

From this programme two rice varieties were developed and recommended to farmers for growing namely Faya 14 M69 and Blue Bonnet along with production recommendation for farmers use. Several other varieties have been selected with much higher yielding potential but were found not as good as Blue Bonnet in terms of quality on the export Market. On the home scene people prefer rice with aroma or Faya type of rice. Several landraces have been identified and ADMARC has now started buying these aromatic strains such as Kilombero etc. Four new high yielding rice strains are undergoing trace assessment, if found acceptable will be recommended for release.

The future for rice research would definitely benefit from a policy directive by the APPR. There is also need to split the programme between export needs and local needs.

Now that we are going to have a well trained rice breeder the future looks bright.

Cotton

Under Malawi condition pest control in cotton is more important than application of fertilizer. Accordingly entomological research is a major aspect of research on cotton. Another major aspect is breeding for newer varieties with better lint quality and yields. Earlier breeding work resulted in the variety Albar 637 grown throughout the country. This variety was first replaced by Makoka 72 released preliminarily in 1972, later on Makoka 78, Makoka 80 and now three more varieties have been released. In the field of entomology spraying and other pest control methods have been sorted out resulting in a water based ultra low volume (wulv) spraying technique. Currently research has reached the final stage in the use of synthetic pyrethroids as a means of control of cotton pests. The agronomic research done to date has confirmed that in the main cotton growing areas of Malawi fertilizer is of secondary importance as compared with

spraying. Future work should concentrate on breeding varieties suitable for upland cotton above 3000 feet above sea level where very little cotton is grown at present mainly because of lack of a suitable variety.

Groundnuts

Groundnuts now rank fourth in value of agricultural export commodities after tobacco, tea and sugar. It is also an important source of edible oils as well as food. Malawi's groundnut production is entirely based on smallholder grower as the crop has not yet been taken up by the estate growers. It is envisaged that the country's production of this crop will increase with the present increased price and due to intensification of the National Rural Development Programme (NRDP).

The scope of groundnut research in the country must, of necessity, be widened if it will best meet the demands of the NRDP.

The history of groundnut research goes far back in the early 1950. Between 1963 and 1975 groundnut research together with other legumes was the responsibility of Agricultural Research Council of Central Africa who had their headquarters at Chiteze. From April 1975 the Department of Agricultural Research took over the responsibility of groundnut research after the dissolution of the A.R.C.

The overall objective of groundnut research is to improve the yields and quality of groundnuts. The programme is in three sections i.e. breeding, agronomy and pathology. According to this speciality, the same overall objective has been split up as follows:

(a) Breeding:

(i) Screen from a large number of collection/introductions breeding lines or cultivars on the station before testing them widely throughout the country. Selection criteria depend on the use of the end product for confectionery for oil expressing purposes.

(ii) Incorporating disease resistance into the currently recommended cultivars. Currently six cultivars are recommended i.e. Chalimbana and Chitembana for upland areas, Malimba for Shire Valley, RR1 (Rosette resistance) for Phalombe-Thuchila Plain and Mani Pintar and Mawanga for lakeshore areas. The last two cultivars are for oil expression while the others are confectionery type.

(b) Pathology:

(i) To screen from a large number of fungicides the most effective, least toxic and economical fungicide which will control both cercospora leafspots and rust diseases. After initial testing on the station promising fungicides are then tested widely thereafter.

(ii) To develop spraying regimes most suited to the smallholder growers.

(c) Agronomy:

(i) To improve the yields, and in particular, the shelling out percentages of the recommended varieties. This is especially important and necessary for Chitembana and Chalimbana varieties which have high export demand for confectionery. Being large Kernel varieties they are particularly susceptible to 'pops' and this is very common on light sandy soils. Pops occur where there is a poor supply of calcium and or magnesium, or an imbalance between the two nutrients.

The economic quantity of the necessary fertilizer to be applied can only be determined by district agronomy trials.

(ii) To determine the causes of low yields of groundnuts in specific and localized areas of the country where 'pops' is not the main constraint.

It is thought that in such areas, low yields may be due to insufficient and/or ineffective soil bacteria being present so that nitrogen fixing is inadequate. In other areas, there appears to be some symptoms of micronutrient deficiencies. Research is being conducted to determine if beneficial effects can be achieved with various forms of trace elements such as boron.

A lot of progress has been made in many aspects: breeding, agronomy and pathology. Varieties have been developed for specific purposes such as confectionery and oil crushing, for dual purposes and also resistant to rosette disease. Cultural practices for high yield and disease control have been developed. The control of such diseases as leafspot has been sorted out. A lot of work still remains to be done, however. Varieties resistant to rust still have to be bred. Many breeding lines have still to be tested and good one released later. Cultural practices for specific new varieties have to be investigated. The use of chemicals and other means of controlling diseases and pests require more research. A new insect pest causing wilt of groundnuts has recently become serious. This new pest called Hilda, will definitely require more research to study its biology and hence develop control measures.

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Soyabeans:

Concentrated investigations have been done on soyabeans for several years and production recommendations were made for farmers use. However, soyabeans are not a traditional dish in Malawi and further, the soyabeans require a special cooking technique and has in this respect posed a major problem the world over. As an oilseed crop soyabeans require solvent extraction to get the edible oil. This type of extraction plant we do not have in Malawi. Interest in soyabeans is now growing as an animal feed as well as for human nutrition. Grain and Milling are now offering good prices for it and commercial production has started. To support this the Research Department is producing and supplying rhizobia for inoculating the seed before planting. A circular has also been produced and made available to all interested parties.

Weeds and Herbicides

This project involves a study of the types and preponderance of weeds under different environmental and cropping conditions, and investigates ways and means of eliminating or controlling of the weeds. With the scarcity of manual labour at the peak of the season use of herbicides can mean larger acreage under cultivation, higher yields and better quality. The research results so far have identified good herbicides and these have been recommended, but whatever the herbicide it would appear that some manual weeding is necessary, the herbicide only allowing some eight to ten weeks of reduced initial weed infestation. Much more work is required to test many more chemicals and different crops such as tobacco, maize, cotton groundnuts, rice etc.

Rotations and Soil Fertility

Rotations and their effect on yields of crops being tested and also their effect on soil fertility, pests, disease, weeds, etc, form a very important research project. Earlier experimental rotations concentrated on treatments and practices which were more relevant to the farmer with small holdings and using ordinary cultivation tools with limited capital. Some of these trials run for about 20 years and have now been discontinued, having collected masses of data from them. The new set of rotation and soil fertility trials are aimed more at the middle and sophisticated farmer who can afford more farm inputs. The trials include use of lime to control acidity and the treatments attempt to stop fertility from declining and even to improve with continued cropping. The results are expected to be very interesting.

This follows from the results which showed that the normal rotation failed to maintain soil fertility or stop it from declining. The future programme will look at ways of maintaining soil fertility or even improving it by incorporating agro forestry into the rotation.

Tung

Tung was one of the very early subjects of research. In fact Byumbwe Research Station was called Byumbwe Tung Experiment Station. The research results have been of great use to the tung grower in the Southern and Northern regions where tung is grown. Low world prices recently threatened the profitability of tung growing but the situation seems to be improving fast and the recent research recommendation to adopt closer spacing will result in better yields.

Should the industry expand good recommendations are available for growers. At the moment the growers are replacing tung with either macadamia or coffee which are more profitable than tung.

Coffee

In spite of the long time during which work has been conducted on Arabica coffee, this work has tended to be mostly on diseases and there is need for more work to be done to sort out various cultural practices including fertilizer requirement. The price of coffee is very good, at the time of writing this review it was K6000 per tonne. This really justifies that more work be done on this important crop. Being perennial crop, however, results can only be obtained several years after planting, and more data are still being collected. Some work has also started on Robusta coffee in Shire Valley and will also be done at the new proposed research centre at Mkondezi near vizara in Nkhata Bay. In order to support research on coffee contract research arrangements have been made with the Tea Research Foundation of Central Africa to conduct research on coffee for the estate sector. To this end construction is under way for a coffee research unit at Mimosa and recruitment exercise has commenced for a coffee agronomist. Coffee research facilities will be expanded at Lunyangwa and a coffee research sub-station developed at Nchenachena.

Malawi has marginal climate for coffee, success of the crop will depend on supplementary irrigation. This aspect will also receive attention.

Cocoa

Cocoa research has been done for a long time at Makanga Research Station and Masenjeje in the Shire Valley. The work was done under irrigation and showed that high yields and good

quality cocoa can easily be produced under irrigation in the Shire Valley. In fact some six acres of cocoa at Masenjere sub-station have been handed over to farmers for general production. However, because of the limitation of land and irrigation in the Valley large scale production is not possible and further research work on cocoa in the Shire Valley has been suspended. However, for production purposes good recommendations and planting materials can be supplied to any interested party.

There is thought also, to try rainfed cocoa under the warm high rainfall environment of Nkhata Bay. This work would be at Mkondezi.

Tobacco

The history of tobacco goes way back to the first coming of settlers. Records show that by late 1896 already tobacco was grown in this country. Several types of tobacco are grown but Western (Dark Fire Cured and Sun air cured) has been strictly a smallholder crop, as well as laku and oriental. Burley tobacco is both an estate crop as well as smallholder crop where schemes have been developed. Flue cured is mostly an estate crop, though since late 60's smallholder schemes have been established for flue cured tobacco.

Research on tobacco is recent except Western tobacco. Research on Burley and flue cured was conducted in Zimbabwe and Malawi used to pay for liason visit and research and growers recommendation.

The volume of tobacco grown in Malawi increased very rapidly mainly after UDI in Zimbabwe. This necessitated increased research work to be done in Malawi.

To meet this demand research on Malawi Western and Burley tobacco was done at Chiteteze while oriental tobacco research was done at Mbawa. Later on, with the expansion of flue cured tobacco in the country a research station was opened at Mwimba in Kasungu District.

When this station was developed there was no need to pay Zimbabwe Tobacco Research Board for liason and growers recommendation. This arrangement was discontinued and full responsibility for tobacco research was done by the department.

Since tobacco had become the most important export crop in Malawi it was decided that the tobacco industry should pay for tobacco research. This was agreed and the Tobacco Research Authority of Malawi was created. As of 1980 all tobacco research in Malawi became the responsibility of the Tobacco Research Authority. The Department of Agricultural Research transferred all tobacco research staff to the new organisation.

Progress has been made, new varieties have been released, new recommendations have been developed and released to the growers. The future looks bright for this important crop. However due to world fall in demand for nicotine sulphate work on labu tobacco has been discontinued.

Sugarcane

Though sugarcane has been grown in Malawi for a very long time, research on this crop started in 1955 when irrigation facilities were developed at Makanga research station and at Alumenda near Nchalo. By early 1960 it was found that sugarcane can be grown successfully in the Shire valley. Sucoma was then developed. When Sucoma became successful research on sugarcane was expanded to Dwangwa and Swange valley with Evumowe acting as a quarantine station and Makanga as the main testing centre. When Dwangwa sugar estate was established the research on sugarcane such as varietal testing and agronomic testing were done by the two estates and Makanga and Evumowe and later on also Lifuwu simply remained with varietal introduction and quarantine.

Sugar production became an instant success and sugar exports were good making sugar an important foreign exchange earner. However, the price of sugar is liable to fluctuations and that further development of sugar industry must be viewed with caution. However, the department has enough knowledge and expertise to identify new areas for future sugar development. But until such time research on sugar is halted except for introduction of new cultivars and quarantine.

Essential Oils

Plants such as Nince, geraniums, vetiver, love grass, lemon grass oil, patchouli, lime etc, which may be distilled to obtain scented oils used in perfumery are being investigated. Large scale production of Nince started in Northern Region but the new industry met an early problem, that of otherwise perennial Nince bushes dying mostly within 3 years of planting. While nematodes are highly suspected of causing this problem no solution has yet been found and Nince production has had to be suspended especially as the overseas market which required a steady supply withdrew its interest apparent due to lack of constant supply of sufficient quantities of the oil. Due to uncertain demand for essential oils serious research has been suspended and only seed plots are maintained. When demand build up research would be started.

Vegetables

Research on a large number of vegetable crops has been conducted at Evumbwe Research Station and recommendations for

farmer use produced. The Agricultural Development and Marketing Corporation (ADMARC) have developed a fresh vegetable air export industry from the results of this work. Most recommendations however are more applicable to the Shire Highlands and other areas with similar environment. The construction of the international airport at Lilongwe has meant that most of the vegetables for air freighting will have to be grown in the vicinity of the new airport. This means that more research for vegetable production methods specific to the Lilongwe area will have to be carried out.

(a) Horticulture (Fruits)

Research into the production of many fruit types has been done for a long time now. Some recommendations have been made and some seedlings of various fruit trees are distributed to farmers or interested growers. There are, however, many fruit types indigenous to the Tropics or of cool temperate regions which require investigating for eventual production for local consumption or for export.

To support interested growers three horticultural nurseries have been developed at Ryumbwe, Chitedze and Lunyangwa research station. While the research on temperate fruits will remain at Ryumbwe, the research on tropical fruits will be done at the new Mkondezi research in Nkhata Bay.

(b) Horticulture (Tree Nuts)

Macadamia and cashew are the main ones under this project and large scale production of both is being done. Thousands of Macadamia trees have already been planted and some of the trees are already bearing. As no industry can be without a problem, some macadamia trees experienced premature nut drop which has been caused by macadamia nut borer and other insect pests. This problem has been well studied and good recommendations have been produced and we are now concentrating our entomological research in the Northern region where large plantings of macadamia has been done.

Research on cracking, roasting and packaging of the nuts has been done jointly by DAR, Naming'omda Tea Estate, ADMARC and Tropical Products Institute. Trials have resulted in good packaging and roasting resulting in good export of the high quality nut and also supplying the local need. Macadamia is poised to play a good share of our crop diversification efforts. The future looks bright.

To support the industry there are regular meeting between the research scientists and Tree Nut Authority as well as Tree Nut Growers Association. These meetings discuss the research needs of the industry.

In addition to the five clones previously recommended, four more new clones have been recommended to the growers and several recommendation circulars have been produced for growers.

Cashew is also been researched on and following its potential large scale planting is under way by smallholders, estates mostly by ADMARC and Press Farming.

Production has reached a stage where local processing would be desirable rather than exporting raw nuts to India. The future of cashew is good and bright.

Research is continuing to find good quality clones and cultural practices. Major pests and diseases are also receiving good attention. Recommendation have been produced for growers.

Sorghum and Pearl Millet

The Shire Valley has a rather dry climate and to make things worse, the rains that fall in that area are so erratic and unreliable that a crop such as maize which requires a lot of moisture seldom does well. Sorghum and Bulrush Millet, however, are more drought resistant and are already grown widely in that area. This project aims at improving the varieties and production methods to assist the farmer achieve higher yields. Appreciable progress has been made in both Sorghum research and Bulrush Millet research. New high yielding varieties such as PM 3r Thengalawanga for sorghum and Nigerian composite for Bulrush millet have been recommended and released to farmers. With the start of the SADC Sorghum and millet project in Bulawayo several good varieties have been obtained from this project and are undergoing test in Malawi. A good breeding programme has also been initiated to produce good varieties combining good characters from local and crossing them with exotic.

Work will start soon on milling with the aim of producing a superior flour from these two crops comparable to that of maize.

Finger Millet

The main object of this project is to find an alternative method of growing finger millet to the destructive 'VISOSO' by which traditional method the farmer cuts down vegetation from a large area and burns it in a heap in one small area where he plants his millet. The millet planted by the farmer is very mixed. The current work is concentrating on separating the varieties into a number of pure lines and on cultural practices which will reduce the problem of weeding. Very good progress has been made recently.

