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Malawi Agricultural Research Project

Center for Tropical Agriculture
International Programs
Institute of Food and Agricultural Sciences
University of Florida

The Department of Agricultural Research
Ministry of Agriculture, Malawi

The U.S. Agency for International Development

QUARTERLY - ANNUAL REPORT

January, February, March
1982

Contract No. 612-0202

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INTRODUCTION

The University of Florida technical assistance team is in Malawi as part of a project to strengthen the Department of Agricultural Research of the Ministry of Agriculture. This project is funded by the United States Agency for International Development (USAID) and the Malawi Government. The University of Florida is administering the project.

This report is a result of the joint efforts of the entire technical assistance team. It covers the Malawi Government fiscal year ending March 31, 1982. It is a combination quarterly and annual report. However, since quarterly reports have been published every three months this report concentrates on the last quarter of the fiscal year. The highlights and publication list cover the entire year.

This report was printed using the Apple II computer with Super Text word processor that the project has introduced into the Department of Agricultural Research. Mr. Emerson H.M. Kanthungo, Stenographer/Secretary with the department, produced most of this report.

HIGHLIGHTS

Training of Malawi research officers is a primary goal of the Agricultural Research Project. At the close of the Malawi Government fiscal year on March 31, 1982 eighteen Participant Trainees were in the U.S. studying for MS and PhD degrees (11 PhD and 7 MS). At the end of the fiscal year 23 percent of the person months allocated for the project had been used, Fig. 1.

In-service training courses were held in Farming Systems, Crop Ecology, Crop Yield Dynamics as well as numerous informal training sessions. Malawian professional officers were sent to 5 workshops and conferences. The funds allocated for In-service Training were 26 percent expended by the close of the fiscal year.

All 7 long-term Technical Assistance staff members were in Malawi by the close of the fiscal year. Their primary role was to introduce three new programs to Malawi: Agricultural Economics, Farming Systems, and Crop Physiology and to serve as heads of sections (some of which were vacated by Malawians who were in training): Agricultural Economics, Farming Systems, Horticulture, Livestock, Maize, Oilseeds, and Pastures.

During the year ending March 31, 1982, six short-term technical assistance persons were brought to Malawi under the project for a total of 203 days. The most significant accomplishment from this was a comprehensive library/information plan for upgrading the Malawi Agricultural Library at Chitedze.

Two research conferences were sponsored at Chitedze, one in October 1981 on multiple cropping research in Malawi and the other in January 1982 on socioeconomic research in rural Lilongwe. Proceedings of each will be published.

Vehicle purchases were 75 percent completed by the close of the fiscal year. Purchasing procedures had been developed, and it is anticipated that commodity procurement can be completed during the forthcoming fiscal year.

Construction was 29 percent completed by the close of the fiscal year. The Chitedze construction and the Bvumbwe laboratory were the major items remaining to be completed.

Time elapsed on the contract was 32 months of the 60 provided or 53 percent.

Of the 7 person administrative support staff for the project only 4 were provided by the close of the fiscal year. These vacancies are seriously hampering project progress.

Nine research publications and many reports were issued during the fiscal year.

