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**MID-TERM
EVALUATION**

**Uganda Manpower
for
Agricultural Development
Project - PHASE II**

Project No.617-0103

July 17 - August 24, 1990

EXECUTIVE SUMMARY

This report presents the findings of the Evaluation Team on the Manpower for Agricultural Development Project No. 617-0103 at its mid-term. The Evaluation Team believes that the project is technically on schedule with one exception being the slowness of the Government of Uganda to build the needed recurrent operational costs into its budget process. The project is making an impact on the lives of farmers by increasing their production of food crops and providing opportunities for income growth, and is contributing to human capital development and institutional capability.

1. Purpose of the Actively Evaluated

The project goal is " to assist the GOU in its recovery program to stimulate small farmer agricultural production."

The findings of the Evaluation Team as related to the goal and purpose are:

. small farmer production is increasing in the food crops such as maize, soybeans, potatoes and beans, supported by the project and relevant technology is reaching farmers.

. increases in food availability and income growth are in evidence.

The project purpose is " to assist the GOU to rehabilitate, retrain and re-direct its agricultural manpower and institutional capability in food crop production."

. 2 MOA research centers (Kawanda and Namulonge) have been rehabilitated almost completely.

. the rehabilitation of Kabanyolo, a MU/FAF teaching/research station, is nearing completion - estimated completion date December 1990.

. long-term academic training program has 36 students training on schedule.

. the MU/FAF in-country training at the MS level is slightly under subscribed.

. MOA institutional capacity has been strengthened through establishment of 6 Commodity Teams. Food crop commodity research planning and prioritization is being accomplished.

. MU/FAF has instituted two additional teaching departments and degree granting programs in Agricultural Engineering and Food Science and Technology and has adjusted its curriculum to meet the evolving demands of the agricultural sector.

2. Purpose of Evaluation and Methodology Used

The evaluation is to provide an independent, mid-term assessment on whether the project is making appropriate progress towards achieving its goal and purpose.

The methodology used to evaluate the project included consultations with the major scientists and administrators involved in project implementation; field visits to the U.S. contractor, research centers and on-farm research sites; review of project documents, consultant reports, plans and strategic papers, and farmer interviews.

3. Findings and Conclusions

Primary findings include:

- . on-station research findings are being transferred to extension agents and farmers,
- . on-farm trials are being conducted involving researchers, extension agents and farmers,
- . farmers are adopting improved technology packages of varieties and cultural practices,
- . the project has produced two studies relative to planning and prioritizing food crop research: the Accelerated Food Crop Production Strategy, the Five Year Food Crops Research Plan 1989-94, and three research plans dealing with commodities: Sorghum Development in Uganda, a Plan for Maize Research and Seed Production in Uganda and An Assessment of Sunflower Production and Potential and a Research Plan for Uganda.
- . researchers have been able to borrow/screen and test a large number of germplasm materials resulting in 11 food crop varieties being released to farmers while 11 more are being tested under farmer conditions pending release.
- . new varieties have been released, the first in the past 15 - 20 years, i.e. soybeans Kabanyolo 1 and Namulonge 1; maize - GUSAU, EV 8429sr, Across 83; sunflowers - Sunfolo 1; potatoes - Cruza, Sangema; and beans - Haricot, Rubona 5 and G13671.
- . MOA and MU/FAF staff are being trained in the numbers and disciplines (agronomy, breeding, entomology, agricultural economics and soil science) that will move the GOU towards attaining a critical mass of scientists,
- . no assumptions in the logframe have proved to be completely invalid.
- . project administration and management need to be tightened up and streamlined.

4. Principal Recommendations

The principal recommendations are:

- . employ a financial analyst/accountant from OSU as a member of the MFAD team.
- . negotiation between USAID, MOA and MU/FAF need to be instituted immediately regarding the inclusion of local operating costs of faculty and research into the GOU budget process so as to provide sustainability to the two institutions being assisted.

. annual research planning meetings should be convened between MOA, MU/FAF, MFAD and the IARCs and other external agricultural research entities.

. the socio/economic departments of the MOA and MU/FAF should take a more active part in conducting baseline data surveys, analyses of on-station and on-farm research and provide leadership in the planning and prioritizing of the future GOU research agenda.

5. Lessons Learned

The Team believes that the following lessons have been learned:

. a Commodity Team or scientist critical mass approach to developing new technology is possible when a reasonable number of local scientists are available.

. project designs that involve the collaboration of both the Ministry of Agriculture and Faculty of Agriculture and Forestry are able to produce more relevant technology more quickly for farmers than project designs that isolate either one or the other of the institutions.

. on-farm trials are extremely helpful in transferring technology from station to farm via extension and for producing and distributing seed of new varieties in a given community. Also on-farm trials provide feedback from farms to station researchers.

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LIST OF ACRONYMS

AAO	Assistant Agricultural Officer
AID/USAID	Agency for International Development
AO	Agricultural Officer
BSc	Bachelor of Science
CIMMYT	International Maize and Wheat Improvement Centre
CIP	Community Import Program
CIP	International Potato Centre
COP	Chief of Party
DAO	District Agricultural Officer
DFI	District Farm Institute
EI	Experience Incorporated
FAF	Faculty of Agriculture and Forestry (Makerere University)
FSR	Farming Systems Research
FVSC	Fort Valley State College
GOU	Government of Uganda
IARC	International Agricultural Research Centre
IBSNAT	International Benchmark Sites Network Agrotechnology Transfer
ICIPE	International Centre for Insect Physiology and Ecology
IFDC	International Fertilizer Development Centre
IITA	International Institute for Tropical Agriculture
INTSOY	International Soybean Program
KRS	Kawanda Research Station
MOA	Ministry of Agriculture
MFAD	Manpower for Agricultural Development
MS	Master of Science
MU	Makerere University
MU/FAF	Makerere University/Faculty of Agriculture and Forestry
MUARIK	Makerere University Agricultural Research Institute Kabanyolo
NARO	National Agricultural Research Organization
NIFTAL	Nitrogen Fixation of Tropical Agricultural Legumes
NARS	National Agricultural Research System
NRS	Namulonge Research Station
OSU	The Ohio State University
PCV	Peace Corps Volunteer
PhD	Doctor of Philosophy
PRAPAC	East Africa Potato Research Network
PRO	Principal Research Officer
PSA	Procurement Services Agent
REDSO	Regional Economic Development Services Office
RO	Research Officer
SAARFA	Strengthening African Agricultural Research and Faculties of Agriculture
SAO	Senior Agricultural Officer
SMSS	Soil Management Support Services
SO	Scientific Officer
S & T	Science and Technology Bureau (AID/Washington)
SRO	Senior Research Officer
SRS	Serere Research Station

SSO	Soil Survey Officer
SSRO	Soil Survey Research Officer
TA	Technical Assistance/Technical Assistant
TOR	Terms of Reference
TREAD	Technology for Resource Evaluation and Agricultural Development
TSMM	Technology for Soil Moisture Management
UM	University of Minnesota
USDA	United States Department of Agriculture

I PURPOSE OF THE EVALUATION

The purpose of this evaluation is to provide an independent, mid-point assessment on whether the MFAD Project is making appropriate progress towards achieving its goal to "assist the government of Uganda to rehabilitate, retrain, and redirect its agricultural manpower and institutional capacity in food crops production."

The project involves two government of Uganda institutions the Ministry of Agriculture and Makerere University Faculty of Agriculture and Forestry. The following are the end of project objectives:

- . A strengthened and better trained University staff and improved curriculum for training and upgrading the future cadre of high level agricultural professionals including researchers and extension workers.
- . A strengthened research capability resulting from staff training and improved research facilities.
- . Results of on-station experiments and on-farm trials indicating means of improving performance of total farming systems and increasing food production.
- . Verified technological packages, developed through farming system research methods, that have been adopted by at least a limited number of farmers.

The aim of this evaluation is:

- A. To determine whether the current project configuration and resources, management practices and working relationships between the Ministry of Agriculture, Makerere University Faculty of Agriculture and Forestry, the U.S. contractor and subcontractors and USAID are producing adequate progress towards achieving these objectives;
- B. to identify and make recommendations on improvements in project structure, relationships and organizations which might enhance project achievements; and
- C. to identify areas of activity which might be incorporated in follow-on USAID or other donor projects. (See Appendix I: Scope of Work).

II EVALUATION METHODOLOGY

The Team responsible for the conduct of the evaluation consisted of:

Robert I. AYLING, Co-Team Leader, USDA/OICD
A. K. OSUBAN, Co-Team Leader, Consultant, former Commissioner of
Agriculture, Uganda
Calvin MARTIN, Consultant, former USAID staff
Raymond MEYER, AID/S&T

The Team:

- (a). visited all major projects sites in Uganda and the Ohio State University (see Appendix II: Evaluation Team Itinerary);
- (b). reviewed mission and MFAD documents, reports, plans, consultant reports, and background papers (see Appendix III: List of Documents Reviewed.)
- (c). interviewed individuals in the Ministry of Agriculture, Makerere University Faculty of Agriculture and Forestry, the MFAD team, research stations, on-farm research programs, the Ohio State University, USAID, and related donor projects (See Appendix IV: Individuals Interviewed). This list does not include some farmers or a number of Ugandan participants being trained under the project).

The Team made visits and conducted interviews as a group and individually as need and time required. The team was fortunate that most MFAD team members and almost all major MOA and MU/FAF participants in the project were present for all or part of the Team's visit and made themselves available for consultation.

The Team's report was discussed in draft with all major project participants in the USAID mission and the Government of Uganda (Ministry of Agriculture and Makerere University Faculty of Agriculture and Forestry), USAID and MFAD.

III EXTERNAL FACTORS

The following factors are important elements of the context in which the MFAD Project operates and may be expected to have impact on a follow-on project.

A. Weak Revenue Base of Government of Uganda

The economy of Uganda has a weak revenue base, approximately 7-8% of GDP, occasioned by the low export level and the low world coffee price from which Uganda has received approximately 85% of its export earnings. While current GOU policies auger well for increased exports, significant revenue increases cannot be expected in the short term.

The extreme pressure to reduce government expenditures is felt particularly in the level of civil service salaries, the rate of rehabilitation of infrastructure and transportation facilities and the capacity of the GOU to contribute financially to development efforts. These pressures can be expected to continue and to change only gradually.

B. Localized Inaccessibility

Access to parts of the country is limited. This has implications for government expenditures. Additionally, it inhibits or prohibits research and development on sorghum/millet, the country's second major food group, and limits work in livestock production and animal power.

C. Policy Directions

Government of Uganda economic policy decisions seem to be in the right directions and are daily generating donor, private sector and investor confidence. Investment is being encouraged along with the private sector itself, interest in trade and investment is high, and the parallel currency exchange market has been legalized. In general, a positive climate towards an open market economy exists and is creating increased business confidence.

D. Coffee-based Economy

Uganda's economy is currently predominantly coffee-based. In view of low world coffee prices and anticipated increased competition among coffee producing countries, Uganda faces the challenge of broadening its agricultural and economic base. This will require an extensive research, training and extension effort for the foreseeable future.

E. Donor Confidence

Donors currently seem receptive to Uganda's policy directions. Given a continuance of current policies, donor support should continue. At this time there are approximately \$300 million in undisbursed World Bank funds, mainly for infrastructure. The repair and development of roads will significantly affect agricultural production possibilities.

F. Agricultural Potential

By virtue of its climate and agroecology Uganda remains one of the high potential countries in Africa for agricultural production. While dropping from the fourth richest country in Africa (excluding South Africa) in 1971 to the twelfth poorest country in the world following the civil disturbances in the 1970's and 1980's, it still fed itself at the height of those disturbances. Its agricultural potential and the quality of its training institutions will continue to make it a priority country for food production efforts in east-central Africa.

IV. ASSUMPTIONS

The Team examined the validity of the assumptions as stated in the logframe. The assumption for achieving the goals is detailed as "Next investment on parallel basis is to up-grade extension capability to link rehabilitated agricultural research to small farmer producer." We believe this assumption remains valid and, in fact, the MFAD project has made considerable progress in about 10 districts to strengthen the extension agents work in on-farm research activities. MOA and MFAD project research scientists are conducting training sessions in laying out farm research plots, proper planting dates and plant populations, conducting farmer field days of research trials, and making agronomic observations of the plant characteristics on the crops used in the research program.