Fodder Crops and Pastures

Screening and agronomic trials on Fodder Crops and Pasture grasses and legumes have been conducted for a long time now and useful results have been obtained. The work is continuing. Perhaps what should be done next is evaluation of indigenous natural grasses and how they can be improved for livestock production. However, work on legume and mixed pastures in conjunction with the Pasture Legume Microbiology is currently being given more attention. Very good results are coming out. A handbook on pasture has been produced plus a number of recommendations. Work will continue.

Phaseolus Beans

This is a major project which has been put under the wing of Bunda College of Agriculture. Research so far has covered many aspects: breeding, agronomy, pathology, entomology and selection for disease resistance. No crossing work as such has been done but selection from a country wide collection of strains has resulted in identification of several better performance strains. Cultural practices have been investigated and recommendations made. In spite of intensive work there still remains the major problem of disease which appear to be the main cause of the low yields under farmer conditions.

Fibre Crops

Kenaf has been tested under irrigation at Makanga for a number of years and good fibre yields obtained. But the yields, though good, are rather marginal for a profitable factory. Agronomically, the main problem is that the Kenaf varieties tested so far are sensitive to photoperiodism, and to avoid this, one has to plant early even before the rainy season starts i.e. by irrigation. Because of sensitivity to photoperiodism, and possibly also high water requirement, rainfed Kenaf has not been successful. Work has been discontinued. Jute research has also been done on a very small scale following the pattern of Kenaf research. Work has since been discontinued.

Minor Oil Crops - Sunflowers

Production methods of sunflowers are being investigated so that this crop may be encouraged to supplement groundnuts as a source of food oil. The work is concentrating on selecting a high oil variety, in addition to agronomic studies under different environments, and finding varieties resistant to leaf diseases. Production recommendations have been worked out for the farmer from research work conducted to date, but very few farmers have taken sunflower production seriously. Other crops being investigated under this project are Sesame, Safflower and Castors.

Minor Grain Legumes

Apart from groundnuts, soya beans and Phaseolus beans, all the other grain legumes are grouped under this project. Some of these are grown on a small scale in villages and the idea is to improve their production. Only limited amount of work is being done with these minor grain legumes.

Cattle Husbandry

Shortage of protein is currently the concern of nutritionists throughout the world. This research project aims at helping to solve this problem by devising modern ways of rearing cattle for both beef and milk production. The aim is not only to sort out ways of utilizing the conventional cattle feed stuffs but also how best any crop and other residues and by products in a farmstead may be utilized.

Cattle Breeding

The main work to date has been to improve on the Zebu breed for beef production. There is also work on Zebu X Friesian crosses aimed at milk production. While these two lines of work are being pursued it is now intended to introduce one or two other exotic breeds into the breeding programme for a wider genetic base and to have in the Country a larger selection of breeds for different purposes and management levels.

Pigs

While pigs are being reared in many parts of Malawi, the husbandry practised is a free-range one, with exception of a few commercial piggeries. The indigenous pig which is used does not produce high quality carcass. The purpose of the project is to investigate different feeding regimes using exotic and crossbred pigs and to compare production economics for small scale and large scale units. The work is being done by Bunda College of Agriculture.

Poultry

The work at Bunda College of Agriculture which investigated feeding regimes for meat and egg production produced some interesting results but due to staff shortages the work was suspended. But work has reverted back to DAR and is concentrated at Chitedze research where the main research focus is on the development of local feeds for both layers and broilers. Very interesting results are coming out. We should have locally formulated rations soon.

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Spice Crops

This is another small project meant to sort out production methods for a number of spice crops for local consumption or for export purposes. Some of the spice crops are Black Pepper, Chillies, Cardamoms, Vanilla, Cinnamon, Ginger, and Turmeric. Progress has been made in some of these crops such as Chillies which is already enjoying export boom but the main problem to stimulate large scale production is the rather small demand associated with spices.

Pyrethrum

Pyrethrum likes cool areas with a long wet season. The aim of this project was to identify suitable clones which would withstand the long dry seasons in Malawi. If found perhaps we would have another cash crop for high altitude areas, for there seems to be world shortage of this commodity which contains pyrethrums for the manufacture of insecticides. The work has now been suspended.

Pharmaceutical Crops

This is a small project aimed at investigating the production of certain crops for pharmaceutical purposes, e.g. Senna (*Cassia acutifolia*), castors *Phytolacca dondecandra*. Appreciable progress has been made in respect of Senna, the only thing left to be sorted out being the time of harvest of the pods for the highest content of the medicinal active chemical. This work has been halted due to uncertified market demand.

Soil Acidity and Liming

A number of areas in Malawi have soils which are too acid for optimum crop production. Liming is the usual treatment to correct acidity, but use of lime has been reported to cause problems under tropical conditions. This investigation was aimed at devising ways of effectively using lime without having to encounter the associated problems. Results to date have shown how agricultural lime should be used in terms of rates and frequency for the different crops grown. A number of crops give a response to applied lime, but even when no direct response is obtained the effect of the lime on soil pH is such that subsequent crops do not suffer and generally many soil characteristics are improved. It has in particular been shown that appropriate combinations of lime, farmyard manure and inorganic fertilizer produce very good effects. The work is continuing and rotations are being incorporated into the study.

Pasture Legume Microbiology

Research to date has resulted in Rhodes grass and other grasses being recommended for production for livestock feed.

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During the dry season, however, these grasses do not give enough protein for balanced animal nutrition and protein has to be supplemented. Work conducted recently has shown that mixed grass/legume pastures may be an answer to improving the nutritive value of these grasses, and compatibility of certain pasture legumes with grasses was studied. The performance of legumes depends to some extent on the efficiency of the rhizobia of the root nodules and the microbiological studies concern the rhizobia for the pasture legumes which may be grown either in pure standy or in mixed grass/legume pastures.

Unit Farms

Because of using small experimental plots under very good management, sometimes research results are not directly applicable under large scale farmer conditions. To test research recommendations under farmer conditions, therefore, there are at research station small farms of different sizes and each owned by a farmer who runs it as if it were anywhere else. The data from these unit farms give a good indication of what would happen under normal farm conditions. Because of the bias with unit farm results the unit farm idea has been abandoned in favour of Adaptive research.

Makande Soil Research

Cotton growth on the very heavy, poor draining and cracking soils of the Makande area in the Lower Shire Valley has been noticed to vary greatly within short distances and the crop performance has been known to be adversely affected by factors which are rather difficult to define. This project aims at tackling the problem from the soil physics and soil chemistry stand point. The work is producing interesting results which have potential use in the Shire Valley and wherever we have these black cotton soils.

Agricultural Economics

Farming in Malawi has certainly shifted from the subsistence status of old to a commercial status. Even a small farmer in a village aims at selling some of the produce and generally aims at getting from his labour at least what an employed labourer would get from his employment. Whatever recommendations are put to the farmer, therefore, must be economic in practice. The labour and the various inputs invested in farming have to be economic for the farmer to remain devoted to his farm. Hitherto research scientists have been making their own interpretation of the profitability of recommended practices and, needless to say, have found it difficult, and have at times not paid enough attention to it. This newly created project aims at providing for this need. The project has been incorporated into Adaptive Research where we have both economist, sociologist and agronomists.

Crop Storage

A good proportion of produce gets spoiled and lost during storage. It is reckoned that sometimes the loss during storage exceeds and, therefore, nullifies any increase in production due to use of improved agricultural methods. A good deal of research has been done in crop storage, especially with maize, and results are being used by the farmer. Research is centred at Byumbwe Research Station and includes an element of extension to ensure that the recommendations reach the user with the minimum of delay. The project was later extended to the Central and Northern Regions. Very useful recommendations are coming out.

Wheat and Burley

Malawi imports about 30,000 metric tonnes of wheat at a considerable cost. The demand for wheat and wheat products is increasing steadily due to increasing income, urbanization and changes in eating habits. Local wheat production is very low (1,000 metric tonnes) = 3%.

Considering the high import costs, difficulties associated with wheat importation, and the fact that Malawi can grow most of the wheat grain that is currently imported, the Government has decided to increase local wheat production.

Some of the important factors which limit wheat production in Malawi are inadequate soil water during the reproductive growth period, lack of adapted cultivars for specific areas, late planting, low fertilizer application, diseases, and insects.

The Department of Agricultural Research has engaged three wheat research scientists who are currently working on wheat in order to solve the factors which limit wheat production hence accelerate wheat production with a goal of substituting wheat imports and attaining self-sufficiency in the long run. The main wheat research objectives are to select high yielding cultivars that are adapted to Malawi to select for resistance to major wheat disease, to determine fertilizer requirements, spacing, seeding rates and time of planting as a basis for technical farmer production recommendations and to introduce wheat as a rotation crop in Tobacco Estates.

Several wheat varieties have to be identified and recommended for production by both smallholder and estate growers. Tentative wheat production technologies have been developed for the farmers in Ntcheu and Mwanza the main wheat growing areas.

There is a small barley research programme at the moment. Its objective is to identify high yielding malting barley can be grown. This work is being done under the auspices of the Carlsberg Plant Breeding Station in Denmark.

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Potatoes

Potatoes are widely grown in Dedza, Ntcheu and Zwanza districts as well as in parts of Southern and Northern Regions. The main problems hampering potato production are the potato blight disease and lack of good quality seed. The project has identified several good varieties that do well but there is no commercial potato seed production in the country. Byumbwe research station produces some seed which is not adequate to meet demand.

Recently work has started on using diffused light potato stores and if found successful would be used by the farmers to store potato for seed from one harvest to next planting.

Cassava and Sweet Potato

These two crops have recently received good attention research wise. Several varieties have been assembled and tested and recommendation made. The major problems for cassava are cassava mosaic virus disease and two newly introduced pests cassava mealybug and cassava green spider mite. Attention is now focussed on the control of these pests. Use of clean planting material is advocated for mosaic while use of parasites and predators is being tested for the other pests.

Milling trials have also been done with a view of having flour processed industrially by Grain and Milling.

For sweet potatoes major problem are virus disease and sweet potato weevil.

Dambo Utilization

Dambos, or seasonally wet valley areas with open vegetation, occupy an appreciable proportion of the surface area of Malawi. Dambos are used as a source of water and other natural resources. They are also used for grazing cattle and other livestock. With population pressure on land, dambos are now being used more and more for crop production. This project aimed at defining in more precise terms what a dambo is and studying its main characteristics. It also aimed at discouraging use of dambos for arable crop production and encouraging their use for livestock grazing under modern management systems. There was employed on this project a fulltime grassland ecologist. The project was discontinued later.

Irrigation

Irrigation has played a very small part in the Agricultural Development in Malawi and did not start on any significant scale until the late 1960s. Even now only about 20,000 ha are

irrigated, of which 15,000 ha are on two large estates (SUCOMA and Dwangwa) and a further 3,000 ha on 16 government owned smallholder rice schemes.

Irrigation can be defined as the art of supplying water to the plant using the correct amount and at the correct time. The supply of this water extremely important to agriculture and determines when crops, may be planted, where and which types. In the absence of rainfall or where it is inadequate, irrigation is the only other alternative.

Irrigation can either be supplemental (wet season) or it can be full irrigation (dry season). The amount of water that can be applied to the soil depends on soil type, type of crop, crop variety, irrigation system and weather.

Sandy soils require little amounts of water but applied at shorter intervals; where as clay soils require large amounts of water but applied at longer intervals. Rice requires more water than beans or wheat. This is why in Malawi we are thinking of growing beans or wheat in irrigation schemes because they mature earlier than rice. The early maturing varieties use lesser quantities of water than the long maturing varieties.

Precise irrigation can be achieved through the use of sprinkler or drip irrigation. Surface irrigation systems are less precise than sprinkler and drip irrigation systems. All the factors mentioned above should be considered when growing crops under irrigation.

A lot of work has been done on varieties, time of planting, fertilizer application and plant population on maize, beans, cotton, wheat, vegetables, groundnuts and bananas in the Shire Valley under irrigation. However, very little work has been done on irrigation scheduling and this is the area we intend to concentrate on in the future. A good irrigation scheduling program can both eliminate waste in water use and can also improve the quality and quantity of yields.

Currently, work is being stepped up at Kasinthula in the Shire Valley, the drier conditions and the erratic rains there making normal rainfed cropping very difficult. It is now generally agreed that irrigation is the only means by which agriculture in the Lower Shire Valley can be adequately developed.

Farm Machinery

One of the main limitations to crop production is the physical limit to which an individual smallholder farmer can work aided by no more than a hoe and an axe. Generally he cannot afford tractors and sophisticated farm machinery and equipment.

He can therefore only manage a few acres. This project aims at devising and constructing for the smallholder farmers tools and implements for cultivation, harvesting, crop handling e.g. shelling, etc., for manual or ox use. These tools and implements which are cheap enough for the smallholder farmer are meant to cut down the amount of oil and labour by farmer at the same time speed up the work so that production and quality may improve. Todate multipurpose toolbar, groundnut lifter, groundnut cracker, maize shellers, sulphur dust applicators, insecticide and fungicide applicators, sprayers, etc, have been designed and tested. More tools and implements are being designed and tested. Farmers have, however, tended to be sluggish in adopting use of these labour-saving tools and it has been decided to put more work into publicizing the availability of these tools.

Agricultural Chemistry

There are two agricultural laboratories in Malawi one at Chitedze and the other at Byumbwe. The work of these laboratories is threefold: Firstly, they do routine analysis of soil and plant samples for purposes of fertilizer recommendations and other advice to farmers. Secondly, they analyse samples of soil, plants, water etc, in support of research work conducted by research workers in the Research Department and other Government departments. Thirdly, some officers in the section conduct some research in their own right in an approved field. Currently the main research work is on determination of available soil phosphorus which work aims at refining analytical methods and the relationship between analytically determined available phosphorus with plant growth and fertilizer responses. The work is in its early stages and will require stepping up especially in terms of field trials.

Agricultural Economics, Statistics and Data Processing

Section (AGREDAT)

The Agricultural Economics, Statistics and Data Processing Unit (AGREDAT), is a service unit based at Chitedze Research Station, came into being in October 1984 as a result of the re-organisation of the Department of Agricultural Research (DAR). It is an expansion of the old Biometrics Unit (formed in 1969 by the defunct Agricultural Research Council of Malawi) of the DAR, which was based at Makoka Research Station because of mainly the computing facilities (Computers) in Blantyre.

At present the AGREDAT unit is composed of

(i) four professional officers - a service Team Leader who is also a biometrician; a Senior biometrician, an economist and a Computer Programmer/Systems analyst.

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(ii) two technical officers

The Unit is responsible for providing advisory services to all research officers in the DAR on such matters as:-

(iii) providing in-service training to the research officers as regards both biometric and economic analysis of research data.

(b) Economic analysis of research data so that recommendations of research findings should not be based on statistical analysis only but also on the economic analysis.

Consequently, the unit is involved in all the planning and reviewing sessions of the DAR activities for effective and smooth co-ordination between the scientists and the unit. To this effect, therefore the activities and volume of work of the unit directly depends on the DAR scientists activities.

Results

In terms of results for recommendations to farmers, there has been appreciable progress made especially on the major crops. It is reckoned that as things stand, research is some 15 years ahead of application; that is, at the present rate of adoption of recommended modern methods the farmer would take some 15 years before exhausting the new techniques that research has in store for them. There are, of course, a few loopholes in the findings especially for remote areas of the country where not enough on-the-farm tests have been done. Also some of the newly introduced crops have not been sufficiently investigated and occasionally the research people are taken by surprise by farmers who request production methods of such relatively new crops.

Present and Future Research Strategy

In the past most of the problems were only scratched on the surface, mainly because of shortages of staff combined with a high turnover of professional staff. The tendency was that each staff member spread his efforts over too many projects and could, therefore, not investigate anything in depth. The staff situation is improving daily and it is now possible to tackle a number of problems to death. Instead of one person doing so many problems it is now possible to have a number of specialists on a single problem and this allows a balanced investigation from all possible angles of the problem. With such team approach to research it has now been possible to put research projects into commodity groups e.g. cereals, horticulture, etc. In this way a team of specialists in all disciplines may work on a group of projects such as those on cereals, which organisation results in much increased efficiency.