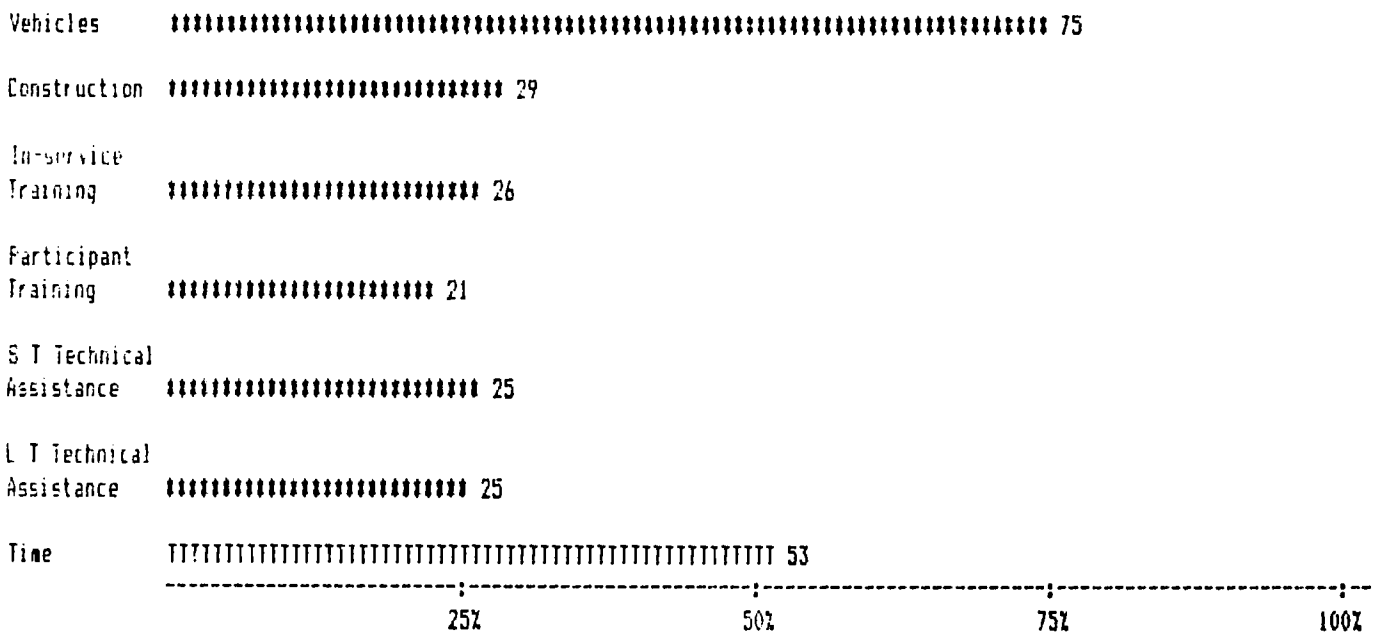

Fig. 1 Malawi Agricultural Research Project, Summary of Inputs to March 31, 1982.

ST = short term
LT = long term

TRAINING

There are two types of training in the project: 1) Participant and 2) In-service or on-the-job training.

Participant Training

One of the most important project goals is to train 33 Malawians for MS and PhD degrees so that they will be able to improve the research conducted by the Department of Agricultural Research. At the close of the quarter 18 students were studying for degrees in the US, 7 for the MS and 11 for the PhD, Table 1. They had completed 189 person-months of training of the 900 total allocated in the project paper, which represented 21 percent completion of the participant training goal.

Table 1 PARTICIPANT TRAINING QUARTERLY REPORT to March 31, 1982

Name	Training	Station	Departure	Months Accumulated	Due Back	Funded To	Degree
Chapola G.M.	Plant Pathology	Bvumbwe	Dec 27 '80	15	Apr 84	Jun 84	
Chigwe C.F.B.	Sorghum Breeding	Makoka	Dec 28 '81	3	Dec 84	Jun 85	
Chikwana R.	Agricultural Economics	Chitedze	Dec 26 '80	15	Dec 82	Jun 83	
Chilembwe E.H.	Fruit Crops	Bvumbwe	Dec 27 '80	15	Jun 83	Jun 83	
Chipala S.E.	Soybean Breeding	Chitedze	Dec 26 '80	15	Dec 83	Jun 84	
Dzowela B.H.	Pasture Agronomy	Chitedze	Dec 26 '80	15	Jun 84	Jun 84	
Gondwe W.T.	Vegetable Crops	Bvumbwe	Dec 28 '81	3	Dec 83	Jun 84	
Khonje D.J.	Soil Microbiology	Chitedze	Dec 29 '81	3	Dec 84	Jun 85	
Kisyombe F.	Statistics	Makoka	Dec 27 '80	15	Jun 82	Jun 83	
Mkamanga G.Y.	Crop Physiology	Chitedze	Dec 26 '80	15	Jun 84	Jun 84	
Mtambo F.J.	Seed Technology	Chitedze	Dec 28 '81	3	Dec 83	Jun 85	
Munthali J.T.K.	Animal Nutrition	Chitedze	Dec 26 '80	15	Dec 83	Jun 84	
Mzembe C.P.	Irrigation Agronomy	Kasinthula	Dec 27 '80	15	Jun 83	Jun 84	
Ngwira L.D.M.	Maize Agronomy	Chitedze	Dec 28 '81	3	May 84	Jun 84	
Ntokotha E.M.	Soil Survey	Lilongwe	Dec 26 '80	15	Jun 84	Jun 84	
Saka A.L.	Soil Physics	Chitedze	Dec 27 '80	15	Dec 83	Jun 84	
Sibale P.K.	Groundnut Breeding	Chitedze	Dec 26 '80	15	Jun 84	Jun 84	
Zambezi B.T.	Maize Breeding	Chitedze	Jun 4 '81	10	Dec 83	Dec 84	
Total				189			

In-service Training

A number of Malawian students went for short courses in other countries during the year. All of the Technical Assistance team provided intensive on-the-job training to the staffs of their respective sections. In addition, the team participated in planning and conducting the Chitedze Field Day which was attended by some 300 persons, about 75% of which were extension workers.