The two assumptions for achieving the project purpose are "(1) Existing human resources adequate to carry on agricultural research; and (2) Training of extension

workers is possible to form basis of linkages with research." While there is still validity to these assumptions, steps are being undertaken to alleviate the impact of the assumptions through the long-term academic training program and short-term professional consultations, and the upgrading of extension agents skills and capabilities as described under the goal assumption. Commodity Research Teams have been established as stated in the Project Paper with training being provided to fill discipline gaps.

The four assumptions to achieve the project outputs are "(1) Trainable personnel available; (2) Research stations available; (3) MAF Makerere collaborate; and (4) Security situation remains relatively stable." These assumptions are still valid. However, this evaluation finds that progress is being made to lessen the impact of the assumptions as indicated in this report.

The input assumptions are "(1) GOU has currency to provide to the project. Technical assistance can be recruited in face of difficulties and (2) GOU has built in its recurrent expenditures in the budget the support for the agricultural activities after the PACD." While there is still validity to these assumptions the progress being made to alleviate their impact has been less concrete. The Team's review of the GOU agriculture research budgets for the years of 1987-88 through 1990-91 indicates that the government has been unable to build into its budgeting process resources for the recurrent costs to support the commodity research on maize, sunflower and soybean.

With two and one-half years remaining in the life of the project, the Evaluation Team recommends that the MOA, MU/FAF, MFAD project and USAID commence negotiations immediately to seek additional budgetary support to cover recurrent research, maintenance and other costs at MOA and MU/FAF research facilities. An endowment or research foundation fund might be an acceptable solution to the problem of covering research recurrent costs.

V. ACHIEVEMENT OF PROJECT GOAL

The goal of the MFAD Project is:

"To assist the GOU in the recovery program to stimulate small farmer agricultural production."

The Team believes that the project goal is still valid at the mid-term point of the project. Farmers cooperating in the on-farm research program reported to the team that their yields of food crops were being increased by 30 to 100 percent. Yield increases were attributed to improved crop varieties, cultural practices, disease tolerance of new varieties and timely deliverance of seed. These relevant technologies were reported to the team by both farmers and extension agents as major factors leading to increased yields. Farmers reported to the Team that increased yields have meant greater availability of food and cash income.

At the time of this evaluation, the relevant technologies being produced by researchers and extension agents at the on-station and on-farm research trials are definitely increasing the welfare of farmers. Discussions with farmers and extension agents alike report that the cooperators are experiencing higher yields of food

crops. Higher yields have meant that more cereals are available for home consumption with oilseed crops producing cooking oils and legume based foods. Moreover, on-farm trials are producing a dependable source of improved seed for farm cooperators and other farmers in the community.

Farmer incomes have increased through the sale of seed and food crop production surpluses to the village markets. It is quite evident to the Team that the project results are relevant to farmers in the food crop growing ecologies of the country. Efforts to extend the current technologies to other parts of the country should be encouraged. The expansion of technology utilization will only be tempered by the absorptive capacity of the Ministry of Agriculture and the private sector.

VI. FULFILLMENT OF PROJECT PURPOSE

The project purpose of the MFAD project is:

"To assist the Government of Uganda to rehabilitate, retrain and redirect its agricultural manpower and institutional capability in food crop production."

The Team believes the MFAD project is making satisfactory progress, at its mid-point, to achieve the intended purpose. Rehabilitation at the three research stations, Kawanda, Namulonge and Kabanyolo is planned to be completed by 1990. Moreover, the MOA, MU/FAF and the MFAD project team are presently engaged in developing a realistic maintenance plan to insure that the rehabilitated research centers are reasonably maintained for the remainder of the life of the project. It is noted that that because of restricted access to the district the planned rehabilitation of the Serere research center has not taken place under the current program of refurbishing the research centers. This exclusion was due to restricted access to the district. As for retraining and training of Ministry of Agriculture and Faculty of Agriculture and Forestry scientists, the Team believes that the participant training is on schedule. The short and long term academic training has been carried out at high quality United States and Uganda institutions, as well as at a number of relevant IARCs.

Research work being carried out at the 3 research stations is of a high caliber and deemed relevant to the small holders of Uganda. This is especially so for the research activities on the crops of maize, soybean, bean, potato and agroforestry. While the research work on sunflower is of high quality its relevance may be of lesser importance. Work is being conducted in the central ecological region while the better growing conditions are found in the northern and eastern parts of the country. In any case, the Team believes that the sunflower research work should continue as planned during the life of project.

The institutional capabilities to conduct food crop research in the MOA and Faculty of Agriculture and Forestry are well established within the present technical absorptive capacities. Commodity Research Teams have been established and functioning. There are discipline gaps in the teams, but most of these will be filled by scientists trained through the participant training program during the balance of the life of project. On-farm research and extension linkages are well established with researchers and extension agents cooperating at the farm level. Extension agents are actively involved in planning and monitoring commodity on-farm trials.

About 50 percent of the farms visited by the team were women operated. In summary, the Team firmly believes that the project purpose will be achieved in an acceptable manner at the end of project based on the absorptive capacity in the MOA and Faculty of Agriculture and Forestry.

VII PROJECT OUTPUTS

Detailed accounts of outputs are available in the various reports of the project. This section of the Evaluation Team's report follows the outputs as stated in the Project Paper logframe, Annex A.

A. Staff Improvement

The training components of the MFAD project are intended to increase the institutional capacity of the Government of Uganda to meet Uganda's agricultural development needs. The related means are degree training at PhD and MS level in the US and at MS level in Uganda, and non-degree training in short technical courses, workshops, conferences, seminars and on-the-job training in Uganda and overseas. The fields selected seem to be appropriate at this time and the Five-Year Training Plan developed provides a framework for the consideration of changes needed and annual updates.

Consistent with the phasing and development of the MFAD project, satisfactory progress has been made in all areas of staff development and a number of benefits beyond the original intent of the project have been experienced. The project has also assisted in developing a Five-Year Master Plan for Makerere University and a Faculty Handbook. Curriculum changes being instituted will have a long-term effect on the quality of graduates from the University. OSU complementary studies have contributed significantly to the establishment of a Food Science Program which is already underway.

The Technical Assistants have assisted in maintaining a quality teaching program pending the return of degree candidates and have made a significant contribution to the faculty. Additional students have been placed in overseas degree programs without cost to the MFAD project or to GOU. Because of increasing confidence in MU/FAF and the role it will play in Uganda, three Ugandan PhD nationals are scheduled to return to Uganda from IARCs and the US in the next four months, a noteworthy return of scarce high quality talent.

The establishment of a Department of Agricultural Education and Extension as supported by the MFAD study on the Status of Agricultural Extension Education in Uganda is being initiated. The improvement in the quality of extension workers and secondary level teachers will have significant impact on technology transfer and farmer acceptance of improved agricultural technologies. Continuing education for extension workers and specific efforts on extension/research linkages will improve the impact of research efforts.

The assistance of MFAD in developing a degree program in Agricultural Engineering in MU/FAF using the first two years of the regular engineering curriculum in the Faculty of Engineering will have major effects on the quality of graduates and is an innovative and solid change. The importance of being able to provide graduates to meet the demand of the private sector for these graduates should not be underestimated. It was reported to the Team that these graduates are expected to receive salaries up to 20 times greater than other MU/FAF graduates, attesting to the demand for agricultural engineers in the private sector.

A similar collaboration with the Economics Department of the Faculty of Arts for agricultural economics majors should be considered. The Agricultural Economics Department should be encouraged to provide an independent but qualified analytical input for agricultural policy at the national level.

University Faculty should be encouraged and assisted to collaborate in a more integrated manner on farming systems research with their colleagues within the University and with MOA scientists.

U.S. Degree Training: Agricultural Education/Extension and Agricultural Engineering will receive 3 MS holders returning to Uganda in 1990. Two agricultural education graduates will work at MU/FAF beginning in September, 1990. Currently, 14 PhD candidates and 9 MS candidates are making satisfactory progress in academic programs. The final 11 candidates (7 PhD and 4 MS) will begin studies in the 1990 fall semester. By the end of calendar 1990 all candidates will have been placed and will have begun their studies.

Uganda Degree Training: With the support of MFAD, MU/FAF has developed and initiated a 4 year BS curriculum which began in October, 1989. A total of 35 students will be funded at the MS level under Phase II of the Project as indicated in the 5 year Training Plan. While the first 3 of these candidates have commenced their studies the program as a whole is behind schedule.

Non-Degree Training. Non-degree training has been used essentially to provide technical upgrading of key individuals in the MOA and MU/FAF, particularly in Phase I. Participants have attended workshops, short-courses, seminars, and specially designed study programs. Over one half of the person months allocated for non-degree training have already been used. Appendix V shows Seminars and Conferences Conducted and Appendix VI, Short Term Training in the United States.

B. Research and Teaching Facilities Rehabilitated

The rehabilitation of the Kawanda and Namulonge MOA research stations has provided the basic infrastructure of buildings, roads, and fields necessary for productive and effective research. The restoration of almost 400 buildings/living quarters and the development of a dependable water supply are very impressive. In addition, maintenance and repairs are being provided for farm equipment and other items used in research operations.

The improvement in the MOA research laboratories indicates that the impact of the renovated and equipped laboratories will be felt well before the end of the project.

The rehabilitation of the main Faculty of Agriculture and Forestry building on the MU campus and the facilities at MUARIK has provided the basic infrastructure of buildings, roads, laboratories, and fields for effective teaching and research.

Progress in the rehabilitation of the laboratories for the MU/FAF indicates that the impact of the project on the quality of teaching and research will also be felt well before the end of the project. This impact at MUARIK will be conditioned, however, by the resolution of continuing problems of water and electricity supply. Faculty members indicated that they were now equipped to carry out most of their research program but that adequate resources for living remained a problem. In fact, the availability of facilities to do research has intensified the decision of MU/FAF professors as to whether to give up a second job in order to do research. To do so means there must be other sources of remuneration. There is still inadequate transportation for increasing research.

The use of local currency for research projects has significantly increased the research output and experience of scientists. Uncertainty on the amount and availability of funds has seriously affected the quality and number of research proposals for 1990-91 compared with prior years. It has seriously affected the morale of the faculty and their willingness to spend time on developing acceptable research proposals.

RECOMMENDATIONS

The Team proposes:

- . that a better system be developed for funding small research projects for MOA and MU scientists from local currency or donor funds - small research grants should each be in the range of \$7,000 - 8,000.
- . that continuing efforts be made to adequately remunerate productive scientists and faculty.
- . that GOU should address the problems of continuity of water and electricity supply at Makerere University within the duration of the project.

C. Research Planning and Priorities Established

The Evaluation Team's assessment of the MFAD contribution to Ugandan Agricultural research capability is based on visits with administrators and, scientists of the National Agricultural Research System (NARS), Makerere University Faculty of Agriculture and Forestry, scientists of MFAD, and observations of on-station and on-farm commodity research trials. Visits and discussions were conducted at Makerere University, Namulonge, Kawanda, and Kalengyere research stations, and on-farm farmer trial sites. The Team was particularly interested in learning and observing the process followed in the planning and establishing research program priorities. It was always attentive in looking for factors affecting impact of the on-station research upon the farmers and the long term sustainability of the research system. The factors of primary concern related to on-station research were the borrowing of technology as to disease and insect tolerance, maturity dates, germplasm materials

and climatic conditions. On-farm trials were reviewed in light of farmer adaptability to the farming system and the extension of new technology among the farming community. Sustainability factors concerned the establishment of commodity teams, training, and other resources needed to implement an efficient research system. The Team's focus was on the commodities of maize, sorghum, sunflower, potatoes, beans and passion fruit. There was universal praise from farmers for the contribution research is making in providing relevant technology to increase their production. The MOA and MFAD project have instituted a mid-term and annual review process whereby the commodity research program is assessed and a work plan developed for the next two crop cycles in the country. This review process has instituted a means for sound planning and prioritizing of commodity research. The formation of commodity teams which include the MOA and Faculty of Agriculture and Forestry scientists has contributed to the institutionalization of developing a meaningful research planning and prioritizing system. The research planning and prioritization process employed by the MOA and MFAD project has benefited greatly from the annual research reports. The reports provide detailed analysis of the agronomic data collected from both on-station and on-farm research trials. Note Appendix III: List of Documents Reviewed for annual research reports. In the Team's judgement a good foundation has been laid for planning research commodity programs.