Communication

In theory the responsibility of the research worker ends when he has analysed, summarised and published his work in journals, bulletins or official reports, and possibly given a talk or two on the results. Whether the results are used or not, and if used to what extent they are used does not in theory have to worry him.

In practice, however, the research worker's ambition does not end at publishing the results. He often wants some recognition, some fame for his contribution to knowledge if not to better life. He will therefore make some effort to have the work receive as much publicity as possible and if usable to have the results used, this is the more necessary in the case of applied research where results must get to the user if they are to be of any meaning at all.

The normal path of research results is from the researcher to the extension worker then to the user public. There is usually a good wastage of usable information in the path between the research worker and the user public for many reasons. Sometimes the liaison between research and extension workers is not good enough and it is the feeling of researchers that there should be special liaison officers between research and extension. The link between extension and the user public is usually very weak because there are too few extension workers for the user public and even the mass media communication methods do not often reach the target. When the information does reach the target very often the user public is too conservative to change to the new methods.

Because of this practical gap between research and the user public it is not unusual for some members of the public to believe that research results belong to research stations and that application of research findings is completely beyond their means.

D. R. Manda
DEPUTY CHIEF AGRICULTURAL RESEARCH OFFICER
(RESEARCH PROGRAMMES)

July, 1986

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A P P E N D I X C

Approved & S-

PROJECT REGISTER

October 9, 1986

Project No.	Programme Component	Dev. Acc. Item No.	Project Name	Year Start	Year Compl	Donor	Currency	Donor Budget	Govt. Budget	Total MK	Source	Status	Status codes:
										1000 units			
1.	NATIONAL RURAL DEVELOPMENT PROGRAMME												
1.0.01	National	077-005	Agricultural Research Training	79/80	84/85	USAID	MK	5548	246	5934	DE66	C	C - Completed
1.0.02	National	077-047	Central Services	79/80	85/87	IDA	MK	4702	541	5343	DE66	O	G - Uncoing
1.0.03	National	077-008	National Agricultural Research (NARP)	85/86	89/90	IDA	US\$	23800	0	41492	FD/FE	O	P - Being Prepared
1.0.04	National	077-007	Agriculture Research (MARE)	85/87	90/91	USAID	US\$	16000	0		FD	P	I - Being Identified
1.0.05	National	077-180	Agric. Ext. & Planning: Ext. & Training (NRDP V)	85/87	90/91	IDA	MK	18019	65	18084	DE66	P	PP - Proj. Proposal
1.1.01	KRADD		Karonga/Chitipa RDP Phase 1	72/73	75/76	IDA	US\$	6800			IDA	C	PF5 - Prefeasib. Study
1.1.02	KRADD		Karonga/Chitipa RDP Phase 2	76/77	79/80	IDA	US\$	9200			IDA	C	FS - Feasib. Study
1.1.03	KRADD	077-055	Karonga/Chitipa RDP Phase 3	82/83	87/88	IDA	MK	10592	1589	12181	DE66	O	FD - Proj. Document
1.2.01	MZADD	077-018	Management Unit	79/80	84/85	EDF	MK	8377	37	3414	DE66	C	FA - Fin. Agreement
1.2.02	MZADD		Manja/Kasitu RDP Phase 1	80/81	84/85	EDF	MK	3052	377	3435	WC	C	DE - Dev. Estimates
1.2.03	MZADD	077-148	Mzimba Bay RDP (NRDP V)	86/87	90/91	IDA	MK	1542	216	2158	DE66	P	WC - Proj. Stockt. BS
1.2.04	MZADD		Mzimba/Rukuru RDP	77/78	84/85	IDA	MK	2065	282	2348	WC	C	
1.2.05	MZADD	077-144	Central Mzimba RDP (NRDP V)	85/87	90/91	IDA	MK	1726	259	1985	DE66	P	
1.2.06	MZADD	077-142	South Mzimba RDP (NRDP V)	85/87	90/91	IDA	MK	1815	320	2135	DE66	P	
1.2.07	MZADD	077-145	Shimbe North-Mzimba RDP (NRDP V)	85/87	90/91	IDA	MK	1774	317	2091	DE66	P	
1.3.01	KADD	077-156	MANAGEMENT UNIT KASUNGU	85/86	89/90	IFAD	MK	2720	480	3200	DE66	O	
1.3.02	KADD	077-024	NTCHEU RDP PHASE 1	80/81	83/84	EDF	MK	2810	124	2934	DE66	C	
1.3.03	KADD	077-132	NTCHEU RDP PHASE 2	86/87	90/91	EDF	MK	2992	1280	4272	DE66	P	
1.3.04	KADD	077-138	MOHANJI RDP	85/86	89/90	IFAD	MK	5437	559	6396	DE66	O	
1.3.05	KADD	077-134	KASUNGU RDP	85/86	89/90	IFAD	MK	5887	1039	6926	DE66	O	
1.3.06	KADD	077-042	SOA WEST RDP	82/83	87/88	IFAD	MK	9569	1589	11258	DE66	O	
1.3.07	KADD	077-130	SOA EAST RDP	85/86	89/90	IFAD	MK	3379	596	3975	DE66	O	
1.4.01	LADD	077-045	MANAGEMENT UNIT	79/80	83/84	IDA	MK	4023	549	4572	WC	C	
1.4.02	LADD	077-046	LILANGWE LAND DEV. PHASE 1	85/89	72/75	IDA	US\$	6000			IDA	C	
1.4.03	LADD		LILANGWE LAND DEV. PHASE 2	72/73	75/76	IDA	US\$	7200			IDA	C	
1.4.04	LADD		LILANGWE LAND DEV. PHASE 3	75/76	79/80	IDA	US\$	8500			IDA	C	
1.4.05	LADD	077-105	LILANGWE LAND DEV. PHASE 4	79/80	83/84	IDA	MK	5366	735	6123	WC	C	
1.4.06	LADD	077-115	LILANGWE M.E. RDP	83/84	87/89	IDA	MK	4577	772	5149	DE66	O	
1.4.07	LADD	077-114	DEDEA HILLS RDP	82/84	87/88	IDA	MK	4842	854	5696	DE66	O	
1.4.08	LADD		THINI-LIFIDZI PRE-RDP	77/78	79/80	IDA						C	
1.4.09	LADD	077-048	THINI-LIFIDZI RDP PHASE 1	79/80	85/86	IDA	MK	1977	270	2247	WC	C	
1.4.10	LADD		THINI-LIFIDZI RDP PHASE 2			IDA ?						P	
1.4.11	LADD	077-020	NTCHEU RDP PHASE 1	79/80	85/86	IDA	MK	2594	354	2948	WC	C	
1.4.12	LADD		NTCHEU RDP PHASE 2			IDA ?				3824	PP	P	
1.4.13	LADD	077-038	RURAL INDUSTRIES			USAID	MK	44	0	44	DE66	C	
1.5.01	SLADD		CENTRAL REGION LAKESHORE PHASE 1	69/69	71/72	FRG						C	
1.5.02	SLADD		CENTRAL REGION LAKESHORE PHASE 2	71/72	77/78	FRG	MK			2212	DE79	C	
1.5.03	SLADD		LAKESHORE/SALIMA RDP PHASE 3	77/78	83/84	EDF	EDU/MK	7833	719	9001	CFC/DE	C	

1.5.05	SLADD	077-154	NKCHOTA-KOTA RDP PHASE 1	86/87	90/91	EDF	MK	5586	1055	6641	DE86	O
1.5.06	SLADD		MWANJE RDP PHASE 1	77/78		-						C
1.6.01	LWADD	077-058	LIWONDE MANAGEMENT UNIT PHASE 1	80/81	83/84	FRG	MK	1668	173	1841	WC	C
1.6.02	LWADD		KAWINGA PRE RDP	77/78		FRG						C
1.6.03	LWADD	077-014	KAWINGA RDP PHASE 1	81/82	85/86	FRG	MK	4898	864	5762	DE86	C
1.6.04	LWADD		KAWINGA RDP PHASE 2	87/88	90/91	FRG	MK	1661	1601	3262		P
1.6.05	LWADD		NAMWERA RDP PHASE 1	77/78		ADB	MK	5000	705	5705	WC	C
1.6.06	LWADD	077-126	NAMWERA/MANGUCHI RDP PHASE 2	84/85	88/89	ADB	MK	5673	673	6346	DE86	O
1.6.07	LWADD		LIWONDE MANAGEMENT PHASE 2	84/85	88/87	FRG	MK	3185	354	3539	DE86	O
1.6.08	LWADD	077-128	LIWONDE MANAGEMENT PHASE 3	87/88	89/90	FRG	MK					P
1.6.09	LWADD		BALAKA RDP			FRG ?	MK	9675	1666	11341		P
1.6.10	LWADD		ZOMBA RDP			ADB ?	MK	17797	5163	22960	PP	P
1.7.01	BLADD	077-022	MANAGEMENT UNIT	79/80	85/86	ODA	MK	1369	152	1521		C
1.7.02	BLADD	077-019	PHALOMBE RDP PHASE 1	79/80	85/87	ODA	MK	4345	693	5029	DE86	O
1.7.03	BLADD	077-124	PHALOMBE/MULANJE RDP PHASE 2	86/87	90/91	ODA ?	MK	955	53	1008	DE86	P
1.7.04	BLADD	077-138	BLANTYRE/SHIRE HIGHLANDS RDP	84/85	88/89	ADF	MK	7670	1354	9024		O
1.7.05	BLADD		MWANZA RDP			ADB ?				r.a.		P
1.8.01	NADD		LOWER SHIRE VALLEY AGR. DEV. 1	68/69	73/74	IDA	US\$	3700			IDA	C
1.8.02	NADD		LOWER SHIRE VALLEY AGR. DEV. 2	73/74	77/78	IDA	US\$/MK	10500	1794	10975	IDA	C
1.8.03	NADD		LOWER SHIRE VALLEY AGR. DEV. 3	77/78	82/83	IDA	US\$	10700			IDA	C
2.	ESTATES DEVELOPMENT PROGRAMME											
2.0.01			LINE OF CREDIT FOR ESTATES	85/86		IDA	US\$	4500		7800		O
2.0.02			ESTATES EXTENSION SERVICE	86/87		ODA	MK	4300	1400	5700	FS	P
3.	CROPS DEVELOPMENT PROGRAMME											
3.1.01	RESEARCH		ESTABLISHMENT OF TOBACCO RESEARCH AUTHORITY	80/81	87/89	UNDP	US\$/MK	1031	1500		UNDP	O
3.1.02	RESEARCH		SCIENTIFIC & TECHNOLG. DEV. OF TEA INDUSTRY	82/83	88/87	UNDP/FAD	US\$/MK	658	1960		WC/UN	C
3.1.03	RESEARCH	077-008	BEAN & COA PEA RESEARCH	82/84	89/89	USAID	MK	1454	0	1454	DE86	O
3.1.04	RESEARCH	077-141	WHEAT RESEARCH & PRODUCTION	84/85	89/90	PSA	MK	328	114	469	DE86	O
3.1.05	RESEARCH	077-140	SMALLHOLDER SEED & WARE POTATO STORES	84/85	87/88	NL	MK	60	0	60	PP	C
3.1.06	RESEARCH		LOWER SHIRE IRRIGATION TECHNOLOGY			not ident.	MK			306		P
3.1.07	RESEARCH		GRAIN DE-HELLERS	85/87	87/88	ICRC	MK					P
3.1.08	RESEARCH		GROUNDNUT SHELTER	85/88	87/88	ICRC	MK	26	0	26	PP	O
3.1.09	RESEARCH		MICRONUTRIENT PROJECT			FAD						O
3.1.10	RESEARCH		MYCOTOKSIN/AFLATOXIN	86/87	87/88	UNDP/FAD	US\$	329				O
3.1.11	RESEARCH		FOOD CROP PRODUCTION & PLANT PROTECTION			UNDP/FAD	US\$/MK	607	750		PP	I
3.1.12	RESEARCH		CROP DIVERSIFICATION, HORTICULTURE			UNDP/FAD	US\$/MK	1422	970		PP	P
3.1.13	RESEARCH		TEA RESEARCH			EDF				n.a		P
3.2.01	PRODUCTION	077-004	SMALLHOLDER TEA AUTHORITY	69/69		ODA/CDC	MK	3345	372	3717	WC	C
3.2.02	PRODUCTION	077-085	NK ZIMBA SMALLHOLDER TOBACCO PHASE 1	77/78	88/87	EDF	MK	40	511	551	WC	O
3.2.03	PRODUCTION	077-093	DWANAWA SMALLHOLDER SUGAR DEV.	79/80		CDC	MK	3300	375	3675	WC	
3.2.04	PRODUCTION	077-091	SMALLHOLDER COFFEE DEV. PH. 1	82/83	88/87	EDF/ODA	MK	5820	739	6559	WC	O
3.2.05	PRODUCTION		DWANAWA SUGAR RISK CAPITAL			EIB	ECU	4462			CDC	C