Miss Nthakomwa, Assistant Agricultural Economist, began work on a capital budgeting examination of the use of a rotortiller versus oxen for rice production in Malawi. This study follows on the work done earlier on the Eicher Tractor compared to oxen.

A two hour examination and interview was conducted for 10 candidates for the position of Assistant Agricultural Economist at Chitedze. As a result, people were identified to fill one of the two vacant positions in Farming Systems and the single vacant position in Agricultural Economics. The Farming Systems staff member was hired, and the name of the candidate for Agricultural Economics was submitted to the Ministry of Agriculture in March.

The Farming Systems Analyst provided two types of in-service training during the quarter. Both staff members in his section received hands-on experience in surveying, interviewing, monitoring trials, and the design of survey instruments. They also were given books, papers and articles to read and report on, and one of the staff, Mr. E.N. Mwango, prepared a paper that was read at a conference in January.

The second type of training was more extensive and oriented toward other research (and extension) staff in DAR, other departments in the Ministry of Agriculture, and University of Malawi. A one day conference on "socio-economic research in rural Lilongwe" was organized for January; ten papers were presented; and 32 people attended from Chitedze, the Ministry, Bunda, Chancellor College and Colby College. This followed an earlier smaller conference on multiple cropping that took place in October 1981. Proceedings of both of these conferences will be published by the project after all of the papers have been edited. In addition to these conferences, other research and extension staff participated in two surveys (Kawinga and Phalombe) and in monitoring on farm trials.

Two seminars on tropical farming systems and multiple cropping were presented at Bvumbwe Research Station on September 19 and October 3. A lecture and discussion on multiple cropping principles was presented at a conference at Chitedze Research Station on October 20. Two in-service training sessions were held at Bvumbwe Research Station on March 15 by Dr. D.N. Maynard (Chairman, Vegetable Crops, University of Florida) and Dr. McLean. The subject was nitrogen, phosphorus and potassium uptake and the roles of these and some other elements in plant physiology and deficiency disorders. Most sections of the station staff were represented in the audience.

RESEARCH

The research objectives of the Technical Assistance team were to fill in for the trainees who were in graduate school and to establish new research in Agricultural Economics, Farming Systems and Crop Physiology.

Agricultural Economics

A proposal was prepared and submitted to the Ministry of Agriculture, recommending that facilities be provided at Chitedze for five hectares of land to be irrigated. Such facilities would protect valuable breeding material from drought during the rainy season and also provide an opportunity to conduct agronomic and economic research on irrigation during the dry season.

The maize fertilizer trials for the development of response surfaces suffered considerable lodging. Although no relationship could be found between lodging rates and fertilizer application rates, there was a considerable difference between the hybrid MH 12, on one hand, and UCA and "local" maize on the other. MH12 was much more resistant to lodging than the other two. A paper on these results is in process.

During February the Unit Farms at Chitedze were officially placed under the responsibility of the Agricultural Economics Section and are now part of the Farm Management work of the Section. This added responsibility also brought with it two additional staff members - a Technical Assistant and a laborer. Effective March 1, the ceiling on the price of eggs sold by these farms was removed and the price determined by a bargaining process between buyer and seller. The price immediately rose from 65t/dozen to 75t/dozen.

During the quarter a report was prepared at the request of the Ministry of Agriculture on the status of the Unit Farms at various Research Stations in Malawi. It is understood that this report will be discussed in some depth in a future meeting with research personnel. At the request of the Officer-in-charge, a study was begun on the pricing implications of the slow drop in rice yields. This study is based on some yield data and the prices of fertilizer and rice.

Another study was begun on some "local" maize fertilizer response data.

In March, Agricultural Economics received permission from Kasungu ADD to conduct surveys in the Mchinji area.

Crop Physiology

In the KOPY experiment we have taken the first harvest and are now getting the desired growth retarding effect from the Kylar treatments. In the POPY 81 experiment we have taken a total of four harvests through February 28.

Programmed the TRS-80 Pocket Computer for Analysis of Variance and Linear Regression functions. This program was preliminary to working out a similar one for the HP 85.

Farming Systems

Trials established in the Lilongwe plain, Phalombe project and Liwonde ADD in November and December were monitored during the quarter. Armyworms attacked some Phalombe sites, and insecticides and advice were distributed. (Armyworms are a serious menace throughout southern and central Malawi this year). Stand counts of all trials were collected.

Monitoring includes observation of the field trials themselves (collection of standard agronomic data on the trials) plus a continual collection of more information, biological and socioeconomic, about local farming systems. This data is collected through informal interviews of trial farmers and their neighbors and through more formal surveys that concentrate on particular issues.