RECOMMENDATIONS

The Team proposes:

. that to further strengthen the research planning and prioritization process, prior to the establishment of NARO, the GOU should initiate an effort to involve the ministers of Ministry of Agriculture, Ministry of Animal Industry and Fisheries, Ministry of Finance, Ministry of Planning and Economic Development, Ministry of Cooperatives and Marketing, Ministry of Environment Protection and the Vice Chancellor of Makerere University;

. that an annual meeting be convened with representatives of International Agricultural Research Centers (IARC) located in Nairobi, Kenya and CIMMYT in Zimbabwe and the Dean, Faculty of Agriculture, Secretary of Research, the Commissioner for Agriculture and the MFAD Chief of Party to develop jointly an annual IARC and MOA work plan. These annual work plan sessions should alternatively be held in Nairobi, Kenya and Kampala, Uganda.

. that MOA and MFAD jointly undertake the development of a budget which fully covers all planned expenditures for operating the research centers. The budget should include the specific expenditures needed for maintenance of the physical structures, salaries and other personnel costs, farm machinery maintenance and operating costs, land preparation, seed, fertilizer and pesticide costs, and laboratory and research supplies. This budget exercise should be conducted for the Namulonge, Kawanda, Serere and Kalengyere research centers, and should be done during December, 1990 and January, 1991 so as to be available for inclusion in the 1991/1992 GOU budget. These budgets should be developed based on the priority of the research conducted at the center. These individual research center budgets will be the aggregate parts to be included in the total MOA research budget submitted to government.

Commodity Research

The MFAD project as designed was to focus on the commodities of maize, soya beans and sunflower. During the first two and one-half years of the project, other commodities have been added, namely beans, potatoes and some horticultural crops, ie passion fruit, pineapple and tomato. It is noteworthy that during the last two years the MOA with MFAD project assistance has released about 11 new food crop varieties with another 11 varieties pending immediate release.

Maize Research

The maize research program is focused on germplasm evaluation, disease and insect tolerance, fertilizer treatment, plant population and planting dates. The Team found a well balanced and effective maize research program. The program is researching both open-pollinated and hybrids, probably a 70/30 per cent split. We observed work at on-station and on-farm locations.

The maize research program is addressing with substantial success the short-term constraints of the small holder farmers by generating technologies to improve productivity, such as early maturity and disease tolerance. The Team observed on-station trials where yields were 6 to 8 times the traditional yields and on-farm trials yielding 2 to 3 times over average farmer production levels. All farmers visited had praise for the new varieties being introduced. Marketing of maize was mentioned as a constraint. However, 2 farmers told the team that they had solved the constraint, one by selling ground maize meal to a primary school for a feeding program and the other by selling green roasting ears.

Another constraint mentioned by some farmers was the lack of a reliable source to purchase improved seed. Farmers reported to the Team that many reserve a part of the yield for planting the next crop. Also it was reported that farmer to farmer seed purchases were being made in on-farm testing areas. (See Appendix VII: Soybean, Sunflower and Maize Varieties Released). The MFAD Project has sponsored three reports titled "Plan for Maize Research and Seed Production in Uganda"; "Five Year Food Crops Research Plan 1989-1994" and the "Accerlated Food Crop Eroduction Strategy." These plans are providing the present strategy for the maize research program and the Maize Commodity Team. (See Appendix VIII: Maize Commodity Research Team).

Soybean Research

The soybean research program is focused on germplasm evaluation, agronomy, pathology, entomology, rhizobium, and inoculation. The Team was able to observe the research work at both on-station and on-farm sites. A Soybean Commodity Team has been established by NARS. (See Appendix IX). Soybean research has been undertaken to meet the near-term needs of edible oil, domestic or household food, and animal protein supplement. The on-station research has been directed to screening germplasm from IITA and the International Soybean Program (INTSOY) located at the University of Illinois. Date of planting, plant population, and inoculation trials have constituted the major focus regarding the agronomy work. On-farm trials have been instituted to test acceptance of soybean varieties growing

under farmer management. Farmer yields of soybean have been increased over traditional yields as reported to the Team during the visits to on-farm research trials. The Team was not informed of any problems regarding the marketing of soybeans. It appears that a large share of soybeans produced are consumed by the farmers' households. The availability of a reliable seed market was mentioned as a constraint to increasing the production areas of soybeans. Farmers reported that they generally save some of their production for the next planting. The soybean research program has released one new variety since inception. (See Appendix VII). It was noted that the previous release of a soybean variety to farmers was in 1971.

In addition to the release of a soybean variety and those under farmer testing, the MFAD project has sponsored three reports: (1) Five Year Food Crops Research Plan 1989-1994; (2) Soybean Development in Uganda; and (3) Accelerated Food Crops Production Strategy. These reports are providing the strategy for the Soybean Commodity Team.

Sunflower Research

The focus of the sunflower research program is on variety testing (open pollinated and hybrid) and fertilizer treatments. Sunflower production is relatively small with an estimated 2000 hectares grown in the country. The short term goals of the research program are to borrow and screen varieties adaptable to Uganda's growing conditions. It was noted by the Team that the most suitable regions for growing sunflowers are in the eastern and northern parts of the country. These regions are currently somewhat inaccessible. This accessibility issue does raise the question of the short term gains that might be accomplished by the sunflower research program. The Sunflower Commodity Research Team (See Appendix X) has been established and able to release one sunflower variety to farmers. Also an on-farm testing program is underway in 5 districts. During the visit to on-farm trials, one farmer exhibited a sample of cooking oil extracted from his most recent production. Farmers reported to the Team that the need for cooking oil was a major basis for growing sunflower. The marketing at the farm gate of sunflower seeds was mentioned as a constraint. The sunflower research program follows a strategy outlined in three reports sponsored by the Project on assessment of Sunflower Production potential; Research Plan for Uganda; and a Five Year Food Crops Research Plan 1989-1994 and the Accelerated Food Crop Production Strategy."

The overall research manpower situation for Uganda is shown in Appendix XI.

RECOMMENDATIONS

The Team proposes:

. that the Maize Commodity Team and Soybean Commodity Team conduct peer reviews of the research program between the 1991 and 1992 crop cycles. The maize peer review should include scientists from the Makerere University, MOA, U.S. University contractor, IARC i.e International Institute of Tropical Agriculture (IITA); International Maize and Wheat Improvement Centers, (CIMMYT); and International Center for Insect Physiology and Ecology, (ICIPE). The soybean peer review should include scientists from INTSOY as well as other external scientists as appropriate.

The peer reviews should be conducted when IARC scientists and other external scientists are on in-country visits so as to reduce travel costs.

. that the economists of the Faculty of Agriculture and Forestry and of the new Socio-economic Unit of the MOA, become more involved in assessing the costs/benefits of the on-station maize, soybean and sunflower research programs.

. that the on-farm testing of acceptable maize, soybean and sunflower varieties be expanded to include additional districts of Uganda, as appropriate. The rate of expansion needs to be governed by the absorptive capacity of the MOA research staff to train additional extension agents.

. that annual workshops be held with the private seed production and distribution entities, government seed production unit, MOA and Faculty of Agriculture and Forestry to review recent research findings and plan for seed production and distribution of the newly released maize, sunflower and soybean varieties.

. that the Sunflower Commodity Team conduct a peer review of the research program between the 1990 and 1991 crop cycles. The peer review should include scientists from Faculty of Agriculture and Forestry, MOA, the U.S. University Contractor and one or two other scientists from either Zambia, Zimbabwe or the U.S.

. that the project place more emphasis on the household level processing of soybeans. INTSOY can provide considerable expertise in the processing and utilization of soybeans.

Research Commodity Priorities

The Team was asked to assess the research priority given to the major crops being grown in the country, especially as to the commodities being provided support under the MFAD project. The Team believes the commodities maize, soybeans, and sunflower now being supported are important to the overall development of the agricultural sector. Sunflower does raise a question as to present priority. It has been reported to the Team that the most suitable ecological zones for growing sunflower are in the northern and eastern parts of the country. However, we do believe that the MFAD project, the MOA and the Faculty of Agriculture and Forestry, should commence a planning effort to assess the entire oilseed research program. As pointed out earlier in this evaluation, other oilseed crops such as cotton, simsim (sesame), and groundnuts, are important commodities in providing domestic cooking oils. The relatively large number of acres devoted to the growing of groundnut, cotton and simsim require an active research program. In order to assess the importance of the various commodities being grown for cooking oils a set of criteria should be established to help prioritize and govern the amount of resources needed for researching oilseed crops. For example, an oilseed planning group may wish to develop a set of criteria which would include the areas devoted to each commodity; the state of international research program; future demand for the commodity; and the distribution of benefits derived by growing the commodity.

We believe that if an oilseed research study was undertaken by the MOA and the Faculty of Agriculture and Forestry with assistance from the MFAD project during the current life of the project, it would provide the necessary background data and commodity prioritization for the next phase of A.I.D. support to agricultural research in Uganda.

RECOMMENDATIONS

The Team proposes:

. that an oilseed research study be planned and conducted during the current life of the project. The study should be undertaken by scientists of MOA, Faculty of Agriculture and Forestry as well as one or two scientists that may be proposed by the U.S. University Contractor. The study should include all oilseed crops grown in the country, i.e. groundnut, cotton, simsim, soybean and sunflower.

D. On-Farm Research and Research Extension Linkages

The on-farm research/testing activity under the MOA and Faculty of Agriculture and Forestry has been initiated in the 5 districts of Luwero, Masindi, Masaka, Kasese and Mubende and in 5 districts in Mbarara. (There are 34 districts in the country). On-farm testing as it is now being carried out serves as an important extension of the on-station commodity research programs. The Team was able to observe on-farm commodity testing of such crops as maize, sunflowers, soybeans and potatoes. Agroforestry trials were observed in the Kabale region.

It is interesting to note that on-farm testing was initiated in Uganda in the early 1900's which involved primarily export crops. The current efforts in carrying out on-farm research are being initiated by a number of institutions and based on a commodity approach. These institutions and commodities reported and/or observed by the Team included USAID support for maize, sunflower, soybeans, beans and potatoes; the International Development Research Center (IDRC) Canada on root crops, CIMMYT on maize, CIAT on beans. (see report "Critical Issues in On-Farm Research in Uganda" March 1989.)

It was reported to the Team that diagnostic surveys have been initiated in the districts of Masindi, Masaka and Luwero. We wish to note that the Team did not receive copies for review of these diagnostic surveys. Hence the Team believes that the MOA and MFAD project have been unable to take into consideration the full knowledge of on-farm constraints contained in the surveys. The on-farm research programs covering the commodities of maize, soybeans and sunflowers are being carried out in 5 districts and in 80 villages by about 40 agricultural extension agents. There are 6 farmers per extension agent cooperating with the testing programs. The extension agents involved in the on-farm research program are being trained in production practices by the Commodity Teams and the MFAD research scientists. On-farm testing of maize is implemented by providing each cooperator with a "Technical Package" consisting of improved seed and fertilizer for one-half acre. The soybean on-farm testing activity provides each cooperator with a technical package of improved seed inoculated with rhizobium and phosphate fertilizer materials. The technical package covers one-half acre. The sunflower on-farm testing activity provides only improved seed to each cooperator. This is sufficient for one-fourth acre.

The potato on-farm testing program in the Kabale region was commenced in 1989 with the assistance of the International Potato Center (CIP). On-farm testing is being implemented in 5 districts. The program is currently based on two newly released varieties being borrowed from Rwanda through the PRAPAC network. One objective of the potato on-farm testing program is rapid seed multiplication. Farmers are given one bag of pure improved potato seed with the production being made available on a for-sale basis to commercial producers. Also, the farmers return 2 bags of seed to the MOA program. As an example, one farmer visited produced 20 bags of seed which was being sold to about 10 to 12 commercial producers. The team was told that in one district 15 farmers produced sufficient potato seed for another 600 growers. Farmers are also being assisted in constructing improved storage facilities. The new varieties are yielding between 5 and 10 times over yields from traditional varieties. It should be noted that the last improved potato variety was released about 15 years ago. See Appendix XII: Potato Varieties Released and Pending Release and Appendix XIII Potato Commodity Research Team.