3.2.05	PRODUCTION		SMALLHOLDER RUBBER DEVELOPMENT			EDF			n.a.		P	
3.2.07	PRODUCTION	077-163	SMALLHOLDER COFFEE DEV. PHASE 2	87/88	91/92	EDF/ODA	KK	7768	2031	9799	PP	P
3.2.08	PRODUCTION		M. NZIMBA SMALLHOLDER TOBACCO PHASE 2	85/87	90/91	EDF	KK	7412		7412		P
3.2.09	PRODUCTION		ANIMAL POWER UTILISATION	87/88	89/90	UNDP/FAO	US\$/KK	394	89		PP	P
3.3.01	IRRIGATION		KAMBSE SMALLHOLDER IRRIGATION SCHEME	81/82	83/84	UNDP/UNDP	US\$/KK	1047	656		WC	
3.3.02	IRRIGATION	076-052	BARA IRRIGATION SCHEME	81/82	84/85	ODA	KK	143		143	DE86	C
3.3.03	IRRIGATION	088-068	TAIKWA TECHNICAL ASSISTANCE			TAIKWA	KK		695		DE86	C
3.3.04	IRRIGATION	086-042	SALIMA SELF HELP IRRIGATION			EEC	KK	29		29	DE86	C
3.3.05	IRRIGATION	086-109	REHABILITATION SMALLHOLDER IRRIGATION, DANIDA	85/87		DANIDA	KK	1171		1171	DE86	C
3.3.06	IRRIGATION		LOWER SHIRE VALLEY IRRIGATION DEVELOPMENT			not icent.				n.a.		I
3.3.07	IRRIGATION		REHABILITATION SMALLHOLDER IRRIGATION, ODA			ODA				n.a.		I
3.3.08	IRRIGATION		SUPPORT TO SELF-HELP IRRIGATION			ODA				n.a.		I
3.4.01	MARKETING	077-204	CONSTRUCTION ADMARC MARKETS	83/84			KK		920	920	DE86	C
3.4.02	MARKETING		AGRICULTURE PRODUCE MARKETING	85/87	88/89	UNDP/FAO	US\$/KK	1219	285		UNDP	C
3.4.03	MARKETING		ADMARC WAREHOUSES AND SHEDS			not cevice				n.a.		P
4.	LIVESTOCK DEVELOPMENT PROGRAMME											
4.1.01	RESEARCH		SMALLHOLDER PASTURE DEVELOPMENT			not icent.	KK	100				I
4.2.01	DISEASE CT		VETERINARY SCIENCE	72/73	82/83	UNDP	US\$	92			UNDP	C
4.2.02	DISEASE CT		CONTROL RINDERPEST DISEASE	83/84	84/85	UNDP/FAO	US\$	45			WC	C
4.2.03	DISEASE CT	081-003	RINDERPEST VACCINATION & CONTROL	84/85	85/86	ODA	KK	87	0	87		C
4.2.04	DISEASE CT	081-067	EAST COAST FEVER IMMUNISATION	81/82	85/87	DANIDA/FAO	KK	1118	593	1711	DE86	C
4.2.05	DISEASE CT	081-001	NEWCASTLE DISEASE V4 VACCINE PRODUCTION		87/88	DANIDA	KK	338	0	338	DE86	C
4.2.06	DISEASE CT	081-023	REGIONAL TSETSE & TRYPANOSOMIASIS CONTROL	85/86	88/89	SARDC/EDF	KK	2000		3358	DE86	C
4.2.07	DISEASE CT		EAST COAST FEVER REG. IMMUNISATION	87/88	90/91	KL	US\$/KK					P
4.2.08	DISEASE CT		STRENGTHENING VET. LABS. & FIELD SERVICES			UNDP/FAO	US\$	2218	253		PD	P
4.2.09	DISEASE CT		EMERGENCY ASSIST. BOVINE TRYPANOSOMIASIS	86/87	87/88	FAO						P
4.2.10	DISEASE CT		MALAWI/OTVM COLLABORATION	86/87	89/90	ODA	KK	705	47	752	PP	P
4.3.01	PRODUCTION		IMPROVEMENT LIVESTOCK & DAIRY INDUSTRY PH.1	88/89	74/75	UNDP	US\$	354			UNDP	C
4.3.02	PRODUCTION		IMPROVEMENT LIVESTOCK & DAIRY INDUSTRY PH.2	72/74	77/78	UNDP	US\$/KK	1843	755		UNDP	C
4.3.03	PRODUCTION		ASSISTANCE TO LIVESTOCK DEVELOPMENT	75/77	85/84	UNDP	US\$	1827			UNDP	C
4.3.04	PRODUCTION	081-011	INTEGRATED LIVESTOCK DEV.	77/78	83/84	ODA	KK	1225		1289	DE	C
4.3.05	PRODUCTION	081-016	MALAWI/DANIDA DAIRY CATTLE PH.1	81/82	85/87	ODA	KK	5140	2811	7951	DE86	C
4.3.06	PRODUCTION	081-012	MALAWI SMALLHOLDER POULTRY	82/83	84/85	ODA	KK	355	39	394	WC	C
4.3.07	PRODUCTION	081-019	MALAWI/GERMAN LIVESTOCK DEVELOPMENT PH.1	85/84	86/87	FRG	KK	2445	435	2881	PRD.	C
4.3.08	PRODUCTION	081-021	NATIONAL ARTIFICIAL INSEMINATION	85/84	86/87	DANIDA	KK	500	0	500	DE86	C
4.3.09	PRODUCTION		MALAWI/GERMAN LIVESTOCK DEVELOPMENT PH.2	85/87	89/90	FRG	KK	1818	737	2555	PP	C
4.3.10	PRODUCTION		FRANCIA LIVESTOCK MULTIPLICATION	87/88	92/93	EDF	KK	2296	405	2701	PP	P
4.3.11	PRODUCTION		RURAL POULTRY IMPROVEMENT	86/87	88/89	not icent.	KK			300	PP	P
4.3.12	PRODUCTION		SMALLHOLDER DAIRY EXTENSION, MALAWI/DANIDA PH.2	86/87	87/88	ODA	KK	996	140	1136	PP	P
4.3.13	PRODUCTION		UTILISATION OF BY-PRODUCTS			UNDP/FAO	US\$/KK	549	69		PP	P
4.3.14	PRODUCTION		SMALLHOLDER BROILER PRODUCTION			not icent.	KK			8100	PP	I
4.4.01	MARKETING		DAIRY DEVELOPMENT	71/72	73/74	UNDP	US\$	74			UNDP	C
4.4.02	MARKETING		ESTABLISHMENT OF MILK MARKETING BOARD	80/81	83/84	UNDP	US\$	58			UNDP	C
4.03	MARKETING		ASSISTANCE TO DAIRY PROCESSING (SWISS/UTTER)	79/80		UNDP/IFP	US\$	1935	6217		WC	C

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4.4.05	MARKETING		T.A. TO BLANTYRE DAIRY	82/83	87/88	EDF	EDU	793	0		CEC	I	O
4.4.06	MARKETING	081-022	MILK COLLECTION CENTRES		85/87	EDF	EDU	142	0		CEC	I	O
4.4.07	MARKETING		NEW BLANTYRE DAIRY			EDF	EDU	2400				I	C
4.4.08	MARKETING		MILK BULKING GROUPS, INSTITUTIONAL DEVELOPM.	87/88	90/91	EDF	MK	577	63	640	PP	I	P
4.4.09	MARKETING		SATELLITE MILK PASTEURISATION PLANTS			UNCDF					FS	I	I
4.4.10	MARKETING		MILK QUALITY CONTROL				MK			500	PP	I	I
4.4.11	MARKETING		DAIRY VEHICLES & FACTORY EQUIPM. MAL/DAK PH.2	85/87	87/88	CIDA	MK			1716	PP	I	P
4.4.12	MARKETING		TECHNICAL ASSIST. TO MM/MDI, MAL/CANADA PH.2	86/87	89/90	CIDA				n.a.	PP	I	P
4.4.13	MARKETING		IMPROVED MEAT MARKETING, NORTHERN REGION			not icent.	MK			2000	PP	I	I
4.4.14	MARKETING		ANIMAL QUARANTINE & HYGIENE			not icent.	MK			4700	PP	I	I
5.	SOIL CONSERVATION AND LAND HUSBANDRY PROGRAMME												
5.0.01		077-162	SATELLITE IMAGERY PROCESSING CENTER	86/87		FRANCE	MK	1550		1550	DE86	I	O
5.0.02			FARMING SYSTEMS ON STEEP SLOPES	87/88	87/88	EDF	MK	192		192	PP	I	P
5.0.03			TRAINING/EXTENSION IN SOIL & WATER CONSERV.			UNDP/FAD	US\$/MK	1368	628		PP	I	P
5.0.04		MFNR	CHIDOMBE HILLS REHABILITATION			EDF ?				n.a.		I	I
6.	INPUT SUPPLY PROGRAMME												
6.0.01		077-116	SMALLHOLDER FERTILISER REVOLVING FUND	83/84	87/88	IFAD/IDA	MK	20043	1500	21543	DE85	I	O
6.0.02		077-096	COUNTERPART FERTILISER FUND, LWADD	84/85	85/85	GTZ	MK	1039	0	1039	DE86	I	O
6.0.03		077-164	FERTILIZER SUBSIDY REMOVAL	85/87	87/88	USAID	US\$	13100				I	O
6.0.04			SEASONAL CREDIT TO SMALLHOLDERS PH.1+2	81/82	85/87	UNCDF	US\$	2613			UNDP	I	O
6.0.05			JAPAN GRANT, INCREASE FOOD PROD. (FERT. & CHEM)	84/85		JAPAN	YEN	350000			DOA	I	O
6.0.05			CANADA TIED PROGRAMME AID (FERT. & VET DRUGS)	86/87	87/88	CIDA	CND\$	8000			DOA	I	O
6.0.07			FERTILISER COUNTERPART FUND, MAL/GERMAN LIVEST	85/85	87/88	GTZ	DM	3300				I	O
6.0.08			FERTILISER BUFFER STOCK (SAISP)			EDF	MK			31000		I	P
6.0.09			NATIONAL SMALLHOLDER CREDIT (NRDP VI)			IDA/IFAD						I	P
6.0.10		MTIT	NITROGEN FERTILISER MANUFACTURING PLANT			not icent.						I	I
7.	AGRICULTURAL EDUCATION PROGRAMME												
7.0.01		071-	BUNDA COLLEGE PHASE A			EDF	MK	855		855	WD	I	C
7.0.02		071-	STRENGTHENING BUNDA COLLEGE			UNDP	US\$/MK	3408	4145		WD	I	C
7.0.03		077-108	NATIONAL RESOURCES COLLEGE			CIDA	MK	7984	1790	9774	DE85	I	C
7.0.04			AND GUARDIANLY DEVELOPMENT	82/83	85/84	UNDP	US\$	161			UNDP	I	C
8.	ADMINISTRATION & PLANNING SUPPORT PROGRAMME												
8.0.01			STUDY OF MOVEMENT & STORAGE OF GRAIN HARVEST	79/80	81/82	UNDP	US\$	48	0		UNDP	I	C
8.0.02		076-020	NATIONAL SAMPLE SURVEY OF AGRIC.	78/79	84/85	ODA	MK	626	64	690	DE85	I	C
8.0.03		076-006	RURAL GROWTH CENTRES	80/81		FRG	MK	6570	777	9347	DE86	I	O
8.0.04			ASSISTANCE TO DEVELOPMENT PROGRAMMING	82/83	84/85	UNDP	US\$/MK	308	29		WD	I	C
8.0.05			LANDBANK STUDY			EDF	EDU	80			CEC	I	C

8.0.06		LAKESHORE LAND USE PLAN		83/84	EDF	ECU	264			CEC	C	
8.0.07		LIVESTOCK & MEAT STUDY		83/84	IDA						C	
8.0.08		TOBACCO SECTOR STUDY		83/84	IDA						C	
8.0.09	077-033	METEOROLOGICAL DATA COLLECTION		82/83	FRG	DM	83	1	84	DE85	D	
8.0.10	076-076	NAT. & REG. PHYSICAL PLANNING		82/83	UNDP	US\$/MK	1172	235		WC/DE	D	
8.0.11		MANPOWER DEVELOPMENT & TRAINING NEEDS STUDY		84/85	85/86	IDA					C	
8.0.12		IRRIGATION STUDY PHASE 1+2		84/85	86/87	IDA				CONTR	C	
8.0.13		T.A. TO MDR PLANNING UNIT		85/86	87/88	EDF	EDU	450		CEC	D	
8.0.14		AGRO-INDUSTRIES STUDY		85/86	86/87	IDA	LS*	240			D	
8.0.15		NRDP DATA ANALYSIS		85/87	87/88	IDA					D	
8.0.16	077-152	AGRIC. EXT. & PLAN SUPPORT, PLANNING DIV (NRDP V)		85/87		IDA	DM	5241	48	5289	DE86	P
8.0.17		NATIONAL LIVESTOCK DEVELOPMENT PLAN		85/87		IDA				n.a.	P	
8.0.18	OPC	ANNUAL SURVEY OF AGRICULTURE		87/88	91/92	UNDP ?	DM			3437	P	
8.0.19		REGIONAL EARLY WARNING SYSTEM (SAOCC)		87/88	89/90	DANIDA/FRG					P	
8.0.20		IRRIGATION STUDY PHASE 3								n.a.	I	
8.0.21		LAND RESOURCES EVALUATION FOR PLANNING				UNDP/FRG	US\$/MK	2556	759		PP	I
8.0.22	OPC	FOOD SECURITY & NUTRITION UNIT (DEPD)				IDA	US\$	975			PD	I

NOTE: A number of mainly U.K. funded projects prior to NRDP (1978) have been omitted

APPENDIX D

WOMEN'S PROGRAMME ACTIVITIES IN THE MINISTRY
OF AGRICULTURE AND THEIR RELATIONSHIP WITH
OTHER MINISTRIES

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WOMEN'S PROGRAMME ACTIVITIES IN MALAWI
MINISTRY OF AGRICULTURE AND RELATIONSHIP
WITH OTHER MINISTRIES

1. INTRODUCTION

The role of women in development is a subject of considerable discussion in various circles in the Ministry of Agriculture as well as the country at large. The United Nations Decade for women 1975 to 1985 has revealed a lot of development issues concerning women and the fact that women are not actively being involved in the development process. The decade has however contributed a lot to the general awareness of the public on the issue.

While in most fields women lag behind in terms of participation, home economics programmes have seen considerable experience in Malawi as is the case in most countries. Most rural areas have homecraft workers. Women's extension programmes have been exclusively oriented towards home economics. Of course, improving nutritional value in food preparation, fostering hygienic practices, introducing some ways of conserving labour in the home, and so forth are of significant social and economic value, and should not be abandoned. However, there is need to improve upon the economic roles of women. As Uma Lele (1975) puts it, the goal of extension services have frequently been not to the increase in farm level productivity of women, but rather finding ways to reduce their participation in agriculture through the promotion of more homebound activities. From this, it could be said that this is the way our extension system has been operating in the past.

The Department of Agriculture has looked at the role of women in agriculture more critically during this decade. It has accepted that women already participate in agricultural production. Agro-economic survey data has also confirmed this fact by showing that women do 50-70 percent of the agricultural operations in the smallholder sector either alone or with their husbands and families (Extension has circular, 1983). These operations involve various fields such as crops, livestock, forestry, fisheries etc. Apart from production, women are heavily involved in food storage, processing and preparation. This critical look at the role of women in agriculture led to a review of the home economics and agricultural extension and training programmes of this department. The review revealed that the home economics programme was not addressing the women's role in agriculture. On the other hand, agricultural messages in the extension and training programme were mostly targeted towards men with the hope that these will eventually reach women. However, observation has shown that most of the messages were not actually reaching women, as a result women continued to participate in agriculture without full knowledge of the recommended agricultural practices. To this effect, the Department has established a specific women's programme aimed at improving the delivery of agricultural messages to women. This programme has replaced the home-economics programme and has integrated women's agricultural activities with their domestic ones; thus having home economics and agriculture in one programme. This is because women combine agricultural activities with house work and often doing both simultaneously.

2. POLICY OF THE WOMEN'S PROGRAMME

The policy of the Women's Programme is outlined as follows:-

1. To ensure that through agricultural extension efforts women become more aware of recommended agricultural practices as a prerequisite for increased agricultural productivity.
2. To promote income generating activities for rural women in order to increase household income.
3. To improve home management skills and knowledge and exploit available resources in order to improve family health and welfare.

3. STRATEGIES FOR INTEGRATING WOMEN IN AGRICULTURE

In order to operationalise the women programme policy, efforts have been made in all Agricultural Development Divisions (ADDs) to make staff aware of the importance of integrating women in agriculture. This has been done through meetings, seminars/workshops and courses ranging from one to five days. However, poor understanding of the programme's aims, strategies etc by staff is still being observed.

With the general awareness of staff of the need to integrate women in agricultural programmes the following activities have been done :-

- (i) Train women in improved husbandry practices, leadership and income generating activities, an effort have been made to include women in general agricultural courses in the training centres at all levels. The Ministry has set a target of at least 30 percent of the farmers attending agricultural courses should be women. The participation of women in such courses has generally improved though very small numbers are involved. Thus, low participation of women in such courses is being reported by all ADDs. However, it is pleasing to note that the need for training women in agriculture is generally being accepted by the community.
- (ii) Encourage women to join existing farmers clubs/groups for the purpose of receiving extension advice and other services such as credit. Where this is not appropriate women should form their own groups. In this respect, an improvement in the numbers of women in farmers clubs/groups has been observed during the past five years. Efforts have also been made to encourage husbands to attend these club/group sessions with their wives.

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An increase in the numbers of women getting credit in their own right has also been observed (appendix : table 1). It is also interesting to note that participation of women in credit has increased by 17.64 percent over 1984/85 season while the participation of men has decreased by 5.8 percent.

Most women receive credit through farmers clubs rather than women's groups. However, the number of women's groups receiving credit for their individual plots as well as for income generating plots has increased tremendously in the past five years. (Appendix : table 2). This has varied from ADD to ADD depending on the understanding of staff towards the issue of integrating women in agriculture as well as availability of funds.

Even though the number of women's groups is increasing the groups tend to be short lived, with a high turn over rate for leaders and varying membership.