A week long survey of multiple cropping and crop associations was conducted in Phalombe during February to learn more about the range and complexity of the various patterns. A second staff member was hired in February, and he participated in this survey.

Seven questionnaire forms were developed during the quarter as part of the process of establishing regular procedures for data collection. These forms were utilized during monitoring as well as in the multiple cropping and diagnostic surveys.

Another area, Kawinga Project of Liwonde ADD, was surveyed by a combined team of DAR and ADD staff during February. The diagnostic survey is the first step in the farming systems research process; this survey was the second one in this ADD, and their staff is now accustomed to the methodology. A report on this survey was presented at ADD headquarters in March.

A conference on Socio-economic Research in Rural Lilongwe was sponsored in January. The one day conference, held in the Chitedze library, was designed to pull together research and researchers from DAR, other departments in the Ministry of Agriculture, and the University of Malawi. This establishes formal ties between the new socioeconomic sections of DAR and their counterparts elsewhere in the Ministry and the University and should accelerate collaborative research on smallholders in Malawi. Thirty two people attended; ten papers were read, including two that described different activities of the Farming Systems Analysis Section. Mr. E.N. Mwango, the first Malawian

staff member, prepared and presented one of these papers, an important part of his professional training. All of the papers will be published by the project in a proceedings. A selection of photographs illustrating the section's work was mounted in the library for the conference and maintained for another week due to general interest by the other Chitedze research staff.

The longitudinal (through time) study of change and development of smallholder households in the Lilongwe Project received a lot of attention. In 1969/70 the Project surveyed 114 households intensively; an economist at Chancellor College has reviewed this data using a cluster analysis technique. Based on this and a similar analysis of 1978/79 project data the economist has presented some hypotheses about types of smallholder households and about changes in the past decade. In order to test these hypotheses and test a procedure for low-cost longitudinal analyses, the Farming Systems Analysis Section in collaboration with two Chancellor College faculty is tracing the actual people interviewed in 1969/70 to re-interview them about changes during the past 12 years. The first problem was whether it would be possible to find enough of the original sample, but indications from preliminary tracing are positive. This longitudinal study will require a major investment of time and resources by the section during the next quarters.

Horticulture

Potato and cabbage fertilizer trials were planted at Tsangano Sub Station and on farmers' fields at Njolomole and Katsekera where these are important cash crops. These trials are a new approach to vegetable fertilizer research in Malawi and will allow economic analysis when several years data are accumulated. Economically viable fertilizer recommendations suited to the smallholder will be developed.

Development of a new fruit tree nursery at Bembeke was discussed with Ministry of Agriculture officials. The Chitala Research Station nursery was subsequently visited to see how we can assist with its expansion.

Considerable time was spent at Bvumbwe Research Station developing plans for expansion and upgrading of the fruit and nut tree nursery facilities and the potato store. Repairs were initiated to several horticulture equipment items.Equipment purchase lists were developed for strengthening of the horticulture, nematology, plant pathology and entomology laboratories. Discussions with personnel from each section were valuable in identifying their needs.

Livestock

Reviewed existing facilities, personnel and programs of the livestock research program. A paper, "Review and Recommendations for Livestock Research" was prepared and submitted to C.A.R.D. Plans developed and submitted to C.A.R.D. in March for ten proposed research projects with the assistance of the Malawi staff.

Assistance was also provided Dr. Hodges in planning and establishment of the pasture grazing trial. Major responsibility was assumed in providing physical facilities (fences, spray race, corral and water system) for handling of livestock necessary to conduct the trial during the 1982-83 season.

Orders for chemicals and miscellaneous supplies for the Feed and Forage Analysis Laboratory were also placed with Florida during the quarter. This required a review of the laboratory procedures and a detailed cross checking to be certain that all necessary items were on order.

Pasture

Completed first year of harvest and initiated second year on replicated trials with setaria accessions and promising grass varieties, both harvested at four regrowth intervals.

Grazed grass variety-legume combination plots to observe impact of grazing on legume survival - completed first year and initiated second year of treatment.

Legume-buffelgrass and legume-guineagrass compatibility trials; forage yield and legume survival measurements completed second year and initiated third year of harvest.

Completed third and final year of Leucaena stubble height x frequency-of-harvest experiment.

Established a replicated plot experiment to measure forage yield of Hemarthria altissima accessions planted on dambo margin.

Harvested Leucaena leaf for use with Christy-Noris pellet mill. Activated the mill in co-operation with Chitedze Farm Machinery Section and pelleted feed mixtures used by Veterinary Division and market development leucaena leaf with National Seed Company.