Agroforestry Research

An on-farm agroforestry research program is being implemented by the International Council for Research in Agroforestry (ICRAF) in the Kabale region. During a visit to an on-farm research site, the Team observed tree plantings made in 1988. Four varieties of trees are planted along terraces to help reduce soil degradation, and provide livestock forage in the future. The Team was told that the research activity receives its most enthusiastic support from women farmers. It was encouraging to note that the ICRAF supported agroforestry activity is cooperating closely with the MOA and CIP potato program and the CIAT bean program. MFAD supports MU/FAF, Department of Forestry research at MUARIK on agroforestry in collaboration with ICRAF.

Bean Research

The Regional Bean Research Network in East Africa is implementing an on-farm research activity. The on-farm research (advanced yield trials) is carried on at 8 locations to test the adaptability of bean varieties, disease and insect tolerances and consumer preferences. There are 5 districts involved in testing bean varieties. The Bean Commodity Team leader reported that the last bean variety released to farmers was about 20 years ago. Now under the East African Bean Research Network program, 3 varieties have been released. (See Appendix XIV: Bean Commodity Research Team and Appendix XV: Bean Varieties Released or Pending Release).

RECOMMENDATIONS:

The Team proposes:

. that the MOA and MFAD project scientists arrange a more workable mechanism with the Faculty of Agriculture and Forestry, in assessing the economics of the trials and in conducting diagnostic surveys. The Team was informed a second workshop on on-farm research in Uganda will be held later this year, the MOA and MFAD commodity scientists should participate with the faculty in this meeting.

. that the MOA Commodity Research Team strengthen their collaboration with the Faculty of Agriculture and Forestry in conducting socio-economic analysis of on-farm research trials. For example, the cost of labor in adopting new technologies is one factor needing economic analysis.

. that the MFAD project develop a detailed local currency budget for the costs of carrying out the on-farm research activities, as it relates to maize, sunflower and soybean. The local currency budget should include expenses to collect the socio-economic data during the balance of the life of project.

. that the baseline and diagnostic data collected by the MU/FAF in the districts of Masindi, Masaka and Luwero be made available to the MOA and MFAD project staff as soon as it is approved for distribution by the Agricultural Economics Department of MU/FAF.

. that the MFAD project work with the MOA and Faculty of Agriculture and Forestry in developing a scheme where the third year students studying agriculture will conduct economic commodity studies on farmer adoption rates of new technologies, and mechanisms of how technology is transferred at the district level.

. that the MOA and MFAD project management arrange for long-term relationships with the CIMMYT On-farm Research Network located in Nairobi, Kenya, as a follow-up to the MOA, MFAD and CIMMYT co-sponsored workshop to be held in 1990.

E. National Agricultural Research Organization (NARO)

The NARO is being established as a semi-autonomous organization to address problems in the priority areas of planning, organization, and management of research for the development of the agricultural sector in Uganda. It was reported to the Team that the Government of Uganda has accepted in principle the establishment of NARO. In discussions with officials of the MOA and Faculty of Agriculture and Forestry, the Team ascertained support for the organization. The time table outlined in the report prepared by Working Group 4 of the Agricultural Task Force sets forth 1 July, 1990 as the time for NARO to be operational as a legal and financial entity. It is evident that NARO will be unable to meet this time frame. Our general discussions regarding NARO have been positive albeit it appears that considerably more time will be needed before the organization is operational. It is the Team's recommendation that the MFAD project management lend support to the establishment of NARO and provide assistance, as appropriate. The suggested type of support could be in helping to establish commodity research planning and priorities, development of research institute budgets and manpower training.

RECOMMENDATIONS

The Team proposes:

. that to further support the NARO the USAID mission negotiate with the Government of Uganda in using Commodity Import Program or PL 480 to generate currency in setting up an Endowment/Research Foundation Fund. If this fund could be capitalized at 20 million dollars it would provide operational resources for an

agricultural research program to be implemented by the Government of Uganda. It is suggested that a foundation like Rockefeller, Ford or a University foundation could be helpful in studying the potential as well as establishing an Endowment/Research Foundation in Uganda.

F. International Agricultural Research Centers (IARC) and Bureau for Science and Technology (S&T) program relationships

The Team believes there are excellent relationships existing among the MOA, Faculty of Agriculture and Forestry, U.S. University Contract Team and the external institutions of the IARC and Bureau for S&T. Relationships consist of research planning and collaborative research activities in the areas of agroforestry, beans, potatoes, maize, soybeans, cassava, fertilizer materials and rhizobium production. The MOA and Faculty of Agriculture and Forestry are obtaining germplasm and cultural technologies from external institutions as well as establishing professional relationships. The Team was impressed by the number of external institutional relationships. However, it is believed that to continue to exploit these linkages will require more planning, monitoring and evaluation of the collaborative research activities by the MOA, the Faculty of Agriculture and Forestry and U.S. University contract team. The IARC and Bureau for S&T institutional relationships currently include:

- . CIAT and the bean program
- . CIP and the potato program
- . IITA and the soybean, maize and cassava program
- . CIMMYT and the maize and farming system program
- . IFDC and the phosphate fertilizer program
- . INTSOY and the soybean program
- . INIBAP and the banana and plantain program
- . ICRAF and the agroforestry program
- . ILCA and the small ruminants
- . NIFTAL and rhizobium production for legumes
- . IBSRAM and the soil studies program.

Bureau for Science and Technology

At the request of the Mission in 1987 a proposal was developed, TECHNOLOGY FOR RESOURCE EVALUATION AND AGRICULTURAL DEVELOPMENT (TREAD), to obtain closer relationships between the Mission's program and S&T/AGR's projects. MFAD had already been working with INTSOY and NIFTAL in the area of soybean processing and utilization and biological nitrogen fixation. The Mission also had received input from IFDC earlier regarding the fertilizer situation in Uganda, particularly the phosphate area. This collaboration has continued.

TREAD was later modified into a second document that detailed possible collaboration of MFAD with NIFTAL, INTSOY, SMSS, TSHM, and IBSNAT. This has been included in the current MFAD budget. NIFTAL has collaborated with training and putting in place a rhizobium production plant at MUARIK, which is operating. There is some question concerning whether the plant is actually providing sufficient inoculant for all research and whether MU has a plan/program in place to increase the supply of inoculant to farmers.

SMSS with support of FRMS and MFAD collaborated with the characterization of the soils of the 3 experimental stations and provided a survey of the stations. This was expanded slightly and a document was produced called MAJOR LAND RESOURCE AREAS OF UGANDA which has been distributed to the MOA and MU. Further collaboration is expected regarding training and support in soil survey, resource planning, and soil laboratory backstopping. TSMM in collaboration with MFAD has produced a proposal for a project on ORGANIC MATTER MANAGEMENT FOR SOIL RESTORATION AND NUTRIENT USE EFFICIENCY is in the process of implementation. An effort to develop a document which will synthesize present knowledge of soil and water management research in Uganda is presently being considered. IBSNAT is collaborating with MFAD and MU/FAF to develop an IBSNAT site as part of the world-wide network. Some training for this collaboration has also taken place at IBSNAT headquarters in Hawaii. Additional linkages are needed with the Peanut CRSP, Bean/Cowpea CRSP, sorghum and millet INTSORMIL, peanuts and ICRISAT.

RECOMMENDATIONS

The Team proposes:

. that the Ministry of Agriculture and Makerere University Faculty of Agriculture and Forestry negotiate a Memorandum of Understanding with NIFTAL which details the collaboration needed to make the rhizobium production plant fully operational to produce materials for the planned research program.

. that the MOA and MU/FAF with the assistance of MFAD team negotiate a Memorandum of Understanding with centrally funded projects in order to expand relationships and implement research activities within the absorptive capacity of GOU research institutions; the goal being to develop long term networking professional relationships with the U.S. scientific community.

VIII PROJECT INPUTS

A. USAID

Financial resources were provided by AID to assist the Government of Uganda in the rehabilitation, retraining, and redirecting of its agricultural manpower and institutional capacity in food crops production. The Ministry of Agriculture and Makerere University Faculty of Agriculture and Forestry were the two institutions involved.

The management and administration of the project has been shared by a number of parties acting in a variety of roles and capacities. Problems of management and administration including the need for clear channels of communication and command, the need for rules and regulations governing operations, and the need for participating agencies to clearly understand their roles were the subject of extensive conversations between key individuals in the project at a Retreat held at Jinja in November 1989 and a number of agreements were reached. (See First Annual MFAD Retreat minutes, P5). It is clear to the Team that significant problems remain

in this area which dilute the efficiency of the project and the personal satisfaction of a number of the project's important personnel.

The Team believes:

. that the number of people involved in the management of the project - 2 at OSU, 1 at UM, 2 at AID/Kampala, 1 at REDSO, 2 in the GOU and the MFAD Team - is a source of delay and confusion and that the roles, responsibilities and channels of communication should be clarified;

. that the project staffing pattern does not realistically reflect the project's workload in the area of leadership and administration. The Team Leader's time allocations were recently changed from 30% administrative and 70% technical to 70% administrative and 30% technical, although the required PIO/T amendment has not been issued. Realistically however, the absence of sufficiently experienced and authoritative fiscal and administrative support staff means that the Team Leader continues to be involved in fiscal analysis/accounting and executive officer activities to the disadvantage of the substantive, technical, integrative and planning requirements of such a complex project. The fact that a significant portion of the funds for project support are provided in local currency is a significant workload element which compounds the problems of lack of adequate support staff.

. that the physical separation of the Team Leader's office from his support staff (and the telephone and radio) causes significant inconvenience and inefficiency.

. that the need to mesh and accommodate the differing fiscal accounting system demands of USAID, GOU and the OSU Research Foundation add to the fiscal workload.

. that many communications affecting the implementation of the project occur verbally or in brief hand-written notes without copies to concerned parties or to the files.

The team noted also that it found among USAID, GOU and MFAD staff interviewed widely varying perceptions on a number of elements of administration (responsibilities, procurement, channels of communication etc.) and even on whether problems existed. The Team believes significant problems do exist and should be addressed.

The fact that a significant portion of the financial resources provided to the project are in the form of local currency has resulted in some problems of planning and implementation of activities. The amount of local currency availability is not known with a sufficient lead time to do effective planning of research activities. The Mission's current efforts to move toward a semiannual or annual disbursement should improve effective use of these funds, if disbursements are made on time. It at least should decrease the process time of obtaining disbursements from GOU. The demand by other donors for local currency counterpart funds will increase the pressure on the Mission to allocate these funds to other activities. The proposed World Bank "Headstart" activity is an example.

RECOMMENDATIONS

The Team proposes:

- . that a full-time financial analyst/accountant from OSU should be employed as a member of the MFAD team in Kampala
- . that the MFAD office organization should be streamlined to reduce the number of individuals reporting to the COP.
- . that the roles, areas of authority and responsibility and communication channels for USAID, GOU and MFAD should be clarified and procedures developed for their implementation. The Team believes a workshop of key AID, GOU, MFAD and OSU figures should be called for this purpose soon.
- . that the number of people involved in management of the project be reduced as far as possible with maximum managerial responsibility being vested in the MFAD Team Leader.
- . that the MFAD Team Leader and his office staff should have adjoining offices with linking communications facilities.
- . that communication between USAID, MFAD, MOA and MU/FAF affecting the implementation of the project be written with copies to concerned parties and to the appropriate files.
- . that a "plan" for local currency support with a time frame sufficient for effective utilization should be developed.

1. Technical Assistance

Technical assistance was provided through long-term resident advisors and through short-term consultants or university backstopping. The technical assistance provided was appropriate and effective. Changes in assistance from that originally proposed in the project paper appears to have been appropriate and by consensus of the parties concerned.

The technical assistance team provided by the Title XII contractor is very effective. However, part of the intent of Title XII legislation is to develop long-term relationships with U.S. institutions. The lack of tenured faculty on the MFAD team (only 2) is of concern to the Team as it does not maximize the opportunity to strengthen this long-term relationship.