- (iii) Advise male Field Assistants to cover as many women as possible in their extension contacts. To do this, the staff go through a reorientation course on the importance of involving women in agricultural programmes.

4.

STRATEGIES FOR PROMOTING DOMESTIC ROLE OF WOMEN

- (i) Train women in the various home management skills aimed at improving the family welfare. These courses are being offered in the farmer training centres, blocks and women's groups. Implementation of most of these skills is limited due to financial problems.
- (ii) Promote better methods of food processing preservation and preparation.
- (iii) Promote home improvement activities in women's groups. Thus members of women's groups or farmers clubs should set an example in their village by ensuring that they have a good house with a latrine, bathroom and all necessary features present.

5.

INCOME GENERATING ACTIVITIES

Each women's group is advised to have an income generating activity that will help run the groups activities initially and help its members implement some of the home management techniques that require money. The idea has spread widely although the activities are narrow and small in size. The profits are therefore small compared to the size of the groups. At present, the agricultural income generating plots

are actually demonstration plots for the groups. Very few groups receive credit for buying inputs such as fertilizer, seed and pesticides.

RELATIONSHIP WITH OTHER DEPARTMENTS WITHIN THE MINISTRY OR AGRICULTURE

Since this programme is in the department of Agriculture, strategies developed are specific to this department. However, there is need to interact with other departments like Research and Veterinary in order to encourage them to develop specific strategies for addressing women in agriculture issues which affect them. Some attempts have been made to develop strategies for increasing the participation of women in livestock production. It is hoped that with the extension and research linkages in the MARE project, agricultural problems of women will be brought to the attention of researchers for their action.

RELATIONSHIP WITH OTHER MINISTRIES

The Ministry of Community Services is responsible for all women's programme activities in Malawi. It coordinates such programmes in both governmental and non-governmental organisations. As such, the women's programme is implemented in collaboration with this Ministry.

Secondly, there are several organisations with home economics programmes such as Ministry of Education (for schools) Ministry of Community Services (bfor both urban and rural women) non-governmental organisations (for urban and rural women). The home economics component of the women's programme is therefore in common with programmes in the organisations mentioned above. The only difference is that our programme is only geared to the rural women.

Recently, a National Commission for Women in Development has been Established and number of its committees have started functioning. The committees are as follows:-

- Education and training
- Family health and welfare
- Employment
- Small and medium scale enterprises
- Planning, research and evaluation
- Legal
- Agriculture

The coordinating role of the Ministry of Community Services has been strengthened by the formation of the National Commission whose members are all those organisations which deal with women issues. Its plan of action is in the process of being drawn.

The National Commission will also encourage professional discussions on specific women issues through its committees e.g. the committee on agriculture has its members drawn from all organisations dealing with agriculture.

CONCLUSION

The agricultural component of the programme is fairly new and we are in a kind of transition period on the paid extension staff as well as the women themselves, who were used to a sole home economics programme. For this reason, the actual activities in the field still lean towards home economic. However, the intention of the Ministry is to gradually change the emphasis towards agricultural activities. It is therefore hoped that the IARE project will assist the Ministry in achieving this goal.

TABLE I : WOMEN'S PARTICIPATION IN SEASONAL CREDIT PROGRAMME : 1983/84 - 1985/86
SEASONS BY ADD

A.D.L.	1983/84 MEMBERS			1984/85 MEMBERS			1985/86 MEMBERS		
	WOMEN	TOTAL	PERCENT WOMEN	WOMEN	TOTAL	PERCENT WOMEN	WOMEN	TOTAL	PERCENT WOMEN
KIARONGA	1823	8587	24	2394	10642	22	2195	9177	24
MZUZI	3552	21941	16	4375	23035	19	3364	18283	18
KASUNGU	3134	30963	10	5849	40039	15	12965	62178	21
LILONGWE	9635	61422	15	10708	68311	16	10646	63410	17
SALIMA	2048	13314	15	1724	17384	11	1409	14768	10
LITONDE	3569	22630	15	4116	26381	17	3862	19295	20
PLANETILE	3628	13193	28	4472	14297	31	5164	14308	36
NYABU	1042	8628	12	1482	11681	31	717	6088	12
TOTALS	28441	180678	17	35120	211770	18	40322	207513	19

TABLE 2: NUMBER OF WOMEN'S GROUPS RECEIVING CREDIT FOR THEIR INDIVIDUAL PLOTS AS WELL AS FOR IGA
1984/85 TO 1985/86 SEASONS BY A.D.D.

	1984/85 NO. OF GROUPS		1985/86 NO. OF GROUPS	
	INDIVIDUAL PLOTS	IGA	INDIVIDUAL PLOTS	IGA
KAROTGA	0	0	2	4
MEZUZU	9	61	32	43
KASONGU	8	45	65	102
LILONGWE	9	90	10	16
SALIMA	0	0	0	1
LIFONDE	22	22	22	22
BLANTYRE	54	0	54	0
NGABU	1	1	1	3
	102	138	187	191

FIGURES OF MEMBERS INVOLVED IN THESE GROUPS ARE NOT AVAILABLE YET. It must be pointed out that repayment record for these members is excellent.

A P P E N D I X E

ANNUAL WORK PLANS AND BUDGETS : THEIR PURPOSE AND
FORMULATION

1. The Purpose of Annual Work Plans and Internal Budgets

1.1 Background

The need to transfer the task of preparing Work Plans (WP) and Internal Budgets (IB) to the A.D.D's is a result of the decision to place direct responsibility for the implementation of M.R.D.P. in the hands of the Management Unit. Annual WP's and IB's are demanded by some donors (IDF) and are now seen to be important tools of project implementation by all donors. To be of any value, they have to be produced quickly and on time and it is only through delegation of this task to the A.D.D.'s that this becomes possible. Furthermore, responsibility for M.R.D.P. cannot be effectively transferred without also transferring control over the budgeting process and direct involvement in planning.

Planning is essentially concerned with the allocation of resources. Since most resources are scarce and have a cost attached to them (Manpower - salaries and wages, vehicles - capital and operating costs, etc) this task involves the allocation of financial resources, that is, a budget. In other words, responsibility necessitates budgeting and budgeting demands planning.

1.2 What are Annual Work Plans and Internal Budgets

An annual WP is simply a statement outlining the activities which it is proposed to undertake with the resources available during the year. It shows how it has been decided to allocate the resources available in manpower, vehicles, etc. to the different tasks which must be tackled and how money will be spent in constructing different roads, buildings, etc. Since resources are always scarce, the formulation of a work plan always involves decisions about priorities : given the resources available, what are the most important tasks to which they should be assigned?

In Internal Budget simply shows how the financial resources of a project have been allocated to different sections and by each section to capital costs and operating costs. All funds, whether internally generated (Revenue Account) or from external donors (Development Account) are ultimately controlled by Treasury and are then allocated to each Ministry. The Ministry in turn allocates the funds to different tasks or projects. Thus, the Internal Budget is simply the final stage of the allocation process.

A Work Plan and an Internal Budget are obviously interrelated and their preparation cannot be done in isolation: it is impossible to plan the work to be done without knowing what resources are available similarly, the allocation of funds in a budget must take account of all the different types of jobs to be done. For this reason, the formulation of a Work Plan and an Internal Budget requires continuous exchange of information

between technical and financial staff and a willingness on both sides to understand the problems of resource allocation. The two are different however, in that whilst the financial allocations of an Internal Budget come from above (Treasury) the content of a Work Plan should come in large part, from project staff in the field, being authorised from above (Headquarters). Although reference should be made of course, to the physical plan in the Appraisal Report, if there are good reasons, this can be changed. New projects are now being designed to allow for much more flexible implementation. In this situation, the Work Plan becomes an extremely important document supplying the details which were not explicit in the Appraisal Report.

For the purpose of this paper, the Work Plans referred to will cover the activities of an individual project (N.R.D.F.) or Management Unit of an A.D.D. The Work Plan is a document that will be built up of the Work Plans of individual sections or components within the project. The Internal Budget will similarly refer to the total financial resources available to a project, sub-divided for each section or component and will include both Development Account and Revenue Account funds.

To summarise : the Internal Budget allocation financial resources whilst the Work Plan explains how those resources are going to be used.

1.3 Work Plans and Budgets as a Means of Improving Planning and Implementation.

Planning and implementation are closely interrelated and continuous processes. Plans are prepared and implemented, their success is assessed and new plans formulated : the feed-back of information on the success and failures of implementation is essential so that between plans can be prepared and plans can be better implemented. The Work Plans and Internal Budgets are important in this respect, in that they specify targets against which to measure performance.

Two types of target are set in a Work Plan and an Internal Budget. Firstly, there is the straight-forward financial target set out in the Internal Budget, the allocations given to each section (Extension, Land Husbandry, etc) and for each different types of activity (capital expenditure, operating costs). These targets are an essential part of financial control, and they can help management to identify problems quickly by assessing actual rates of expenditure against targets. Where substantial under - or over - expenditure is seen, this might indicate a section or component which is experiencing difficulties in implementation, extravagance or misappropriation. This information can be used to make efficient use of resources available by re-allocating funds or preventing their mi-use. Secondly, there are the targets related to Work Plans and the activities of the different sections. These are more difficult to define meaningfully than financial targets, but are just as important.

Although the livestock section, for example, may be able to set quite clear targets (e.g. 10,000 FID vaccinations) Extension Section may find it more difficult to define worthwhile targets does a target of "10,000 farmer contacts" really mean very much? It is therefore, important to make sure that the targets set are meaningful since it is against these targets that performance will be measured.

Thus, the Work Plan and Internal Budget targets are an important tool of management. The Senior Project Management can use them to identify problem areas and to initiate remedial action. Since the same targets will be used in the Quarterly Reports, the Project Monitoring and Evaluation Committee will also be able to check progress by reference to the targets.

2. Work Plan and Budget Cycles

Planning is a process that never ends but for the sake of convenience, Work Plans are usually drawn up for the period of one year. The problem which arises is that whilst the budget is based on the financial year (FY) (1st April to 31st March) much of the work plan activity is based on the crop year (CY) (October to September).

The attached chart illustrates this problem. Since budget allocations have to be made for the financial year, the preparation of a budget must be done during the period September to December, in time for the new financial year starting in April. The Work plan attached to this budget however, will refer to the crop year which starts one year later. For example, the preparation of an Internal Budget for financial year 1987/88 will start in September, 1986 and will provide funds for the agricultural activities starting in November, 1986. More important, the Work Plan for the Crop Year 1986/87 will have to be prepared before the 1986/87 crop year has started. This means that the lessons learnt from the 1985/86 crop year cannot be put into practice until the 1987/88 crop year. Many activities such as construction, land husbandry, health, etc. are not directly affected by the crop year and so their activities can be synchronised with the financial year. All activities related to agriculture however, (Extension, Research, Credit, etc.) will be affected.

In order to avoid this problem, two sets of Work Plans should be prepared for agriculture - related activities. The first Work Plan will be attached to the Internal Budget and will describe in brief outline only, the proposed activities. The second Work Plan will be prepared immediately before the main agricultural activity period, that is, during April to September and will provide more details of the operational programme for the new crop year. Since the first Work Plan will be in outline, there will be the opportunity to modify it in the second Work Plan following the results and lessons of the previous crop season. This second Work Plan of course, will have to be designed within the budget allocated for that financial year. In the second Work Plan, firm targets can be set which will be used in the Quarterly report.

3. Stages in the Preparation of a Work Plan and an Internal Budget.

There are five stages in the preparation of a Work Plan and an Internal Budget.

3.1 Preparatory Stage

Date : September

(i) Progress reports should be called for from all Section heads based on the first half of the year and referring to current Work Plan and Internal Budget targets.

(ii) A complete inventory of staff, vehicles and equipment and their status should be made, section by section, making clear whether they are paid from or for, by Development or Revenue Account; this will be part of the preparation of the current year Development and Revenue estimates.

(iii) A review should be made of progress with the physical development plan contained in the Appraisal Report.

(iv) Any policy guidelines or recommended changes in emphasis or methods (new extension method; new crop packages, etc.) issued by Headquarters, including comments by the PIPO, should be taken into account.

(v) Meetings should be held with all Section Head to discuss their programmes and proposals, in particular stimulating ideas, and interaction and discussion between related Sections (e.g. Extension with Research).

(vi) Evaluation Unit data should be reviewed and any useful lessons incorporated.

(vii) Initial budget allocations should be made to each section based on the Appraisal Report figures or, if lower the annual allocations contained in the Five Year Programme.

(viii) Planning Division will provide up-dated standard cost data each year, covering salaries, allowances, vehicle operating costs, unit construction costs, vehicle purchase prices, etc. and this should be made available to each Section Head.

3.2 Review and Revision Stage

Date : October/November

(i) Receive draft WP's and IB's from each Section and (for Projects) submit to management unit.

(ii) Meetings should be held to discuss the proposals together with management unit personnel assess claims for extra allocation of funds.

(iii) Modifications made to WP's and IB's and agreed upon.

(iv) Introduction and summary tables should be compiled by PM and Financial Controller.

(v) Revised WP's and IB's received.

3.3 Submission of WP and IB

Date : December

(i) Finally, compiled WP and IB should be submitted to Headquarters.

(ii) As appropriate, a supplement should be attached in which any special problems or issues are identified.

3.4 Final Budget Allocation

Date : March/April

(i) Final budget allocation notified by Headquarters from Treasury.

(ii) Revision to IB finalised and notified to each section Head and copied to Headquarters.

3.5 Revised Agricultural WP

Date : April - June

(i) Based on performance and lessons in previous crop season, revise original Work Plan.

4. Work Plan and Internal Budget Format

Since each project is really unique with regard to its organisational structure and components, the format for the Work Plan and Internal Budget outlined below is not rigid. However, the headings listed should be common to all projects.

4.1 Overall Format

(i) Introduction - by Project Officer/Programme Manager.

(ii) Financial summary - showing the allocation of funds to each section or component, by category or cost (capital, operating) and using standard allocation codes

(iii) Staff Summary - Showing all posts created, their grades, whether filled or vacant whether paid by Development or Revenue Account.

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- (iv) Vehicle Summary - listing numbers and types of vehicles by Section, their status and whether operated on Development or Revenue.
- (v) Procurement Summary- listing all major items to be procured, by Section.
- (vi) Construction Summary-listing all construction proposed by type and Section.
- (vii) Section WP's and IB's - one for each Section.

4.2 Section Work Plan and Internal Budget Format

- (i) Resources : inventory of staff and vehicles, their number, status, whether Development or Revenue.
- (ii) Work Plan : Review of Progress - achievements and problems of the section referring to targets in current Work Plan.
 - : Programme
 - outline of activities to be undertaken.
 - : Targets
 - definition of physical targets (to be transferred to the Quarterly Report activity report).
- (iii) Internal Budget: A standard work sheet for putting together the Internal Budget for each section should be supplied to each Section Head. An example is attached.

Capital Costs : list of main items to be procured and construction to be undertaken using unit costs supplied by P.D. Use footnotes to table to supply details.

Operating Costs : staff vehicles and other operating expenditure, using unit supplied by P.D. Use footnotes to table to supply details.

5. Quarterly Reports

The Quarterly Report is a quick way of testing the pulse of a project. It provides in a fairly concise form indicators of the progress which the project is making : how much work has been done - how much has it cost. Progress is measured against the targets set by the project itself and are taken directly from the Work Plan and Internal Budget.

For each Section, a Quarterly Report consists essentially of four parts : (i) financial report, (ii) staff reports,

(iii) activity report and (iv) general comments. In addition, there is a Programme Manager's report and Financial Summary showing progress on construction and procurement for the entire project.