Established Ntchisi panicum experiment to test effect of plant spacing and harvest interval on forage yield and quality (protein and in vitro). Harvest to begin in December 1982.

Grazing trial experiment, Chitedze. Established pastures as follows: (a) Boma rhodesgrass (b) Ntchisi panicum (Guineagrass) (c) No. 2 stargrass (Cynodon nlemfuensis) (d) Boma rhodesgrass intermixed with Silverleaf desmodium -Desmodium-uncinatum). Each treatment established in triplicate on 1.5 ha areas. Grasses will receive 40kg per ha nitrogen annually plus phosphorus (P) and (K) as indicated by soil test.

The legume-grass combination will receive only P and K. Grazing will be rotational at an intermediate stocking rate, emphasizing grazing season production and with evaluation of aftermath forage includes as the supply indicates. Experimental cattle will be Malawi Zebu, approximately two years of age at beginning of trial. First experimental grazing cycle will begin December 1982. Three to five annual cycles will be conducted. Professional Officer H.D. Msiska with Technical Assistant, labourer and driver spent

two weeks in August collecting grass and legume materials in the Northern area of the country.

Plant Breeding

Prepared a report on the progress of the Maize Breeding Program and delineated future requirements to improve the program. Evaluated exotic maize entries from SARMEIT and identified entries for inclusion in the Malawi Maize Breeding Program.Made selections and crosses within the maize populations that are being improved.With Dr. Gelaw, CIMMYT, identified CIMMYT populations that show promise in the marginal areas. Selection will be made within the populations to form new varieties.Prepared the FY83 budget requirements for Maize Breeding.

Prepared a list of equipment and supplies to be purchased by the Malwi Agricultural Research Project for Maize Breeding.

Prepared a synopsis on the production potential of wheat in Malawi for the American Ambassador.

Evaluated a rice breeding research proposal for the Rice Breeder, Lifuwu Rice Research Station, and made suggestions on how the program might be improved.

Established daily water requirements for maize, groundnuts, wheat, and vegetables in order for Dr. Pervis, Agricultural Economist, to make an irrigation proposal for Chitedze ARS.

TRAVEL AND MEETINGS

The Technical Assistance Team has a broad mandate to help upgrade the DAR, and all of the team met during the quarter with the visiting ISNAR team which was reviewing DAR in the context of NRDP. USAID also sent a team to Malawi during the quarter to revise and update the CDSS, and this team met with the Chitedze T.A. team.

Considerable travel by Technical Assistance team members was done during the quarter for orientation purposes. Several meetings and Field Days were attended by team members.

Gray

Jan 7	Salima A.D.D. at the request of the Planning Director to discuss possibility of establishing goat research at Chitala to support small holder farmer needs in the A.D.D.
Jan 7	Chitala Research Station to observe livestock and discuss Officer-in-Charge's request for financial assistance for pasture development to support the livestock program.
Jan 14	Mbawa Research Station to inspect the beef cattle breeding herd and discuss request for financial assistance from the Officer-in-Charge.
Jan 15	Viphya Pulpwood Project to investigate the availability of creosoted fence posts from Mazamba Sawmill. Arrangements were made for purchase of posts for the pasture project.
Jan 18	Toured the Kuti and Lifidzi Ranches in Salima A.D.D. to observe livestock operations.
Jan 20	Accompanied Dr. Fervis and Dr. Fasley on their initial visit to Dzalanyama Ranch.
Feb 8	Confered with Mr. Alex Jumbe, Head, Livestock Production and Marketing Unit, Department of Animal Health and Industry to obtain recommendaions for construction of external parasite treatment facilities for the pasture experiment and discussed possibilities for cooperation between Research and Livestock Production.
Feb 19	Conference with Dr. J. T. Legg and Dr. H. Mwandemere to review the paper "Review and Recommendations for Livestock Research.
Mar 30	Dzalanyama Ranch to confer with Mr. M. H. B. Kasowanjete regarding animal breeding research.

Hansen

of a survey to determine the decline in area planted to groundnuts.

Attended a meeting of various ministries on the NRDP plan for funding of new development projects for the 1982/83 fiscal year. The Library-Information Service proposal was delayed pending more definitive funding.

Met with both the Director General and the Leader of Groundnut Investigations from ICRISAT, the international institute at Hyderabad, India to explain groundnut research of the UF/USAID Malawi Agricultural Research Project. ICRISAT has signed an agreement to establish a regional office with a small staff on groundnuts at Chitedze.

Met with the Director General and his Team Leader of ISNAR, the International Institute for National Agricultural Research, in the Netherlands to explain te role of the Malawi Agricultural Research Project in strengthening the Department of Agricultural Research. ISNAR has been invited to conduct an in depth study on agricultural research in Malawi.