While the long-term technical assistants were intended to provide temporary faculty at MU/FAF while permanent faculty received further training, it is clear that gaps will occur between the departure of the TAs and the return of newly trained Ugandan faculty. These gaps may need to be addressed by short-term technical assistants. Such TAs may be U.S. faculty on sabbatical leave or under other arrangements. (See Appendix XVI: TA Schedule).

Short-term technical assistants have been a major source of a number of outstanding reports that will provide the MOA, IIU and GOU with information for planning, prioritizing and implementing programs. (See List of Documents Reviewed).

While there was some justification for the technical assistance to assist in crops beyond the three food crops identified in the Project Paper, the decision to work on sunflowers and potatoes does not seem to have been supported by detailed analysis. The Team does not recommend that any further changes be made at this time but recommends that any further changes be supported by analyses which indicate relationships to the Food Production Strategy and the Five-year Crops Plan.

A program in soil and water conservation is needed to ensure the long-term productivity of the natural resource base for food production. While the Agricultural Engineering group is beginning work on soil erosion, closer integration of the soil resource base into the farm system is warranted. The issue of resource conservation should be considered as a follow-up activity to MFAD. Both activities would be consistent with U.S. Congressional mandates on environmental sustainability.

The reasons for the turn-over in Chief-of-Party (3 in 5 years) were not readily apparent to the Team and did not appear to have been due to the technical assistance inputs provided. At this point, the final decision on the replacement of the Research Advisor has not been made. The Team believes it is not necessary to replace the position with the original TOR. The Team noted that in a number of cases TORs do not reflect TAs responsibilities as they have evolved and should be updated.

The November, 1987 evaluation indicated that the lack of a "team" approach by the Contractor's personnel was a problem to effective functioning. The current Evaluation Team feels that significant progress has been made in this regard, but that further progress in strengthening a Team approach including AID and host country bodies is required. The Annual Retreats initiated in November, 1989 will help provide for a basis to improve overall communication among the participants.

Technically the project is excellent. The primary weaknesses lie in the area of management and administration and will require continual attention.

RECOMMENDATIONS

The Team proposes:

- . that means be found for short-term OSU consultants who have contributed major studies in support of the project, e.g. Accelerated Food Crop Production Strategy, to return at a later time to update their work. This will help strengthen the long-term OSU/Makerere University relationship at relatively low cost and provide important inputs and continuity.

- . that socio-economic research studies at both MOA and MU/FAF should be strengthened by employing third year MU/FAF students.

. that OSU faculty should be encouraged to spend sabbatical leaves at MU/FAF or MOA as a means of strengthening research/teaching programs and to consolidate OSU/MU long-term relationships.

. that the Retreats initiated in November, 1989 to review the project's progress should be continued annually and the periodic meetings of the project's principals to review management/administrative issues should be held quarterly.

2. Training

Uganda has a long history of having excellent agricultural research and teaching programs. Its record of overseas educated participants returning to Uganda is excellent and indicate that providing overseas graduate training is an excellent means of returning in Ugandan agricultural research and teaching institutions to their former quality. While some "leakage" may occur, past experience indicates that these trained individuals are not lost to the country but frequently contribute at higher levels in governmental or private sector positions.

The training funded under the MFAD project includes long-term post-graduate education both abroad and in-country, short-term training at IARCs, specialized courses and workshops, and attendance at conferences. The training program to-date is satisfactory. Some delays and changes have occurred but these are within normal expectations for a project of this magnitude and complexity. The contractor has placed participants with due regard for their training needs and commendable efforts have been made to provide well-rounded programs.

No major or significant complaints were received concerning the appropriateness or timeliness of the training. The Team believes that the time and funding allocated in the Project Paper for the completion of the graduate programs (18 months for MS; 30 months for PhD) is probably inadequate, especially for participants who are returning to the classroom after many years absence. This will impact on the budget allocated for training and on the scheduling of TAs to teach at MU/FAF. Participants departing Uganda for the U.S. should receive further information on the terms and conditions of their study grants and on conditions in the U.S.. Students and OSU faculty question whether to conduct thesis research in Uganda needs to be considered on an individual basis. It was noted that there are significant practical issues as well as added costs associated with conducting research in Uganda.

There is a perception by students, MFAD and advisors that the process of determining elements of participants' academic training such as thesis title, program details, and attendance at professional meetings, is unnecessarily bureaucratic and should be decided between MU/FAF, MFAD or MOA, participants and academic advisors.

The number of participants initially intended seems to have been appropriate for the project and the system capability. (See Appendix XVII, Degree Training Matrix).

RECOMMENDATIONS

The Team proposes:

- . that the time allocations for degree training be reviewed and budget adjustments made accordingly: any recovery funds for degree training studies in the U.S. be used to strengthen highest need areas at MU/FAF/MOA.
- . that any changes in time requirements for degree training particularly in the Crop Science and Agriculture Engineering Departments should be reviewed for their implications for TA assignments, short-term contractor consultants and sabbaticals.
- . that participants' program details, thesis titles, attendance at professional meetings and location of research should be the joint responsibility of the MFAD Team Leader, Dean of MU/FAF, Sec'y of Research/MOA, the participant and the relevant advisor/institution of study.
- . that USAID/MFAD conduct exit training sessions to inform participants of the overall MFAD project and the terms and conditions of AID sponsorship so that they can effectively represent the MFAD project and development assistance in general.

3. Rehabilitation

The rehabilitation assistance on the 3 research stations was appropriate and very successful. The Team feels that the terms of the Project Paper will be fully met before the end of the Project. The MFAD project rehabilitation specialists have been very effective, particularly since the number was decreased from 5 to 3 and the number of buildings to be rehabilitated was increased. The Phase II changes in stations and the addition of structures over the initial plan were appropriately planned and implemented.

Funds were sufficient to rehabilitate the stations to a level that provides a solid base for future maintenance. There were delays in procurement which made it difficult to keep work moving forward without interruption. An REDSO/Nairobi suggested change in a Nairobi based procurement agent was particularly problematic (one order is currently outstanding for 10 months). Lack of local currency continuity also presented problems of maintaining work crews efficiently. Since procurement for rehabilitation will essentially be complete when current orders arrive, the Team has no specific recommendation.

There is justification for supporting the rehabilitation of the whole Kabanyolo station rather than only those areas relating to the specific MFAD crops. This is particularly true as the Kabanyolo Farm is a teaching facility, related to MU/FAF. Rehabilitation of the women's hostel at MUARIK should be reconsidered given the GOU's recent emphasis on increasing the education of women at Makerere University.

Maintenance was not considered an output in the Project Paper. Maintenance was regarded by the November, 89 Evaluation Team as a necessary component of rehabilitation. The continued and increasing demands placed on GOU financial

resources by donor projects make it improbable that the GOU can provide the funds for maintenance. The MOA has budgeted for maintenance in the past but funds have not been released by the Treasury. If NARO comes into being, it could provide a significantly better option. The consultant report on "Maintenance Program and Rehabilitation Phase-out Plan" provides the basis for making the necessary decisions on future courses of action. It is essentially a financial decision as to funds being available and whether the Mission feels it is more important to hold to the "letter" and require GOU to maintain or to keep its investment in rehabilitation and allow GOU to "buy" time for an improved economy. The Team believes that maintenance is a high priority if funds are available but should not detract from the research program. A means of ensuring reasonable care and maintenance should be put in place and accepted by anyone provided housing.

The use of Peace Corps Volunteer (PCVs) to assist in station maintenance and training was considered at an earlier stage of MFAD and has been requested again. The Team endorses this concept as an effective low-cost means of assisting the MOA to put in place an improved maintenance and training program.

RECOMMENDATIONS

The Team proposes:

- . that USAID, MOA and MU/FAF should review and consider seeking funds to complete the rehabilitation of the women's hostel at MUARIK to support the GOU and MU's emphasis on training women.
- . that a more complete training program for technicians necessary to maintain the rehabilitated facilities should be implemented consistent with the consultant's report.
- . that the project should provide the funds to maintain the facilities during the LOP while assisting the GOU to put in place a system of effective management and maintenance (est. \$30,000 per station, per year).
- . that a plan with cost estimates to rehabilitate the Serere Research Center be undertaken with consideration being given to the placement of scientific and other staff, laboratory and farm equipment and other needed facilities. The development of this plan should be a joint effort involving USAID, the GOU and the MFAD team.
- . that a plan, reflecting changing research priorities, should be developed for the continuing rehabilitation of the Kabanyolo research facility in case additional funds become available from AID or other donors.

4. Commodities

The complexity of procurement channels (3: OSU, IQC and MFAD project) and procedures resulted in major delays in the procurement of commodities. Delays were contributed to by the lack of the prime Contractor's full responsibility for procurement. Currently, because of confusions in the procurement process, a PIO/C

signed a year ago for farm equipment and rehabilitation materials is only now being bid.

Adequate control and maintenance programs are not in place to maximize effective long-term use of certain items such as vehicles and farm equipment. Preventive maintenance is cost-effective but requires a system to track requirements.

RECOMMENDATIONS

The Team proposes:

- . that procurement procedures of the Project Paper should be simplified and more direct authority given to MFAD management.
- . that additional training in systems of control and in actual maintenance be provided

B. Government of Uganda

The GOU contribution to the MFAD Project comes from the Ministry of Agriculture and Makerere University, the cooperating Ugandan entities. Contributions have been provided from GOU annual budgets, in the form of in-kind contributions or from government-owned PL-480 and commodity import generated funds. Categories of expenditure include research teaching, rehabilitation of facilities and project support.

The GOU has provided local costs associated with the project-related research work at Kawanda, Namulonge and Kabanyolo, the Variety Trial Centers, the On-farm trials and the student teaching activities. In the rehabilitation area, the GOU has supported the worker allowance program, and the purchase of rehabilitation and maintenance supplies. Local funds have been supplied on project support for local supplies, petrol, oil, lubricants, local hire TA support staff salaries and expenditures for office support.

The projected GOU financial contribution of all types for 1990-91 is 869,627,500 Shillings. (See Appendix XVIII: Government of Uganda Contributions, 1990-91). Actual GOU regular budget contributions to MOA research alone in 1988-89 totalled 129,291,883 Shillings.

The GOU involvement in agricultural projects with other donors is shown in Appendix XIX.

C. The Ohio State University

1. OSU/Columbus Backstopping

The Ohio State University administration and Faculty have demonstrated commitment to the effective administration of the MFAD Project. Overall the project has been well managed and the field team well supported. Participants have been placed in

appropriate universities and programs. OSU staff are to be commended for above-average efforts to place students in strong academic programs sometimes in spite of less than desirable GRE scores. Faculty interviewed demonstrated a personal knowledge of and interest in their advisees and a strong desire for PhD candidates to undertake high quality research relevant to future Ugandan needs.

OSU fiscal records are maintained by the Ohio State Research Foundation in formats not wholly consistent with USAID. Clarifying expenditure categories periodically is a time-consuming task for the MFAD Team Leader and the campus coordinator.

RECOMMENDATIONS

The Team proposes:

. that the OSU Research Foundation devise a mechanism for providing the MFAD COP with AID-compatible financial reports.

2. Sub-Contracts

OSU administers sub-contracts with the University of Minnesota for procurement, Experience Incorporated for rehabilitation staff, and with Fort Valley State College (FVSC) to provide Technical Assistance in horticulture. FVSC is the Title XII (1890) partner of OSU through a joint Memorandum of Understanding. These contracts do not seem to present problems in administration. It is noted, however, that under the University of Minnesota procurement contract procedures supplies are shipped only when a container is filled. This has led to unacceptable delays in the arrival on the project of some rehabilitation supplies. An appropriate recommendation appears under Commodities above.

3. OSU Financial Contribution and Complementary Activities

The Ohio State University has complemented its activities under the MFAD Project with a number of activities designed within the objectives of the project and to establish a long-term relationship with Makerere University.

These complementary activities have been well designed to stretch project funding available for the training of Ugandan students, to contribute OSU faculty experience to Makerere University and to develop long-term faculty relationships. A particular contribution has been assistance with the initiation of a department of Food Science which, while outside the scope of the MFAD Project, is critical to the fulfillment of the MU/FAF role nationally and regionally.