5.1 Financial Report

This reports on the operating expenditures of each Section. The targets, or annual allocations, are taken from the Internal Budget and are presented in condensed form. For example, the S.V.A.C.P. Quarterly Report lists five categories of operating expenditure :

- (i) Salaries and allowances.
- (ii) Wages and overtime
- (iii) Vehicle running
- (iv) Building maintenance
- (v) All other costs

These categories were chosen as being those which often indicate where there might be problems. For example, underspending on salaries will suggest problems of filling vacant posts over-expenditure on vehicle running should be checked for wasteful use of transport or theft etc.

5.2 Staff Report

This reports on the status of staffing in the Section. It shows progress in the creation of posts and filling of vacancies and gives a quick impression of staffing problems. It is clear however that without a complete inventory at the beginning of the year of all staff, their posts, grades and whether they are paid by Development or Revenue Accounts, such a staff report is meaningless.

5.3 Activity Report

This report is intended to give a summary of the work which has been carried out. Physical targets from the Work Plan are entered here for comparison with the progress during the quarter. Where a quantitative target cannot be defined or cannot adequately summarise activities, a brief written summary may be used. This report will indicate directly whether the programme laid down in the Work Plan is being adequately carried out.

5.4. General Comments

This section may be attached to each of the previous reports or kept separate. Its purpose is to answer questions which emerge from the financial, staff and activity reports : for example, Why are vehicle operating costs running above allocation ?

Why have a large number of extra labourers been employed

Why have training courses not attracted the expected number of student ? etc.

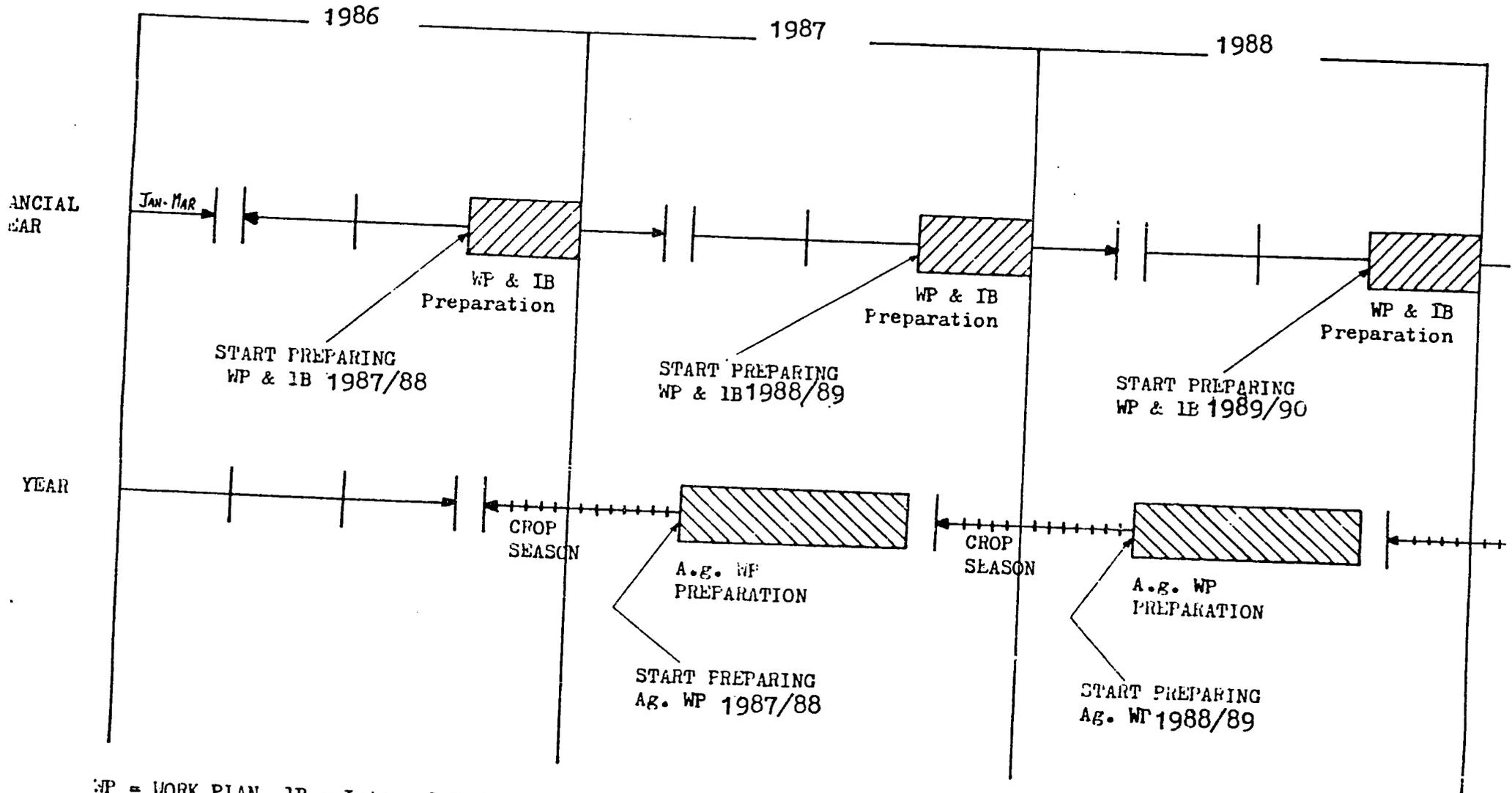
This section and the Programme Managers report can highlight particular problems which have been encountered and bring them to the attention of the Ministry Headquarters.

5.5 Project Monitoring and Evaluation Committee

The Quarterly Report can be an extremely useful tool for the project management itself. It is however, ideally suited to the purposes of the PMEC. The Project Monitoring and Evaluation Committee (PMEC) acts as the principal agent of the Ministry Headquarters management and supervisory functions. Using the Work Plan and Internal Budget and the regular Quarterly Reports the PMEC can identify problems and take remedial action. This may involve asking the project management, for example, to exercise greater control over vehicle use or to put greater emphasis on farmer training; it may also mean taking action at Headquarters on complaints for example, about the slowness of staff recruitment or recruitment or requests for guidance on policy matters.

For the Project Monitoring and Evaluation Committee to work effectively, it is important that the Quarterly Reports be produced quickly, within six weeks of the end of the quarter concerned. As historical documents six or nine months old, they are of little value for the purposes of management.

WORK PLAN AND BUDGET PLANNING CYCLES



WP = WORK PLAN, IB = Internal Budget, Ag. W.P. = Agricultural Work Plan

A P P E N D I X F

INTERNAL BUDGET WORKING SHEET

SECTION

YEAR

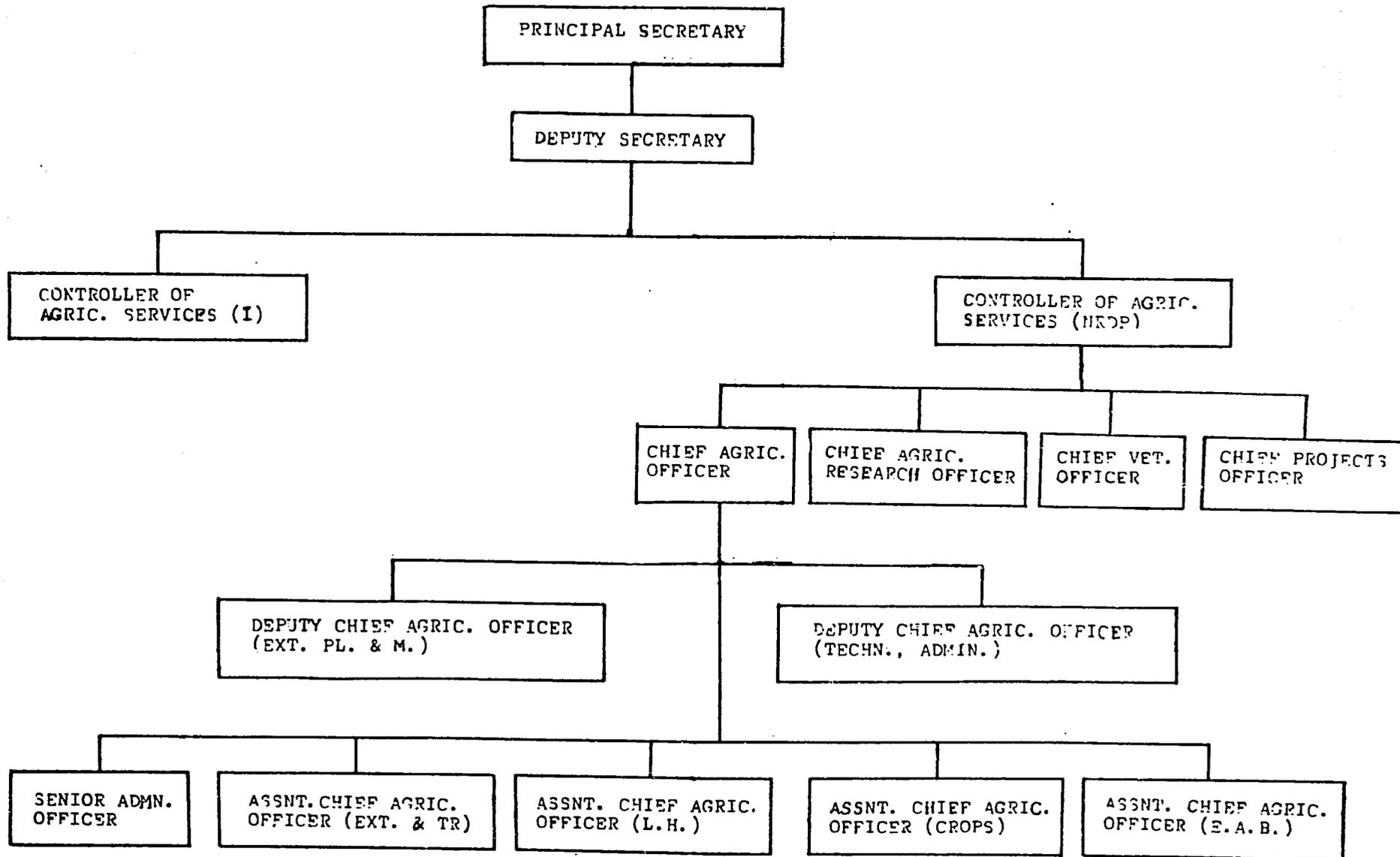
	UNIT COST	NO.	DEVELOPMENT A/C TOTAL	REVENUE A/C TOTAL	TOTAL	COMMENTS
A. CAPITAL COSTS						
1. BUILDINGS						
1. Housing:						
DH 8	22,300	1	22,800	-	22,800	For Ekwendeni (AAS) Health/Mzuzu
DH 10	7,150	2	14,300	-	14,300	
Sub-total			37,100	-	37,100	
2. Other Buildings:						
Rural training centre	20,000	1	20,000	-	20,000	Mzimba Emcisweni
Dispensary	30,000	1	30,000	-	30,000	
Sub-total			50,000	-	50,000	
II. ROADS						
First priority	3,000/Km	30	90,000	-	90,000	See WP
Second priority	3,000/Km	15	45,000	-	45,000	See WP
Bridges	7,500	1	7,500	-	7,500	See WP
Sub-total			142,500	-	142,500	
III. EQUIPMENT						
1. Vehicles						
Land-Rover S.W	15,500	1	15,500	-	15,500	For Land Husbandry For Extension/Repl. For T s
Land-Rover P.U	12,260	2	12,260(1)	12,260(1)	24,520	
Motor-cycles	700	8	5,600	-	5,600	
Sub-total			33,360	12,260	45,620	
2. Other						
Furniture	1,000		1,000	-	1,000	For Emcisweni
Health Equipment	4,000		4,000	-	4,000	
Sub-total			5,000	-	5,000	

IV. OTHER CAPITAL						
Boreholes	7,000	3	21,000	-	21,000	Sec WP
Livestock Survey Consultant	15,000		15,000	-	15,000	
Sub-total			36,000	-	36,000	
TOTAL CAPITAL			303,960	12,260	316,220	
B. OPERATING COSTS						
1. STAFF						
1. Salaries & Wages						
CTO Project Officer	4,280	1	4,280	-	4,280	
STO Field Officers	1,920	4	5,760(3)	1,920(1)	7,680	
EO Exec. Officer	1,920	2	1,920(1)	1,920	3,840	
STA	1,670	1	1,670	-	1,670	
TA Land Husbandry	750	1	750	-	750	
TA Credit	750	1	750	-	750	
TA Extension	750	17	7,500(10)	12,750(7)	12,750	
Messengers	300	2	300(1)	300(1)	6,000	
Watchmen	250	3	500(2)	250(1)	750	
Drivers	600	5	2,400(4)	600(1)	3,000	
Nurse	750	1	750	-	750	
Typists (II)	750	2	750(1)	750(1)	1,500	
Development Assistants	620	3	1,240(2)	620(1)	1,860	
			28,570	11,610	40,180	
2. Allowances:						
CTO	450	1	450	-	450	
STO	300	4	900(3)	300(1)	1,200	
EO	90	2	90(1)	90(1)	180	
STA	100	1	100	-	100	
TA	70	19	810(12)	240(7)	1,080	
Drivers	200	5	800(4)	200(1)	1,000	

	UNIT COST	NO.	DEVELOPMENT A/C TOTAL	REVENUE A/C TOTAL	TOTAL	COMMENTS
Typist	25	2	25(1)	25(1)	50	
Sub-total			3,205	855	4,060	
II. VEHICLES						
Land-Rover S.W	12,000	2	24,000	-	24,000	
Land-Rover P.U.	12,000	2	12,000(1)	12,000(1)	24,000	
Lorry (5 ton)	12,000	1	12,000	-	12,000	
Motor-cycles						
Sub-total			62,640	19,320	81,960	
III. OTHER						
Stationary			3,500	500	4,000	
Training Centre			1,000	500	1,500	
Furniture maintenance			1,000	-	1,000	
Building maintenance			5,000	-	5,000	
Land Husbandry			1,500	-	1,500	
Sub-total			12,000	1,000	13,000	
TOTAL			106,415	32,785	139,200	
C. CREDIT						
Seasonal			25,000	-	25,000	
Medium-Term			10,000	-	10,000	
TOTAL CREDIT			35,000	-	35,000	
TOTAL PROJECTS COSTS			445,375	45,075	490,420	