Held monthly Technical Assistance team meeting to consider the 1982/83 fiscal year budget and equipment lists from the TA team.

Traveled to Makoka, Bvumbwe, Kasinthula and Ngabu with Drs. Dean and Thompson to orien them to conditions in Malawi which will assist the Malawian students in Florida.

McLean

Jan 5	Attended meeting of Fruit and Vegetable Growers and Processors Liaison Committee at Mulanje ADMARC cannery.
Jan 7	Met with Mr. Shawa and Mr. Sawerengera at Ntcheu to discuss development of the nurseries at Bembeke, Chitala.
Jan 14-15	Planted potato trial at Latsekera. Supplied materials to Tsangano Sub station for potato fertilizer trial there.
Jan 19-20	Visited Mua Mission to ascertain how a smallholder plant nursery could be developed. Discussed horticulture in Salima ADD with Program manager and Mr. Ed Blanker. Inspected mango planting and cashew trial at Lifuwu Research Station. Discussed proposed irrigation and nursery improvment at Chitala Research Station with the Officer-in-charge and others.
Feb 8-9	Attended team meeting at Chitedze Research Station. Completed TDY requisition for Dr. D.N. Maynard with Dr. McCloud.
Feb 11-12	Supplied materials to Tsangano Sub Station for

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cabbage fertilizer trial there. Transplanted cabbage fertilizer trial at Njolomole. Topdressed potato trial at Katsekera.

Feb 16 Traveled to Kasinthula Research Station to fumigate a chinese cabbage seedbed.

Feb 17 Traveled to Tsangano to supply cabbage transplants. Sprayed potato trial at Katsekera.

Feb 22-23 To Katsekera, Tsangano and Njolomole to work on potato and cabbage trials.

Pervis

Jan 10-17 Trip to Southern Malawi - see highlights of offices visited.

Jan 20 Visited Dzalanyama Ranch to examine cattle operations and pasture management.

Feb 9 Met with Mr. Jim Mudge to discuss the Malawi Country Development Study.

Feb 10 Visited the Mbawa Agricultural Research Station to study their potential for conducting irrigation studies and to look at their Unit Farms.

Mar 1 Visited Mr. John Doughty to obtain the ICL linear programming manual and discuss the acquisition of the NSSA data.

Mar 10 Meeting of the Computer Society of Malawi.

Mar 11 Visited Lilongwe ADD office. They had some NSSA data but we were not able to obtain the computer print-out.

Mar 17 Met with Mr. Richard Bolt, Economist working with the Department of Research, on Research Station management.

Mar 19 Met with Martin Geake and Mr. Msango of Kasungu ADD and obtained permission to do surveys in the Kasungu area.

Mar 23 Met with Dr. Neal Thompson, Assistant Dean of Research from the University of Florida.

Pasley

Attended 25th Seed Technology Meeting, Ministry of Agriculture, GOM, to report on maize varieties that have shown promise in the marginal areas.

Dzalanyama Ranch to evaluate a forage legume that had been established in an indigenous grass pasture.

Salima ADD to discuss maize variety requirements for that area with the Program manager and planning personnel.

Station to evaluate maize trials.

A session on progress of the USAID-financed building project at the Ministry of Works, GOM.

The National Seed Company of Malawi Farm to identify a disease that was killing foundation lines of maize.

To Mchinji and Kasungu to take part in field days held for producers of hybrid maize seed. Explained the procedures and precautions necessary to assure purity.

To Mbawa Agricultural Research Station to inspect maize trials that had been adversely affected by drought.

To the Blantyre area to inspect fields of hybrid maize. It had been reported that impure seed had been sold in the area and the Program Manager, Blantyre ADD, requested my evalution.

To Bunda College to examine the status of the USAID-financed building project for Mr. Garms, USAID/MA.

With a representative from the International Germplasm Center to discuss the necessity of a germplasm collecting project in Malawi.

With Mr. Mudge, USAID/WA, to discuss the future biological research requirements for Malawi.

Participated in a field day at Chitedze Agricultural Research Station to explain what Maize Breeding is doing and to discuss the performance of experimental varieties.

To Bembeke to evaluate maize breeding trials.

With Drs. Bernard, Dean, and Thompson, University of Florida, to explain maize production and maize research in Malawi.

With a consultant from the Federal Republic of Germany and discussed what research might do to bring the smallholder into the credit stream.

With seed producers from Swaziland and discussed maize breeding and seed production in Malawi.

With a representative from ICRISAT and explained the maize and groundnut breeding programs.