The OSU life of project (1988-93) contribution was projected at \$2 million. Actual contributions in this category for the period 1988-June 30, 1990 are \$835,545. (See Appendix XX: OSU Contributions).

IX BENEFICIARIES

A. Trainees

The persons trained and educated are the most direct beneficiaries of the project. They will be able to make a greater contribution to the productive capacity of the country.

B. MU and MOA Staff, MU Students

MU faculty and researchers and MOA researchers, district agents, and administrators will benefit directly by their collaboration with research supported under the Project. They will be a more productive human resource base for the country to grow economically.

MU students will benefit directly by better and more relevant instruction because of the training and research assistance provided.

C. Farmers

Cooperating farmers involved in on-farm trials or demonstrations will benefit directly through examples of better agronomic practices on their farm. Other farmers will benefit by having access to better trained extension agents and actual examples of improved farming practices.

D. Women

Women have already benefited from the project and will continue to benefit in important ways. Over 15% of the MOA and MU candidates for U.S. PhD and MS degrees are women. Over 50% of the farmers participating in the on-farm trials visited by the Team were women, indicating women are being visited by extension agents and are receiving materials for testing. The technology packages being tested are clearly relevant to and welcomed by women farm operators. Policy changes announced by the GOU in August, 1990 will confer advantages on women with regard to admission to higher education and will increase the number of women available for MOA, MU/FAF and the private sector employment. The current Minister of Agriculture is a woman and a graduate of MU/FAF.

X LESSONS LEARNED

A. The time-frames projected for Ugandan participants in the Project Paper for MS degrees (18 months) and PhD degrees (30 months) are unrealistic where students are returning to study after an absence of many years.

B. In a period of 2 - 3 years it has been possible to engage farmers in on-farm trials and for them to begin to open new markets for increased commodities and for them to become conveyors of seed to other farmers.

C. It will not be possible for the GOU to absorb recurrent project costs by the end of Phase II of the project as projected in the Project Paper. In spite of most encouraging policy and resource divisions by the GOU, donor support will have to be founded for some recurrent cost as a follow-up project.

D. GOU civil service salary levels are currently and for the foreseeable future will be insufficient to support staff and their families. Unless supplementary remuneration is provided a significant if not the major portion of faculty and researchers' time will be absorbed in income producing activities not directly related to their official positions.

E. To retain the aesthetic/functional level of the current rehabilitation of station houses and other buildings will require extensive funding. Experimentation should be continued to devise low cost/long durability maintenance methods and materials.

XI. RECOMMENDATIONS

The Team's recommendations for action are included in the body of this Evaluation report. The Team regards the recommendations below as most important for achieving the project's goals and objectives with maximum efficiency.

The Team proposes:

A. that a full-time financial analyst/accountant from OSU be employed as a member of the MFAD team in Kampala as soon as possible.

B. that management/administrative lines of responsibility and authority be defined clearly and maximum management authority be placed in the hands of the MFAD Team Leader in accord with the GOU, USAID and MFAD agreements reached at the retreat in November, 1989.

C. that participants' program details, thesis topics and research location should be the responsibility of the MFAD Team Leader, Dean of MU/FAF, Secretary of Research/HOA and the relevant institution of study.

D. that the project provide the necessary funds to maintain the facilities during the life of project while assisting the GOU to put in place an effective system of management and maintenance (est. \$30,000 for station per year); and a plan, consistent with changing research priorities, be developed for continuing research facility rehabilitation should funds become available from USAID or other donors during the life of project or in the future.

E. that a more efficient system of research proposals and reliable funding be worked out for local currency and donor funds to enable MOA and MU/FAF scientists conduct research projects in the range of US\$ 7,000 - 8,000; and that continuing effort be made to adequately recompense productive scientists and faculty.

F. that the MOA, MU/FAF and MFAD convene an annual meeting with representatives of International Agricultural Research Centers (IARCs) located in Nairobi, Kenya and the Dean (MU/FAF), the Secretary of Research, the Commissioner of Agriculture and the MFAD Team Leader to develop faculty an IARC/MOA workplan. These annual workplan sessions should be held alternately in Nairobi, Kenya and Kampala, Uganda.

G. The Agricultural Economics Department of the Faculty of Agriculture and Forestry and of the new socio-economic unit of the MOA be strengthened and become more involved in assessing the costs/benefits of on-station and on-farm maize, soybean, sunflower and horticulture crops.

APPENDIX I

MANPOWER FOR AGRICULTURAL DEVELOPMENT
PROJECT EVALUATION
SCOPE OF WORK

Section One: Activity to be Evaluated:

The Manpower for Agricultural Development Project (MFAD) is a ten year effort to assist the Government of Uganda to rehabilitate, retrain and redirect its agricultural manpower and institutional capability in food crops production. It was initially funded for a period of five years and extended for approximately five additional years. The project is being implemented by the Ohio State University as prime contractor. The project has two major components: (1) the Ministry of Agriculture research component; and (2) the Makerere University component. Within each major component, five key elements are addressed: (1) technical assistance; (2) reorganization of agricultural research; (3) support for conducting agricultural research including on-farm testing and improved linkages with extension; (4) training (postgraduate and short-term); and (5) rehabilitation and equipping research facilities. In order to keep the mandate of the project within reasonable bounds, the research is confined to questions relating to food crops and focuses primarily on maize and oilseeds.

Project number: 617-0103

Contract number: APR-0103-C-00-4047-00

Title: Manpower for Agricultural Development Project

Cost:	<u>Phase I</u> <u>(\$000)</u>	<u>Phase II</u> <u>(\$000)</u>	<u>Total</u> <u>(\$000)</u>
AID	9,900	15,000	24,900
GOU	5,255	9,700	14,955
OSU	-	1,600	1,600
	-----	-----	-----
Total	15,158	26,300	41,455

Life of Project Dates: 8/15/83 -8/26/93

Section Two: Purpose of the Evaluation:

The purpose of this interim evaluation of MFAD is twofold. First, independent judgments are desired to determine whether the present project configuration, management methods and working relationships between the three groups involved, (1) The Ministry of Agriculture and Makerere University; (2) the prime contractor and subcontractors; and (3) the USAID Mission, are producing the expected outputs in the areas of training, research station rehabilitation, and food crop research and extension. Secondly, to the extent possible, areas of improvement are to be identified and recommendations are sought which may help improve the achievement of planned project outputs.

Section Three: Background:

(a) Introduction

The project is designed to assist the Government of Uganda stimulate small farmer agricultural production. More specifically, it is designed to assist the Ministry of Agriculture and Makerere University to address critical constraints and provide institutional support to implement activities in agricultural research, education and link this to agricultural extension. Since late 1984, the Ohio State University has been the prime contractor charged with the responsibility of implementing Phase I of the project on behalf of USAID. As a result of a coup in July, 1985 and a new government in January, 1986, activities were suspended for almost a year until May, 1986.

Phase II is a logical progression of activities initiated in Phase I. During the extension, some of the activities differ somewhat from what has been done previously. The thrust of the project remains on food crops and AID resources will be focused more keenly on maize and oilseed crops in the Ministry of Agriculture and those departments in the Faculty of Agriculture and Forestry that are critical to a food crop strategy.

By the end of the project the Government of Uganda should have an improved capacity for institutional collaboration in training, research and extending technologies that will more effectively utilize farmer's resources in increasing food crop production and it will be funding all recurrent costs associated with on-going activities originally financed under this project.

(b) Project Purpose and Objectives

The purpose of the project is to assist the Government of Uganda to rehabilitate, retrain and redirect its agricultural manpower and institutional capacity in food crops production.

In order to achieve the end of project status the following outputs need to be developed:

- 1) A strengthened and better trained University staff and improved curriculum for training and upgrading the future cadre of high level agricultural professionals including researchers and extension workers.
- 2) A strengthened research capability resulting from staff training and improved research facilities.

- 3) Results of on-station experiments and on-farm trials indicating means of improving performance of total farming systems and increasing food production.
- 4) Verified technological packages, developed through farming system research methods, that have been adopted by at least a limited number of farmers.

Section Four: Statement of Work:

The following evaluation components should be considered and addressed in the Team's report. The Team is also expected to use their professional judgement with respect to additional items they may wish to add in the discussion presented in their report.

1. Assess the adequacy and effectiveness of the various elements of the project management and/or project design. The following should be addressed:
 - a) Is the USAID Mission providing the needed and appropriate support for the project team?
 - b) Assess the adequacy of the U.S. Home Office of the Prime Contractor in supporting the team in Uganda.
 - c) Assess the current operational organization of the technical assistance team. Is the role of the Team Leader clearly and properly defined? Is there a productive working relationship among team members? Are the counterparts included in the decision making process?
 - d) Are reports (technical and financial) filed in a complete and timely manner?
 - e) Are annual progress reviews held with senior GOU and USAID officials?
 - f) Given the evolving conditions in Uganda, is the current mix and quantity of technical assistance appropriate? Is the current selection of two or three food crops adequate or should more emphasis be placed on crops such as beans, potatoes and cassava?
 - g) With regard to the project outputs, compare the present status to what is being planned for by the end of the project.
 - h) Has the Government of Uganda met its share of project commitments in terms of funding required etc.

2. Assess the adequacy and effectiveness of the development and implementation of research activities undertaken with The Ministry of Agriculture and with Makerere University.

a) Evaluate the general planning and implementation of research:

- Has an adequate process of research planning and setting of priorities been established?
- Are research data being adequately analyzed and the results preserved in a clear manner in reports or publications?
- Are local currency research grants being clearly and professionally prepared?
- Has sufficient support been provided for the reorganization of agricultural research?

b) With respect to on-station research:

- Assess the general quality of the research work.
- Are the trials and replications being organized, supervised and conducted in a rigorous manner?
- Does the work concentrate on ranges of inputs which are appropriate for Ugandan conditions?
- Is the conceptualization and supervision of the work being increasingly transferred to Ugandan professionals?

c) With respect to on-farm research:

- Who are involved in planning trials?
- Assess the general quality of the work.
- Are appropriate diagnostic surveys and analysis being conducted and utilized?
- To what extent are the packages being tested on farms, selected based on criteria of economic returns and social acceptability?
- Assess the role the extension agents play in the on-farm research trials.
- Are procedures being put in place to assess the impact of the on-farm trials in the general area of the research?

- Assess the efforts being made to address the special concerns of women and to include women in the technology development and dissemination process?
 - Assess the capacity building and skill transfer to National Program Scientists.
 - Assess the relationship with the National on-farm Research Program.
- d) With respect to the dissemination of research results:
- Are linkages being developed between research and extension?
 - Are developed new varieties or selections being released in a timely manner?
 - Is information about production packages being distributed to extension workers, to cooperative societies, to farmers (both male and female)?
 - Is a body of baseline data being developed in a manner which will allow an impact assessment at the end of the project.
3. Assess the adequacy and effectiveness of the training program and of the assistance in planning given Makerere University and the Ministry of Agriculture:
- a) Assess the progress of work designed to "up-grade" the Faculty of Agriculture and Forestry.
 - b) Assess the progress being made in updating the curriculum in agriculture at Makerere University.
 - c) Examine the balance between "theoretical" and "applied" training.
 - d) How effective and supportive was the Prime Contractor in academic placement and supporting the post graduate degree candidates? Assess the relative placement of participants at OSU and other universities?
 - e) Assess the process of selecting trainees.
 - f) Assess the effectiveness of the short-term training.

4. With respect to the process of experiment station rehabilitation:
 - a) Assess the progress in completing this process.
 - b) Assess the sustainability of the rehabilitation process.
 - c) Have training priorities considered the needs of the mid-level managers on these stations?
 - d) Assess the commitment of resources for continued maintenance of these stations.

Section Five: Methods and Procedures:

The Evaluation will take place from July ³⁰ 40 to August 23, 1990 in Uganda. If logistically possible, one U.S. based individual will spend two days on the campus of the Prime Contractor collecting information about the support provided from the head office and interviewing selected graduate students. The evaluation will be done in accordance with the provisions of the contract which calls for an interim evaluation during this period of LOP and as a regular part of AID project monitoring and oversight.