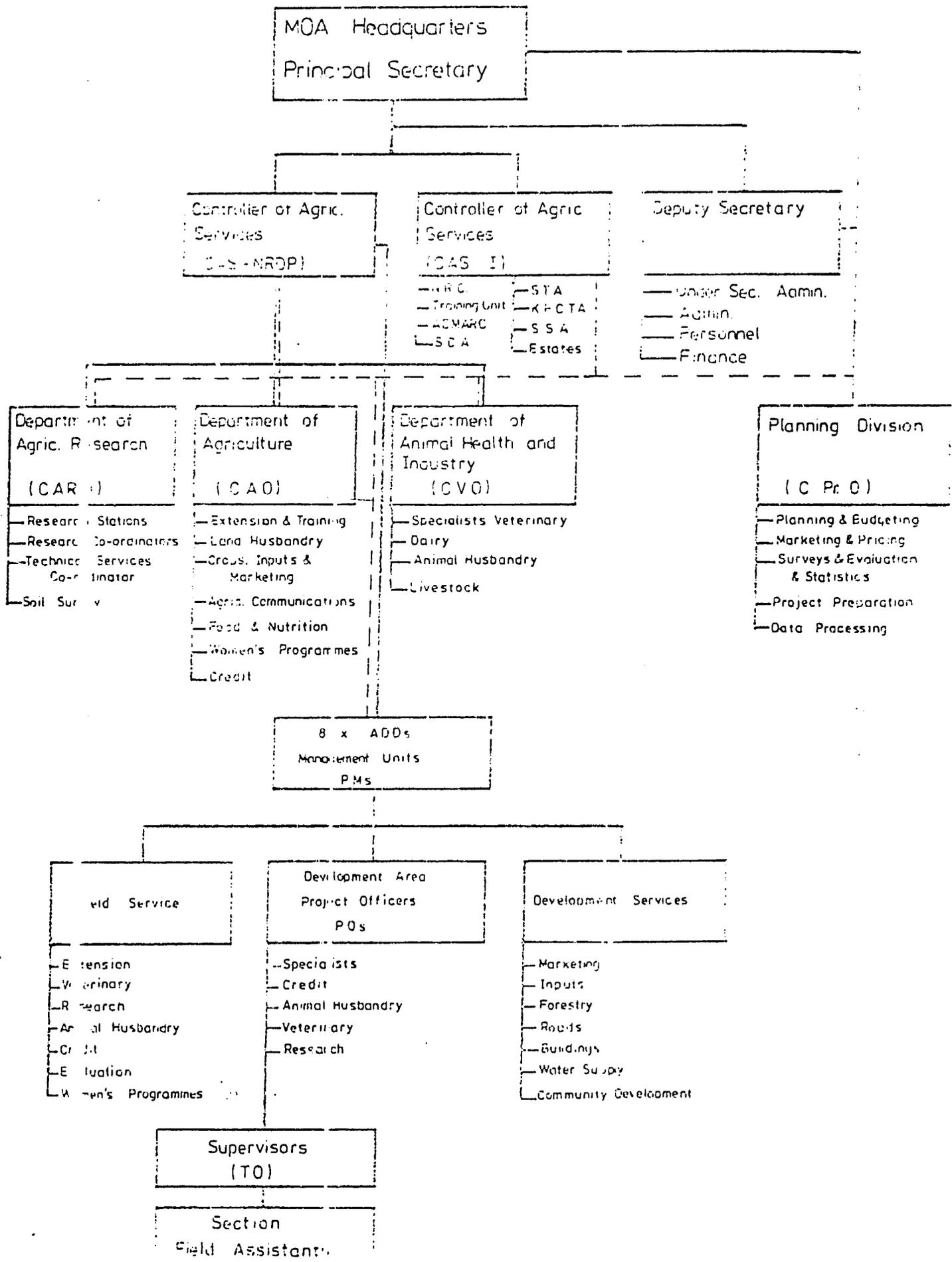
A P P E N D I X G

ORGANISATION CHART OF THE MINISTRY OF AGRICULTURE AS AT MARCH 1986



12

MINISTRY OF AGRICULTURE ORGANIZATION CHART (UNDER REVISION)



10/2

A P P E N D I X H

DEPARTMENT OF AGRICULTURE
THE ROLE OF SUBJECT MATTER SPECIALISTS AT THE
HEADQUARTERS

1. ACKNOWLEDGEMENTS

In preparing this paper I have benefitted greatly from the contributions of the subject matter specialists at the Department of Agriculture Headquarters. The views here represent a synthesis of the perceptions of the various subject matter specialist with regard to their roles in the department. It is important that each subject matter specialist becomes conversant with the role and functions of his/her position in the Department in order to improve performance.

2. INTRODUCTION

Agriculture, a technology-oriented field, is subject to very rapid changes as new innovations become available for use. In a framework of planned introduction of change, as development has been defined, the changes in innovations make the provider of information more and more necessary as a partner to farmers, the ultimate users of information, and to scientists, the originators of the information.

There are two levels of information flow in Agriculture. These are the scientific and the extension. The scientific level consists of scientists who are both producers and consumers of the agricultural information and the user community at the extension level includes both extension workers and farmers. Each level of agricultural information needs to be better equipped with appropriate information that will assist decision making and problem solving. What information is made available, when and where, and in what form will all depend on which audience is to be reached. The important point to remember is that information services should be relevant to the environment in which each different category of agricultural extension worker operates.

Scientific information can improve agricultural productivity only if it is actually and correctly applied. But

farmers cannot use research information directly; it must be transformed into an easily intelligible format and repackaged for delivery to the farming community. The problem is more acute in situations where the majority of farmers are illiterate or semi-illiterate and the information must be presented in vernaculars and mostly through oral communication. The intermediaries responsible for repackaging the information in line with local needs and conditions are therefore necessary and should in no way be of inferior cadre to their scientific counterparts.

The extension workers must be seen to play a very important advisory role in transferring the results of laboratory and field trials into tangible benefits such as increased crop yields and improvements in the well-being of the rural population. A distinction should be made between specialised advisors, the subject matter specialists, and the general advisors, the extension workers. While the farmer use scientific working methods and information the latter have to assist farmers or groups of farmers to solve their everyday problems under local conditions.

3. THE SUBJECT MATTER SPECIALISTS

A subject matter specialist is essentially an active information consultant whose role is to help the users, both extension workers and farmers, define their information needs and then link these users with relevant sources of information. In order to provide effective information the subject matter specialists should have the following attributes:

3.1 KNOWLEDGE ABOUT AGRICULTURAL INFORMATION SOURCES

A knowledge of agricultural information sources is more important for a subject matter specialist than detailed familiarity with agriculture itself. Thus, subject matter specialists should be familiar with the major printed sources and the major agricultural information centres within and outside the country. This attribute must be supported by abilities to

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communicate effectively, decision-making, problem-solving and management practice.

3.2 PARTNERSHIP WITH AGRICULTURAL SCIENTIST

The scientist in research is the expert on the subject matter and can be expected to know more in that field. The subject matter specialist, on the other hand, is an expert in organizing and managing information resources, exploiting these effectively in search for information bearing upon a specific farmer problem and packaging the information in forms appropriate to various audiences. In an ideal situation, the subject matter specialist should interact more closely with the scientist in order to promote agricultural development. This interaction can be enhanced through training of the subject matter specialists up to a Ph.D level to upgrade them to the same level as their research counterparts.

3.3 COMMUNICATION WITH INFORMATION SOURCES AND INFORMATION USERS

The subject matter specialist should importantly maintain contact, through visits and correspondences, with extension workers and farmers in order to assess situational changes and corresponding information needs in each farmer locality. Contact should also be maintained with information sources to ensure that the information services are pitched at different levels and to varied in sophistication to meet different farmers' needs.

The subject matter specialists are support staff of the head of this Department, the Chief Agriculture officer. He requires the services of subject matter specialists on detailed professional and technical work.

The subject matter specialist plan work of their specific subjects annually and monthly. They also advise their immediate supervisors on what is happening in the field in their subjects. They advise field staff on aspects of their subjects during the execution stage of programmes. Subject matter specialists train field staff (in-field training) especially on new technology. They study their subjects in detail and write publications or circulars to field staff.

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Supervision and monitoring of programmes is done during field visits to ADDs. They then report either in writing or verbally to their supervisors. During supervision missions they also give advise to field staff. They liase with outside organizations involved in their subjects. All these they do in liason with their supervisors who do not have such ample time to go into specific details of each subject in addition to management work.

4. SUMMARY

The activities of the subject matter specialist in the department can be summarised as follows:

4.1 General

- (a) Assist and advise CAO on the development of programmes in each subject matter area to ensure that programmes are technically sound.
- (b) Formulate strategies for the implementation of development programmes in the subject matter area concerned.
- (c) Act as a secretariat for the committees dealing with that particular subject area.
- (d) Assist the CAO or the Mnistry in formulating policies affecting that speciality to ensure that incentives are provided and bottle necks addressed.

In order to fulfill the above functions the specialist has to get involved in the decision making machinery right from the initiation up to final decision making stages.

4.2 Specific

- (a) Guide field staff through management units on implementation of programme.
- (b) Identify implementation problems and suggest solutions to the problems.
- (c) Identify incentives for the clientele for the

purpose of achieving objectives.

- (d) Identify shortcoming in staff implemeting programmes. and arrange for staff development programmes.
- (e) Estimate for and ensure that inputs are available for implementing programmes.
- (f) Obtain and keep data required for planning and assessing progress in implementation of programmes.
- (g) Prepare messages and information required by field staff to implement programmes.
- (h) Liaise with relevant institutionsffor the purpose of generating and updating information required for implementing programmes.
- (i) Fulfill other tasks outside the speciality as required.

5. CONSTRAINTS

- (a) Some SMS do not have qualifications in their fields of speciality except the general degree which is inadequate for SMS.
- (b) Even some of those who have qualifications in their speciality, they do not have adequate field experience to differentiate what is practical from theory, and what can work in one climatical condition and not the other.
- (c) There is no sufficient contact and consultation between one SMS and other in their fields of speciality so that they can share experiences.

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A P P E N D I X I

THE ROLE OF EXTENSION AIDS BRANCH IN SUPPORTING TECHNOLOGY TRANSFER

A PAPER PRESENTED AT THE INDUCTION WORKSHOP
FOR TECHNICAL ASSISTANCE PERSONNEL FOR NRDP V
FROM 13TH TO 15TH OCTOBER, 1986

BY

M. M. A. MPHEPO

ASSISTANT CHIEF AGRICULTURAL OFFICER

EXTENSION AIDS BRANCH

INTRODUCTION

The Extension Aids Branch of the Ministry of Agriculture was established at the end of 1958 as a small unit called the Agricultural Public Relations Office.

The Branch was set up with the aim to provide publicity material to support the extension services. The Public Relations Officer was directly under the then Director of Agriculture. His support staff comprised of a Senior Agricultural Instructor, a Clerk and a Dark Room Assistant.

In 1960 a number of leaflets were produced, and two 15 minute radio programmes for farmers were introduced. The radio broadcasts were in Chicheŵa (then called Chinyanja). In 1961 a monthly magazine for farmers called Farm News was introduced and the printing was done at the Government Press. During the same year the Unit was placed under the administrative control of Information Department. The idea was to provide promotion opportunities for the specialised staff and to centralise expenditure on all media produced for the general public.

Considerable expansion took place in 1962 under the Development Plan for the country. Additional staff were recruited and/or seconded to the Agricultural Public Relations Office. News staff were trained and subsequently regional centres (now known as Visual Aids Sections) were set up in Blantyre, Lilongwe and Mzuzu. Later in the year the operations of the Unit under the Information Department were unsatisfactory. The Unit was placed back again under the Ministry of Agriculture, where its work priorities were basically agricultural. At the time of separation the Unit was allocated two mobile cinema vans.

Between 1966 and 1967 there was rapid expansion of the Unit with the help of funds from the British Technical Assistance and U.S. Agency for International Development. Three offset printing presses were purchased and installed at the Government Press. Printing of agricultural publications at the Government Press became difficult owing to job priorities. As a result it was decided that the Unit should set up its own printshop. The Extension Aids Branch then consisted of two main sections: The Publications Section and the Audio Visual Aids Section. The former was involved in the production of printed matter whereas the latter concentrated on mobile cinema programmes, radio programmes and the production of photographs and slides. In 1968 a film Unit or section was set up to facilitate production of appropriate films for the Malawian farmer.

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As more media were being produced there was need to assess their effectiveness. The University of Reading in U.K. was requested to carry out a study to evaluate media produced by Extension Aids, However, the University of Reading suggested a training programme for staff and set up a small unit to carry out continuous studies to promote the effectiveness of media produced. Hence, the birth of an Evaluation and Action Research Unit in 1976.

At the meantime Extension Aids Branch is organised into eight sections: Administration (or Management), Publications, Radio, Cine, Editorial, Photography, Mobile Cinema (or Maintenance) and Evaluation and Action Research.

ACTIVITIES IN INFORMATION TRANSFER

As a media producing organisation Extension Aids Branch plays an important role in the transfer of technology from research to extension workers and farmers. The media that Extension Aids Branch produces are: publications, radio programmes, 16mm movie films, photographs, slides and puppet programmes.

Publications.

Apart from workshops and field days a very important medium of communication for research findings is the printed matter. Extension Aids Branch undertakes the work of printing reports on research development. When research work has reached the final stages Extension Aids Branch has the duty to inform extension workers and farmers through extension circulars. Extension circulars are produced mostly for extension staff. However, sometimes the information is translated into Chichewa for distribution to farmers. Books and booklets are also printed by Extension Aids Branch for use either by farmers or extension staff. The Branch also produces a bi-monthly magazine "Za Achikumbi" specifically for farmers. The magazine has a circulation of 32,000 copies per issue. It also produces a yearly agricultural policy booklet called the Guide to Agricultural Production. The booklet covers policies and guide-lines for the production of a range of crops and livestock. Other publications include charts and posters.

Radio Programmes

Extension Aids Branch produces six agricultural radio programmes in Chichewa for farmers. The programmes are: Modern Farming (Ulimi wa Makono), Farm Forum (Bwalo la Alimi), Cotton Broadcast (Nkhani za Alimi a Thonje), Farmers Voice (Zokomera Alimi), Family Serial (O'Phiri) and Farm Notebook (Buku la Alimi).

About five hours of air time per week is allocated to the agricultural programmes. Some of the programmes include interviews with farmers. As such production of those programmes include interviewing, scriptwriting, editing and narrating. The Family Serial Programme is produced jointly by Extension Aids Branch and Ministry of Health (Health Extension Service). Thus the topics discussed include agriculture and health.

16MM Movie Films

The film unit of Extension Aids Branch produces 16mm colour movie films on agricultural crops and livestock. The films are usually short (between 10 and 15 minutes) and cover one subject matter. The films are used on the fleet of mobile cinema vans which go to the rural areas following a pre-arranged programme. The actors in the films are farmers who follow recommended agricultural practices. Almost all the films have Chichewa commentary since they are used to educate the farmers. The only exception is films that are produced for staff training where the commentary is in English. Other government ministries or departments sometimes request Extension Aids Branch to produce films for them.

Puppets:

Extension Aids Branch utilises puppets as a medium to transfer technology to farmers. Puppet programmes like movie films, are used on the fleet of mobile cinema vans. The puppets are shown during the day whileas the movie films are shown during the night. Puppet shows combine entertainment and education and are very popular in rural areas.

Photographs:

Most of the photographs are used in the "Za Achikumbi" magazine and other publications. Some are used on displays. All the photographs are produced in black and white.

Slides:

Extension Aids Branch takes colour slides for use in agricultural training centres and for exhibitions. Processing is done by other organisations but soon the work will be done at Extension Aids Branch. The slides are produced in sets as per subject matter for crops and livestock.

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ORGANISATION

Extension Aids Branch is within the Department of Agriculture although its services are extended to the other departments of the Ministry. For administrative purposes Extension Aids Branch is divided into eight sections as shown on the attached organisational chart. All the staff are centrally stationed in Lilongwe except the Visual Aids Section staff who are based at each Agricultural Development Division headquarters. Moreover the staff are administratively under the Programme Manager but technically under the Assistant Chief Agricultural Officer (Extension Aids Branch).

CONCLUSION:

Extension Aids Branch plays a vital role in technology transfer through the media it produces. It operates like a bridge between the research, and the extension service and farmers. In addition it carries out agricultural extension service through media contact.