Table 2 USAID Project Vehicle Miles Driven to March 31, 1982

Vehicle	Location	Jan-Feb-Mar	Mileage to March 31, 1982
Peugeot			
542D	Chitedze	4,582	22,270
716D	Chitedze	5,523	20,800
754D	Chitedze	5,773	19,920
715D	Bvumbwe	5,920	23,310
Land Rover			
694D	Bvumbwe	3,750	23,311
689D	Lunyangwa	4,810	23,070
690D	Chitedze	6,012	31,470
692D	Chitedze	7,098	30,477
691D	Makanga	7,034	34,388
653D	Kasinthula	9,010	38,509
	Total	59,512	267,525

Short-term Technical Assistance

Dr. Russell Bernard, Chair of the Department of Anthropology, UF, was in Malawi from 9-26 March, 1982. He assisted the team with advice and software for micro-computer data management and worked specifically with the Farming Systems Analyst to design a large scale survey of Lilongwe smallholders that is scheduled for August and September. Dr. Bernard's visit was extended to 17 days because he became seriously ill, and the doctor advised him to regain strength before traveling back to Florida.

The visit by Dr. D.N. Maynard, Chairman, Vegetable Crops, University of Florida, provided an opportunity for consultation in the fertilizer program and discussion of all other research projects planned by Dr. McLean. It also enriched Dr. Maynard's experience in Malawi and his opportunities to counsel Malawi graduate students in his department regarding their thesis research. The visit was a very valuable asset to the horticulture project.

ADMINISTRATIVE AND FINANCIAL

Two major reports were compiled during the quarter, then approved by the Ministry of Agriculture, and submitted.

The Secretary-Stenographer for the project arrived January 11 nineteen months after the project began!

The Copy-typist and the Messenger joined the project's administrative staff on February 2, 1982.

Collected data on computer usage by DAR and prices for service on the Apple vs. TRS-80, and prepared a justification to USAID for computer purchase.

Obtained bids on vehicles, and submitted request to purchase to the Malawi Government.

Prepared 11 in-service training travel outside of Malawi proposals for 1982, which were approved by the Ministry of Agriculture. Compiled the 20 short-term Technical Assistance requests for 1982, and obtained Ministry of Agriculture approval.

Held the monthly Technical Assistance Team meeting to consider program financial needs for the next MG fiscal year, including equipment, expendable supplies and library requests.

Meeting with Garms and an AID/WASH representative on the vehicle waiver and procurement problems. Apparently both these problems can be resolved.

Processed the sixth claim for reimbursement to the Malawi Government in the amount of K17,551.43 from the University of Florida local account.

Prepared IDY requests for the March visits of Thompson and Dean and, obtained MA and AID Malawi approvals.

Requested approval from Ministry of Agriculture for air shipment of urgently-required contract goods.

Prepared IDY request for Hensel, and submitted it to the ministry of Agriculture.

Problem Areas

1. Three Apple computers approved by the Malawi Government are urgently needed to facilitate the livestock records system, the farming systems survey analysis, and to develop production economics functions.

2. Staffing of the Administrative positions remain serious. The Executive Officer (General Duties) and his Clerical Officer still await adequate housing at Chitedze.

Table 3 Transactions University of Florida-IFAS Local Account January, Februa y and March 1982.