The AID project manager and the project team leader will, in consultation with the Dean FAF, MU and the Secretary for Research, MCA, prepare a preliminary travel and study program for the Evaluation team's guidance during the first week in Uganda. The team leader or his deputy will make arrangements to provide office space, meeting space, accommodations, logistical support and appropriate secretarial support for the Evaluation team.

The team will follow the format and guidelines established by USAID in the supplement to Chapter 12, AID Handbook 3, Project Assistance, entitled, "AID Program Design and Evaluation Methodology Report No. 7". The team will use the following data collection and interview methods:

- 1) Review the relevant project papers and contracts, the periodic (quarterly) reports and previous evaluation reports.
- 2) Interviews and discussions with appropriate scientists, technicians and trainees involved in the project and an examination of their activity records, data analysis and conclusions.

- 3) As necessary to gather further data, visits to experiment stations, field research sites, University training facilities, and farmers participating in on-farm research trials.
- 4) Interviews with the Secretary for Research, Ministry of Agriculture; the Dean, Faculty of Agriculture and Forestry; the Director, USAID/Kampala; the Supervisory ADO, USAID/Kampala, and Project Officer MPAD.
- 5) Review the most current financial audit. Visit the offices where financial and administrative records are kept in Kampala and discuss procedures with the staff responsible for maintaining the records.

Section Six: Evaluation team Composition:

A four person evaluation team will be composed of the following types of people:

- 1) A Project Management and/or Design Specialist:

This person should be the team leader and be familiar with AID project procedures and documentation, with characteristics of successful project management and with agricultural research, training and extension activities. This person should have a proven record of successful team building and demonstrated writing abilities.

- 2) A Co-Team Leader:

This person should be a senior Ugandan official who has participated in project evaluation before and is very familiar with the MPAD project. In addition, this team member should be able to assist the remainder of the team with respect to the suitability of project activities to the Ugandan situation.

- 3) An applied, Agronomic Researcher:

This person should have a minimum of ten years of experience related to agronomic research under on-station and on-farm conditions, preferably in Africa. This person, should be capable of assessing the practicality of the on-farm and on-station research agenda and procedures with respect to the Uganda situation, the linkages between research and extension, and the suitability of the baseline data for providing benchmarks for later impact evaluations. This person needs to be sufficiently senior and experienced to maintain the respect and confidence of fellow researchers. Previous evaluation experience is desirable.

4) **A Training/Rehabilitation Specialist:**

The qualifications of this team member should include the ability to assess the participant training programs and also an assessment of the rehabilitation of the Ugandan experiment stations. An individual who has been a dean or assistant dean of resident instruction and who has worked in a developing country university would be an appropriate candidate, or someone who has had at least 5 years experience in working with AID trainee participants and rehabilitation efforts.

Section Seven: Reporting Requirements:

The format of the evaluation report will follow AID guidelines established in "the Supplement of Chapter 12 of AID Handbook 3", and will include an executive summary, a table of contents, the body of the report, and appropriate appendixes (e.g evaluation scope of work, contact list and bibliography). The body of the text, exclusive of executive summary and annexes, should not exceed 30 single spaced pages.

The Evaluation team will specify conclusions based upon the findings of the study and prepare a set of recommendations for improving the future project implementation process. The report will be written jointly by the evaluation team under the coordination of the team leader who will be responsible for debriefing appropriate USAID, MOA and UM staff as well as submission of the final evaluation document to the relevant institutions.

The draft of the evaluation report is due prior to the Team's departure from Uganda. The Team Leader will facilitate the preparation of the report. The final report is due no later than 30 days after completion of the evaluation.

Section Eight: Funding

Financial support for this evaluation will originate from the evaluations line item of the project budget. Any USAID direct participation from REDSO/ESA or AID/W will be financed by Operational Expense budget.

Doc: MPADEVAL/jk/5
Doc. MPADPEVA

APPENDIX II

EVALUATION TEAM ITINERARY

Washington

July 17, 1990

USAID/AFR/TR Technical Officer and State Department Desk Officer

Ohio

July 18-20, 1990

The Ohio State University, Columbus:
Campus Coordinators, Faculty and Ugandan Students
(Team Leader)

Uganda

July 30, 1990

MFAD Team Leader and USAID, ADO, Project and Evaluation Officers (Team Leader)

July 31, 1990

USAID Project Officer and MFAD Team Leader
(Team Leader)

August 1, 1990

AID Staff - ADO, P.O. and Evaluation Officer and MFAD Team Leader

August 2, 1990

MFAD Technical Assistants
USAID: Director, Deputy Director, ADO, Project Officer, Evaluation Officer

August 3, 1990

Namulonge Research Station: MFAD TA's, MOA Program Directors

August 6, 1990

Kawanda Research Station: MFAD TA's, MOA Program Leaders.
Makerere University: Dean of Faculty of Agriculture and Forestry, Secretary of Research, Commissioner of Agriculture

August 7, 1990

Luwero Research: DAO, MFAD TA's, Extension Agents, Farmers.

August 8, 1990

Ministry of Agriculture and Forestry, Dean and Department Heads.
Ministry of Agriculture, MFAD TA's.

August 9, 1990

Kachwekano Potato Program, Afrena Project, Kachwekano

Kabanyolo University Farm: MU/FAF Scientists, MFAD TA's

USAID: Project Officer, Controller, Accountant.

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August 10, 1990 Kalengyeri, MOA/DTC Officials
Bubale, MOA officials, farmers.
MFAD: Returned Participants
USAID: ADO and Project Officer.

August 11-12, 1990 Kampala: Report writing

August 13, 1990 Mityana, Mubende: On-farm Research;
MFAD TA's, extension agents, farmers.

August 14, 1990 Kampala: Report writing

August 15, 1990 USAID: Report Presentation (Draft)

August 17, 1990 USAID: Report Review

August 18-20, 1990 Kampala: Report Preparation

August 21, 1980 Kampala: Joint USAID/MFAD/GOU Report Review.

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APPENDIX III

LIST OF DOCUMENTS REVIEWED

1. **Five Year Food Crops Research Plan 1989 - 1994 Vol 1, E. Hartmans, June 1989**
2. **Report by Short-term Consultant on Horticultural Crops, H. D. Tindill, November 1988.**
3. **Phosphate Fertilizer and Agricultural Limestone Production and Distribution Feasibility Study in Uganda, Phase I, O. W. Livingstone, IFDC, May 1988.**
4. **Establishment of a Department of Food Science and Technology at Makerere University. D. S. Muduuli, I. Okello-Uma, P. M. T. Hansen, February - March 1988.**
5. **Report of the College/University Articulation Task Force, May 1990.**
6. **Data Availability, Constraints and Utilization in Uganda Report No. 1, Econometric Modelling and Policy Analysis of the Bean Industry in Uganda. Food and Agricultural Policy Unit (MFAD), December 1989.**
7. **ACDI - Uganda - Makerere University, Kampala.**
8. **FY 1990-91, Plan Of Work, MFAD.**
9. **Makerere University Faculty of Agriculture and Forestry, Five-Year Development Plan (Draft).**
10. **Critical Issues in On-Farm Research in Uganda. Proceedings of Workshop held in the Faculty of Agriculture and Forestry, Makerere University, 29 31 March, 1989.**
11. **The Status of Agricultural Extension Education in Uganda and the Establishment of an Agricultural Extension Education Department at Makerere University, Faculty of Agriculture and Forestry, Makerere University/MFAD, April 1988.**
12. **Minutes of the Third Annual Review of the MFAD Project held on Thursday, 1990 at 2:40 p.m. in Council Room, Makerere University.**
13. **MFAD Quarterly Report**
 - a) January - March 1989
 - b) April - June 1989
 - c) July - September 1989
 - d) October - December 1989
 - e) January - March 1990
14. **Uganda MFAD Project Paper, 1983.**
15. **MFAD Rehabilitation Report: Present Status, Projections for LOP and Phase**

Two W. E. Fenster, October 10, 1987.

16. Revised USAID/MFAD Project Rehabilitation Report, May 1989.
17. Maintenance Program and Rehabilitation Phase-Out Plan MFAD (617-0103), March 5 - 28, 1990
18. Uganda Concepts Paper, FY 88-90, USAID/Kampala, March 1987.
19. Action Plan FY's 1989/90, USAID/Uganda.
20. ABS FY 1992, US/AID Uganda.
21. Uganda Accelerated Foodcrop Production Strategy MOA/MFAD, Kampala April 1990.
22. Uganda: Headstart Program for Agricultural Research and Extension, World Bank 1990.
23. Groundnut Program - Brief for USAID Evaluation Team 1990.
24. Republic of Uganda: Establishment of a National Agricultural Research Organization (NARO) ISNAR, August 1988.
25. First Annual MFAD Retreat: Jinja - Uganda November 27-29, 1989.
26. Major Land Resource Areas of Uganda, SCS/SMSS, July 1990.
27. Plan for Supporting Agricultural Research and Faculties of Agriculture in Africa, AID, May 1985.
28. Manpower For Agriculture Development Project: Project Amendment, March 1988.
29. Project Evaluation (617-0103): MFAD November 1987.
30. Review of Irrigation Research Facilities, OSU/MFAD/USAID/UGANDA, September 1989, Robert W. Hill - Utah State University.
31. Social Structural and Agricultural Research Policy - 1987
32. Soybean Development in Uganda, Carl W. Hittle - 1987
33. Plan for Maize Research and Seed Production in Uganda - 1987 Ernest W. Sprague.
34. An Assessment of Sunflower Production Potential and a Research Plan for Uganda - Arlo Thompson, 1988
35. MFAD Project - 1989 Plan of Work
36. MFAD Project - Annual Food Crops Research Plan for Uganda, 1988
37. Ministry of Agriculture - 1988: Interim Research Report on Maize, Soybean

- and Sunflower Field Trials.
38. Ministry of Agriculture and MFAD Project, 1988: Research Report on Maize, Soybean and Sunflower Field Trials.
 39. MFAD Project - Research - Extension Specialist Team (REST) Concept, 1987.

APPENDIX IV

INDIVIDUALS INTERVIEWED

The individuals listed below were interviewed by Evaluation Team members for information on the Project.

State Department, Washington DC

Mr Carlton Terry, Project Officer.

AID Washington, DC

Dr Russell Backus, AFR/TR

REDSO/ECA

Dr Richard J Edwards, Agricultural Development Officer

Ohio State University, Columbus, Ohio

- . Dr Fred Hutchinson, University Provost
- . Dr David Hansen, Director, International Agricultural Programs
- . Mr Mark Erbaugh, Project Campus Coordinator
- . Dr Trevor Arscott, International Agricultural Programs Office (former Project Team Leader)
- . Dr Paul Henderlong, Faculty, Agronomy Department and Former Campus Coordinator
- . Dr Rattan Lal, Faculty, Agronomy Department
- . Dr Neil Smeck, Faculty, Agronomy Department
- . Dr Paul Hansen, Faculty of Food Science and Technology Department
- . Dr Joseph Havlicek, Faculty, Agricultural Economics Department
- . Dr Allen Lines, Faculty, Agricultural Economics Department
- . Dr Luther Tweeten, Faculty of Agricultural Economics Department
- . Dr Ron Borton, Agricultural Technical Institute
- . Dr Robert Gustafson, Faculty, Agricultural Engineering Department
- . Ugandan Students

USAID Kampala

- . Dr Keith Sherper, Director
- . Mr Stephen C Ryner, Deputy Director
- . Mr Gary Bayer, Agricultural Development Officer
- . Dr Albert Agard Jr. Project Officer
- . Ms Shirley A Erves, Evaluation Officer
- . Mr Rick Riley, Comptroller
- . Mr Charles Gordon, Project Officer
- . Mr Milton Obasoni, Accountant
- . Dr Everett Hendrick, Consultant (former Acting ADO)

MFAD Project

- . Dr Frank Calhoun, Team Leader and Soil Science Advisor
- . Dr Manuel Vanegas, TA, Agricultural Economics
- . Dr Charles Simpkins, TA, On-farm Research
- . Dr Charles Arnold, TA, Agricultural Engineering
- . Dr Ajmar Bhagsari, TA, Horticulture
- . Dr Guy Denton, TA, Agricultural Extension Education
- . Mr Gib Boyd, TA, Rehabilitation Supervisor
- . Mr Ted Lane, TA, Construction Specialist