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EXTENSION AIDS BRANCH STRUCTURAL CHART AS AT 31ST MARCH 1986

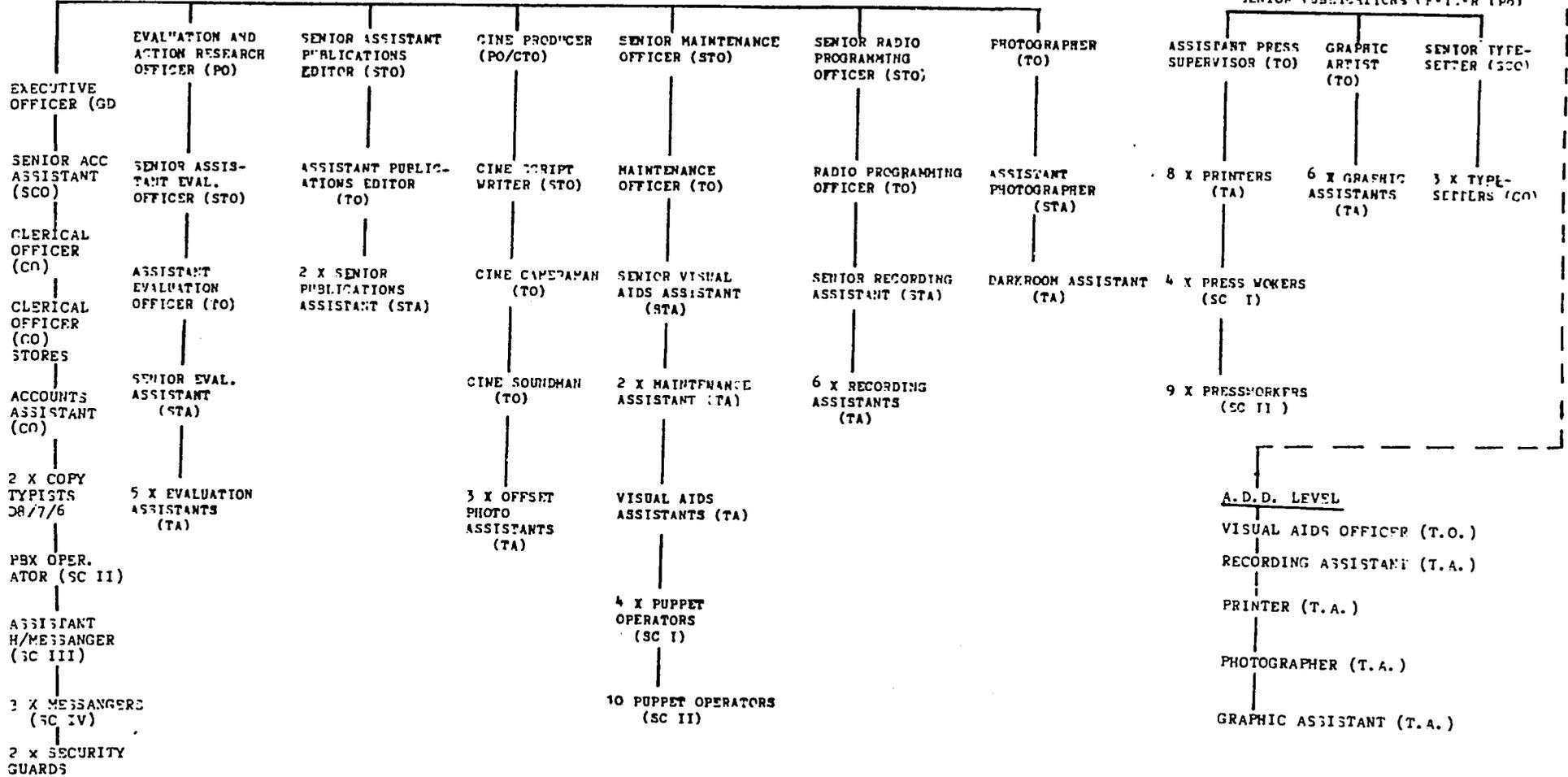
ASSISTANT CHIEF AGRICULTURAL OFFICER (P6) (EXTENSION AIDS)

STENOGRAPHER (D3/D2)

PRINCIPAL EXTENSION AIDS OFFICER (P7)

SENIOR EXTENSION AIDS OFFICER (P8)

SENIOR PUBLICATIONS OFFICER (P8)



~ 100 Total

1/1/86

A P P E N D I X J

TECHNICAL ASSISTANCE SEMINAR (MARE),
MANGOCHI FROM 13TH TO 15TH OCTOBER, 1986

Period of Contract

Your contract will last for a period of two to three years unless negotiated otherwise by all the parties concerned, and will be governed by Book V of the Malawi Public Service Regulations as read together with its Book I, which is the mother regulator.

Local Leave

You will be eligible for 12 working days per year. This leave can be taken in anticipation.

Passage and Baggage Allowances

You are eligible for a free passage between your terminal airport in your country and the terminal airport in Malawi at the beginning and the end of your tour. The baggage allowance is 80 kgs by air freight at the unaccompanied baggage rate from an airport in your country of origin to an airport in Malawi at the beginning of your tour and vice-versa.

Unaccompanied Children

The baggage allowance for unaccompanied children is 15 kgs per child up to a maximum of 45 kgs.

Travelling Allowances

When travelling on duty using your own car you will be paid 50t per kilometre and such an allowance shall not exceed K1,000 per month unless undelegated authority has been sought and received from the Secretary to the President and Cabinet. If your travelling will necessitate your spending nights outside your duty station you will be paid subsistence allowance which in designated areas like Mzuzu, Blantyre, Zomba, Liwonde etc, your boss for MARE will be paid K75 per night and the rest of you K65 per night. The rest of the areas in Malawi have got their own rates which you will be shown when you start your work.

Medical Attention

Basically, you will get free medical attention. A charge may be made to operations which are not essential to your health or that of your wife or children, and a charge will be made for medical appliances and medical comforts as distinct from prescribed medicines.

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Housing

This government will provide you with housing free from charges.

Sick Leave

When you are on sick leave you will be eligible for a full salary up to a combined maximum of six months in any one period of twelve months. After those six months you may be granted an additional six months on half pay, Subject to certification by medical authorities.

Medical Attention Outside Malawi

If the medical authorities can deem it fit that a Technical Assistance Personnel should receive treatment from outside Malawi, arrangements to that effect will be made and direct expenses arising therefrom will be met by the Malawi Government.

Termination

Government reserves the right to do away with your services under the following conditions:-

- (a) If your performance is unsatisfactory we shall give you 90 days notice; and
- (b) If necessary by reason of misconduct we as a government shall give you one months salary in lieu of notice.

Notice to be given by an Officer

As and when you intend resigning from your appointment you will be required to give 3 months written notice.

Thank you.

E.E. Chogawana
A.C.P.O.

MINISTRY OF AGRICULTURE HEADQUARTERS

13/10/86

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A P P E N D I X K

INTRODUCTION WORKSHOP FOR NRDP V

TECHNICAL ASSISTANCE PERSONNEL AT CLUB MAKOKOLA,

MANGOCHI - BRIEF TALK ON FINANCIAL PROCEDURES

INCLUDING PROCUREMENT OF STORES

BY

PRINCIPAL ACCOUNTANT,

15TH OCTOBER, 1986

NOTES ON FINANCIAL PROCEDURES INCLUDING

STORES PROCUREMENT

FINANCIAL APPROVAL

As part of public administration and control, financial planning is done by the Ministry which requests its Departments and Agricultural Development Divisions to make their requirements known about October or November each year. The Departments in turn reveal what they need by submitting their Estimates which are quantified and later expressed in monetary terms.

The Estimates are first discussed at Ministry's level and then later sent to Treasury for further consideration Vote by Vote and subhead by subhead. This applies for both REVENUE and CAPITAL BUDGETS.

Financial approval is obtained about March 1986 when the Minister of Finance issues a General Warrant to the Ministry to spend Funds approved by the National Assembly.

The Ministry of Agriculture, in turn, issues Department Warrants to the spending Departments/ADDs who require the money to run the various services and to implement their programmes.

Basic Features of the System of Government Accounts

- (i) The system of accounting has been progressively decentralised with the establishment of self-accounting Ministries. Each self accounting Ministry is an accounting entity and is responsible for detailed accounting, budgeting and reporting. The permanent Secretary to the Ministry is designated as the Controlling Officer and is primarily responsible for maintaining an efficient system of accounting and control.

- (ii) Payment control is generally centralised with Ministry Headquarters except in the case of a few Ministries such as Agriculture and Works and Supplies which have delegated authority for payment to subordinate offices. In other Ministries and Departments Warrant Holders are required to submit vouchers for payment to headquarters accounts section.

- (iii) In non-self-accounting Ministries payments are made by Treasury Cashier who render accounts to the Accountant General.

- (iv) Two types of Accounts are kept: Vote Accounts and Cash Accounts. Vote Books (expenditure detail-sheets and commitment Registers) are kept by each Warrant holder and controlled through control accounts (Main Vote Ledger) maintained at Ministry headquarters. For this purpose warrant holders submit monthly returns of expenditure and commitments to Ministry headquarters who submit monthly Consolidated Summary Statement of expenditure to the Accountant General.

- (v) Cash accounts are kept by officers handling cash viz Sub accountants in self-accounting Ministries, and Treasury Cashiers. Cash Accounts (top copy of Cash Book and copy of vouchers together with Cash Control) are daily submitted to the Cash Control Section of the Accountant General's Department.

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- (iv) The monthly accounts are processed through the computer by the Data Processing Unit and monthly computer tabulations are received in the Accountant General's Department who distributes them to Ministries and Departments concerned for reconciliation with their Vote Books

- (vii) Control accounts for revenue collection are kept by the Ministry headquarter Revenue Ledger GP. 196, and Register of Outstanding Revenue GP. 189), by Treasury Cashier (Revenue Collection Chart Acc. 79) and by collectors of revenue (Revenue Control Book GP 191). Monthly returns of outstanding revenue are submitted by collectors of revenue to Ministry headquarters, who Consolidated them and submit Annual Return of Arrears of Revenue to the Accountant General.

- (viii) The Accountant General keeps central control accounts in respect of cash and bank accounts, account of public debt, summary account of receipts, disbursements and appropriations on Revenue and Development Fund Accounts and certain control accounts for below-the-line accounts. The Accountant General has the responsibility for management of Government cash quarterly allocation of funds to Ministries and Departments remittances to Treasury Cashiers, management of public debt and banking arrangements. Certain payments such as agency payments, payments to foreign Government etc. are centrally made by the Accountant General.

- (ix) After close of the annual accounts sometime in June, each year, the Accountant General prepares the Annual Statements of Accounts (Appropriation Accounts) within six months of the close of the year. Which are signed by the Secretary to the Treasury and transmitted to the Auditor General. The Auditor General audits the accounts and submits them together with his audit report to the Finance Minister for placing before the Parliament.
- (x) An essential feature of the accounting system is system of internal control and internal audit. Internal Control is provided by ensuring that no single person has sole control over a complete cycle of accounts and payment. Thus preparation of basic documents, making payments, assessment collection and accounting of revenue, maintaining control ledger should not as far as possible be entrusted to the same person. Each Ministry and Department also has an internal audit organisation which reports direct to the officer other than the head of the Accounts organisation.
- (xi) The general management of Government accounts vests with the Treasury assisted by the Accountant General. The detailed regulations regarding accounting and financial control are set out in the Treasury Instructions, Treasury Circular Instructions and Accountant Generals Circular Instructions, which are issued from time to time for the guidance of controlling officers and should be strictly followed.

STORES MANAGEMENT

The Instructions are designed to assist officers in purchasing care and custody, and disposal of stores.

The procedure for obtaining stores (other than local purchases) is by means of a R.I.V. (Form GP.30B) for Government Central Stores and R.I.V. (Form GP. 16B) for other stores and an indent (Form GP. 112) for overseas purchases.

The Stores are classified as :-

- (1) Allocated Stores-purchased for specific purchases and charged to the Vote, Head Treasury Fund etc promptly.
- (2) Unallocated Stores-purchased for stock by stores controllers for subsequent issue to Ministries/Departments.

Authorities for Purchases:- (1) Controlling Officers of up to K500

(2) Controllers of Stores with the following monetary limits whose stock lists are issued by Central Stores and Government Printer.

Controller Central Stores	K2,000
Controller Medical Stores	K2,000
Government Press Stores	K3,000
P.V.H.O. (Mechanical Spares only)	K6,000
Post Office Stores	K2,000
Office Equipment	K4,000
Viphya Pulpwood Project (for mechanical spare parts only)	K3,000

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- (3) Central Tender Board-Purchases of Stores exceeding limits fixed for each. Controller of Stores has to be submitted to C.T.B. for approval.

However, purchase orders should not be split to evade reference to Controller of Stores or C.T.B. And stores of a particular manufacturer should be purchased from authorized agents.

Purchase Procedures : There are five stages:

- (1) Requirement of Stores for the subsequent year must be included in the Estimates.
- (2) Quantity, quality, specifications time and place of delivery should be authorised and committed in Vote Ledger.
- (3) Tender enquiry or calling for quotations. Complete particulars in respect of specifications, quantities delivery requirements, payment terms etc should be given.
- (4) Bids are evaluated, prices tabulated, quality determined. Lowest bid should be accepted except for reasons stated in writing. Negotiations with bidders undertaken.
- (5) Award of contract/issue of purchase order.

Commitment Accounting : Details of a requisition will be recorded in a commitment register (Form GP. 113). A financial commitment is an obligation to pay at future date for services or goods ordered

Requisition and Issue Vouchers (R.I.V.'s) Local Purchase Orders (LPOs), Petrol Oil and Lubricants Requisitions (POL Requisitions), Road and Rail Transport Warrants Air Passage Requisition, Indents etc are the documents which create financial commitments.

OVERSEAS PURCHASES:

Indents duly signed by authorised official are submitted to the Controller of Stores so that purchases are arranged through London Agents-Malawi Finance and Trading Co. The Controller of Stores will forward the indents to London Agents after it is confirmed the non availability of the Stores on the Local market. A copy of the indent will be sent to Controller Officer for follow up and immediate delivery.

When the stores are received, they are checked against purchase order. Their receipt must be supported by RIV or copy of payment voucher (Local Purchase) or Stores receipt voucher where they form basis for entry in stores ledger. Any damage or differences will be noted.

Invoices are checked with purchase order and certificate of receipt of stores. Allocated stores when bought from abroad are directly invoiced by the Controller of Stores to Ministries/Department. Port to destination, forwarding and Clearing charges are invoiced separately. Allocated and unallocated stores purchased locally or behalf of Ministries/Departments are invoiced to Agency Section of the Accountant General's Department for payment except with the effect from this year when Ministries and Departments are invoiced direct.

REQUISITION AND ISSUE VOUCHERS:

R.I.V.'s are prepared in 5 copies - 4 are issued to the Controller of Stores and one returned with the stores.

Great care should be taken in the preparation and security of the R.I.V.'s since they are accountable documents. The following points should be noted when issuing R.I.V.s:

- (i) Funds committed and certified
- (ii) Authorised by competent officer
- (iii) D.W. number and allocation correctly posted in the allocation block.
- (iv) Issued in serial order.

PROCESSING PROCEDURES

Stores accounting involves

- (i) Preparation of basis documents to support receipt and issue of stores
- (ii) Recording in stores ledgers and
- (iii) Verifying book balance with actual stock balance after annual physical verification of stock

The actual receipt and issue of stores, maintenance of stores ledgers and stock verification should be entrusted to different persons in order to ensure internal control.

STORES LEDGER :

In the manual system stores ledgers may be kept in the form of registers, loose leaf ledgers or stock cards.

- (i) Ledgers or Stock Cards
Separate folio/card is used for each article of store.

The format is as follows:-

<u>NAME OF ARTICLE</u>	<u>STOCK LEVEL:</u>		
	Size	Max.	Min
Unit.	Unit		Prices
Date reference No.	Quantity		
	Received	Issued	Balance

- (ii) All entries of receipt and issue of stores must be supported by relevant documents entered under "Reference " column.
- (ii) Stores are generally issued on the principle "First in First out (FIFO) i.e. the oldest items should be issued first.
- (iv) In large stores bin cards in similar format may be maintained by the store keeper and kept in the bin for each article.
- (v) At the end of each year stores ledgers are balanced and closed and balance carried forward new ledgers opened for the next year.
- (vi) Physical verification of stock must be done at least once a year. Balances of each article is compared with the balance in the stores ledger and discrepancies investigated.
- (vii) Articles such as furniture, equipment, etc issued for ~~use~~ are recorded in distribution list or inventory and verified annually.
- (viii) Stores ledgers need not be maintained for consumable stores received in small lots e.g. cleaning material etc.

C.M.G.
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