Date	Details	MK	MK
January			
5	Balance brought forward		64,697.40
5	Travel E.M. Hodges Lunyangwa, Chitapa, Baka	77.36	
5	Travel I. McLean reimbursement Chitedze trip	112.27	
6	Travel D.E. McCloud reimbursement	140.68	
6	Dr. I. McLean Advance for school fees	560.00	
6	Deposit		1,100.00
7	Dr. D.W. Pervis Chitala Lifuwu Trip Dec 18-20, '82	104.32	
19	Manica Freight Services Ltd Freight charges inv.	717.44	
20	Dr. H.K. Mwandemere travel advance conf. on climate	850.00	
20	Dr. I. McLean educational driving allowance	213.46	
20	Dr. I. McLean reimbursement for Ntchisi trip Nov 3-5,'81	70.91	
22	Deposit		1,955.00
25	Dr. R.C. Gray reimbursement for drapes, passport maps	218.03	
26	Dr. R.C. Gray travel advance for S.A. trip	400.00	
26	Manica Freight Services (MW) Ltd. invoice No. 2062379	364.15	
February			
8	Deposit		500.00
11	Malawi Govt Six claim for reimbursement	17,551.43	
15	Dr. I. McLean reimbursement cheque deposited to L/Acct	20.50	
15	Freight Air (Manica) Gray air shipment	177.14	
19	Benson Phiri reimbursement for Agric. Econ. interview	10.00	
March			
5	Deposit		52.60
5	Manica M. George (MW) Ltd Pasley's air shipment customs	399.13	
5	Securicor (MW) Ltd services for February March	573.10	
5	Dr. R.C. Gray reimbursement pick up car at Durban	680.01	
8	Dr. S.F. Pasley travel reimbursement	362.00	
8	S.H. Thindwa reimbursement for agric. econ. interview	5.00	
8	C.D. Phiri reimbursement for Interview Agric. Economics	5.00	
8	P.A.M. Msiska reimbursement for Agric. Economics interviw	5.00	
8	R.F. Munthali reimbursement for Agric. Econ. interview	5.00	
8	D.A.H. Jere reimbursement for Agric. Econ. interview	5.00	
8	W.F. Msisla reimbursement for Agric. Economics interview	5.00	
8	F.Y. Mlanda reimbursement for Agric. Economics interview	5.00	
8	G.I. Msiska reimbursement for Agric. Economics interview	10.00	
8	Dr. D.W. Pervis reimbursements travel	505.62	
9	Miscellaneous	44.00	
9	Manica Pasley air freight customs clearing and handling	206.51	
9	Dr. D.W. Pervis Emergency dislocation Feb. 15-16, '82	91.65	
12	Dr. I. McLean Salima-Sangano Ed. drives	101.21	
18	Dr. Anita Spring Advance on Medical costs	1,060.00	
19	Malawi Govt water bills McCloud Hodges Pervis Pasley	46.28	
19	Dr. I. McLean reimbursement Ntcheu, Chitedze trip oct	41.36	
29	Dr. E.M. Hodges Balance reimbursement Mzuzu trip	38.41	
30	Unpresented cheques		2,096.60
		25,781.97	70,401.60
	Balance carried down		25,781.97
	Balance as per Bank Statement		44,619.63

Table 4 Summary of Commitments for the University of Florida-IFAS Local Account January, February and March 1982.

Program	Quarterly Expenditures Jan - Feb - Mar	Total Expenditures since project began
	K	K
Maize, Breeding and Agronomy	362.00	947.93
Groundnut, Breeding and Agronomy	486.57	2,818.59
Pasture Agronomy	1,220.01	8,374.44
Livestock	1,152.93	2,961.71
Horticulture, Fruits and Vegetables	1,559.61	1,974.78
Agricultural Economics	756.59	1,030.77
Farming Systems	64.75	4,371.42
Soil Fertility	235.60	1,007.34
Research Coordination	151.91	1,662.35
Library	132.00	2,227.44
Participant Training	----	10,034.70
In-service Training	6,021.50	24,131.19
Vehicles, First Purchase	----	141,087.64
Overhead' Not Assignable by Program	4,843.13	63,003.45
TOTAL	16,986.60	265,633.75

' Overhead should be divided among the following programs: Maize, Groundnut, Pasture, Livestock, Horticulture, Agriculture Economics, Farming Systems and Research Coordination (12.5% each).

PUBLICATIONS

The following are a list of publications for the Malawi Government fiscal year ending March 31, 1982:

1. Ministry of Agriculture "ELEGANT GRASSHOPPERS (---------- --------)" Extension Aids Circular No. 4/81

2. Ministry of Agriculture "RECOMMENDATIONS ON COTTON GROWING IN MALAWI" Extension Aids Circular No. 5/81

3. Ministry of Agriculture "SORGHUM CULTIVATION IN MALAWI" Extension Aids Circular No. 6/81

4. Hansen, Art "Farming Systems Research: Theory and Practice in Malawi" Agricultural Research Project Miscellaneous Paper 1 October 1981

5. McCloud, D.E., Duncan, W.G., McGraw, R.L., Sibale, P.K., Ingram, K.T., Dreyer, J., and Campbell, I.S. "Physiological Basis for Increased Yield Potential in Peanuts" ICRISAT Proceedings of the International Workshop on Groundnuts October 1980

6. Ingram, K.T., McCloud, D.E., Campbell, I.S., Duncan, W.G., McGraw, R.L., and Sibale, P.K. "Pnutmod: An educational model of crop growth and development simulated in a hand-held calculator" Journal of Agronomic Education Volume 10 pp 36-42 November 1981

7. Pervis, D.W. and Matthews, M.D.P. "An Analysis of the Introduction of the Eicher Tractor into Malawi" Agricultural Research Project Miscellaneous Paper 2 December 1981

8. Ministry of Agriculture "CONTROL OF FOLIAR DISEASES IN GROUNDNUT USING DACONIL 2787 W-75" Extension Aids Circular No. 1/82

9. Ministry of Agriculture "GROWING WHEAT IN MALAWI" Extension Aids Circular No. 2/82