Government of Uganda Ministry of Agriculture

- . Prof K Joseph Mukilibi, Secretary for Research
- . F A Ojacor, Acting Commissioner for Agriculture
- . John Kavuma, Assistant to Prof. Mukilibi

Namulonge Research Station

- . Dr V A O Okoth, Entomologist, Acting Director
- . Mr T D Kyetere, Breeder, Maize Program Leader
- . Mr P Tukamuhabwa, Breeder, Soya Bean Program
- . Mr Busolo Bulafu, Breeder, Groundnuts Program

Kawanda Research Station

- . Dr Israel Kibirige, Director
- . F N Nkakyekarera, Ag Head, Horticulture Research
- . N D Bafokuzara, Head, Crop Protection Research
- . E V Ssendiwanyo, Scientist, Soil Science Research
- . W N Higenyi, Assistant Farm Manager
- . T Sengoba, Head, Bean Research
- . John C Nakibirige, Estates Manager
- . H E Gridley, CIAT, Regional Bean Breeder
- . L K Yiga, NIC Horticulture Project
- . Shiva Prabhan, FAO Consultant
- . Minas Papademetriou, FAO Consultant
- . Karamura, Head, Biological Control Unit

Luwero On-Farm Research

- . Ocen J Stephen, Coordinator, On-Farm Research Program
- . Mr S K Mugwanya, Farmer
- . Mr Gabriel Sembuku, Farmer
- . Mr Sonko, Farmer
- . Mr Masembe, Farmer

Afrena Potato Project

- . Dr Douglas Reden, Coordinator, ICRAF
- . Mr Steven Byenkya, ICRAF, Agroforestry Project
- . MOA/OTC Official
- . Mr Karamagi, Farmer
- . Mr Tumwine, Farmer
- . Mr Mugunga, Farmer
- . Mr Barigayomwe, Farmer

MOA/CIP Potato Project

- . Mr A Kemanzi, Potato Research Coordinator
- . Mr James Komayombi, Kabale District Agricultural Officer
- . Mr Timothy Mafullira, Director, Kalenyere Highland Crop Research Institute
- . Mr Rogers Kanzibwera, Potato Agronomist
- . Mr James Nsumba, Potato Breeder
- . Mr Dominic Rybunuka, Seed Potato Production Specialist

On-Farm Trials, Bubale

- . DA/DES
- . Mr Karyengyeza, Farmer
- . Mr Rutuhe, Farmer
- . Mr Kanyarutokye, Farmer
- . Mrs Hunter, Farmer

Makerere University, Faculty of Agriculture & Forestry Kampala Campus

- . Prof John S Mugerwa, Dean
- . Dr S Zziwa, Acting Head, Agricultural Economics
- . Dr R L Adupa, Head, Crop Science
- . Mr V Kassenge, Farm Manager, MUARIK
- . Dr Julius Y K Zake, Head, Soil Science
- . Dr Gabriel N Kiwuka, Head, Animal Science
- . Dr Levi Kasisira, Acting Head, Agricultural Engineering
- . Dr David S Muduuli, Head, Food Science & Technology
- . Dr Patrick Rubahayo, Plant Breeder
- . Dr Deusdedit Rusoke, Crop Scientist
- . Dr Charles Nkwilne, Soil Scientist
- . Dr Sam M Sessanga, Crop Scientist
- . Dr John C M Odunga, Crop Scientist
- . Dr Tenywa Makooma, Soil Scientist

Kabanyolo University Farm

- . Valentine Kassenge, Farm Manager
- . Dr Charles Nkwilne, Rhizobium Production

Mityana On-Farm Research

- . Mr Katongole, Coordinator, On-Farm Research Program
- . Mr Ssozi, Principal, District Farm Institute
- . Mrs Silas Lyazi, Farm Operator
- . Mr Joseph Maula, Farmer
- . Mrs Dominic Magobwe, Farm Operator
- . Mr John Masembe, Farmer
- . Mr Daneri Jaggwe, Farmer

Mityana District On-Farm Trails

- . Francis Sozi, Principal, District Farm Institute
- . Emmanuel Katongole, Coordinator

APPENDIX V

SEMINARS AND CONFERENCES CONDUCTED

1. Short-course on potatoes at DFI Mityana, 2nd 1990.
2. Workshop: Pedagogy, curriculum development and evaluation, 20 participants, Bushenyi District Farm Institute. Jan 1990
3. Workshop Program development, evaluation FAO Horticulture project, 30 participants, Mukono DFI. Feb 1990
4. Workshop: On-farm research, Mukono DFI. Nov 1989
5. Workshop: BNF technology, VCCU, ACDI, MFAD. Oct 1989
6. Seminar: Efficiency in Agricultural Research
7. Seminar: African Basic foods, Soybean use.
8. Workshop: Farming Systems Research, MU/MOA. Mar 1989
9. Seminar: Banana production and research. Mar 1989
10. Seminar: Vegetable crop production and marketing. Mar 1989
11. Short course: Training, demonstrations, on-farm trials; 40 participants. Feb-Mar, 1989.
12. Seminar: Irrigation methods, Robert Hill. July 1989
13. Short course: Tractor and vehicle operation and maintenance. July 1989

28 July - 14 Sept 88	Ruth Mubiru Biochemical Technologist Animal Science MU/FAF	Basic laboratory techniques in animal science at OSU
28 June - 16 Aug 89	Charles Lwanga Principal Technician Crop Science MU/FAF	Basic laboratory techniques in crop science at OSU
21 June - 5 Aug 89	Ponciano Nemeya SO - Entomology Kawanda RS	Integrated Pest Management USDA TC 130-8, Texas Tech.
8 Aug - 6 Sept 90	John R. W. Aluma Head - Forestry MU/FAF	Forest management and teaching techniques at OSU
18 July - 24 Sept 90	Gadi Gumisiriza SRO - Legume Breeder	Soybean production and practices - OSU
11 Ju / - 10 Sept 90	Moses Idembe SO/Agronomist	Soybean production and practices - OSU
11 July - 13 Aug 90	Rev. Canon Sentongo University Secretary Makerere University	University administrative procedures - OSU
11 July - 13 Aug 90	D. B. Onyango Academic Registrar Makerere University	University administrative operation - OSU
27 June - 27 Aug 90	Georgina Hakiza RO/Plant Pathology Kawanda RS	Plant disease clinic operation - OSU
29 July - 11 Sept 90	Marion Okot Senior Lecturer Animal Science MU/FAF	Small animal extension methods, processing - OSU and Land O' Lakes
2 Aug - 8 Oct 90	Esther Lwanga Librarian Kawanda RS	Agric. research library training - OSU
29 July - 27 Oct 90	W. K. Tushemereirwe Plant Pathologist Kawanda RS	Plant pathology research methods, statistical techniques

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APPENDIX VI

SHORT TERM TRAINING IN THE UNITED STATES (MFAD-SPONSORED UNDER THE OSU CONTRACT (PHASE II))

12 July - 5 Sept 89	C. W. Baliddawa Head, Crop Science MU/FAF	Entomology - insect sampling data analysis at OSU
28 July - 13 Sept 88	David Katwire Technician Soil Science Dept. MU/FAF	Basic soils laboratory techniques at OSU
28 June - 16 Aug 89	Joseph Ssenyimba Laboratory Technician MOA/Kawanda RS	Basic laboratory techniques in soil science at OSU
19 June - 27 Aug 88	Christopher Ayo SO/Agronomist Kawanda RS	USDA Technical Course No. 13011 vegetable Crop Production and Marketing
28 July - 13 Sept 88	G. W. Muwonge Lab Technician Crop Science MU/FAF	Basic laboratory techniques in crop science at OSU
29 May - 5 Aug 88	Joyce / pa MOA/Public Service Commission	USDA TC 110-5: Agric. Ext. Programs for Developing Countries Univ. of Wisconsin
19 June - 13 Aug 88	J. C. W. Odongo PRO/MOA Entebbe	USDA TC 140-24: Management of Agricultural Research
28 June - 16 Aug 89	M. K. Luyira Lab Technician Soil Sci. MU/FAF	Basic laboratory techniques in soil science at OSU
21 June - 12 Aug 89	J.R.S. Kaboggoza Senior Lecturer Forestry MU/FAF	Forest products at OSU
28 June - 16 Aug 89	I. B. Sekalya Principal Technician Forestry MU/FAF	Forestry laboratory techniques at OSU

APPENDIX VII

SOYBEAN - SUNFLOWER AND MAIZE VARIETIES RELEASED
OR PENDING RELEASE, IIFAD, AUGUST 1990

CROP	VARIETY	DATE OF INITIA- TION OF STATION TESTING	DATE USED ON FARM TRIALS	DATE RELEASED	PENDING RELEASE
Soybeans	KABANYOLO1	1987	1987-88		1987
	NAHULONGE1	1987	1989		1989
Sunflowers	SUNFOLA1	1988	1988-89		1990
	S400	1987			1990
Maize	GUSAU-TZB-SR	1987	1988-89		1990
	EV8429SR	1987	1988-89		1990
	ACROSS 83	1987	1989		1990
	POPULATION	1989			1991

APPENDIX VIII

MAIZE COMMODITY RESEARCH TEAM
NAMULONGE RESEARCH STATION

1. V. A. O. Okoth, PhD. - Entomologist
2. T. D. Kyetere, MSc. - Breeder/Program Leader
3. G. Bigirwa, BSc. - Pathologist (Trainee)
4. D. Baguma, BSc. - Agronomist (Trainee)
5. T. Kalule, BSc. - Entomologist (Trainee)
6. J. J. Hakiza, on PhD. training - Breeder
7. P. Mijumbi, on MSc. training - Agro-Economist
8. N. Wajja MSc. - Agronomist, (seconded to ICRAF)

APPENDIX IX

SOYBEAN COMMODITY RESEARCH TEAM,
NAMULONGE RESEARCH STATION

1. **Dr. Gadi Gumisiriza, PhD. - Director of Research/Program Leader. - Breeder**
2. **Phinehas Tukamuhabwa, MSc. - Breeder**
3. **Dr. Tony Arach, PhD. - Agronomist**
4. **Jastus Imanyoha, MSc. - Agronomist**
5. **Moses Mbalule, BSc. - Agronomist**

APPENDIX X

SUNFLOWER COMMODITY RESEARCH TEAM

Lastus SERUNJOGI	H.S.	(On leave Ohio State University for Ph.D
Walter ANYANGA	B.S.	Acting Team Leader
Jolly MAMAKULA	A.A.	
Stella ADUMO	A.A.	
William ODONGO	A.A.O.	

Manpower Situation in Uganda's National Agricultural
Research System (August 1988)

Research Station/Institute	Research Scientists					Research Support Staff		
	BSc	Postgrad Diploma	MSc	PhD	Subtotal	Technologists/ AAO	Technician/ AAs	SubTotal
1. Kawanda - Agriculture	22	1	26	3	52	21	47	68
2. Namulonge - Agriculture	16		12	3	31	6	30	36
3. Serere - Agriculture	11		14	2	27	25	74	99
4. Kachwekano - Highland Agriculture	1		1		2	1	4	5
5. Mbarara - Animal Production	5				5	3		3
6. Entebbe - Animal Health	4	2	12	2	20	16	53	69
7. Tororo - Trypanosomiasis	11		8	3	22	7	23	30
8. Nakawa - Forestry	4	2	20		26			83
9. Jinja - Fisheries	4		16	2	22		6	16
10. Entebbe & Kajansi - Dept. of Fisheries		2	3	2	7			7
Subtotal	78	7	112	17	214			416
<u>Makerere University</u> (Agricultural & Veterinary Faculties)			36	48	84		29	29
Total	78	7	148	65	298	79	276	445

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APPENDIX XII

POTATO VARIETIES RELEASED OR PENDING RELEASE,
MFAD, AUGUST 1990
 (Field Range 42-6C.3 MT/ha)

VARIETY	DATE OF INITIA- TION OF STATION TESTING	DATE USED IN FARM TRIALS	DATE RELEASED	PENDING RELEASE
CRUZA	1987	1988-89		1989
SANGRIA	1987	1988-89		1989
381381-20	1987-88	1990-91		1990-91
381379-9	1987-88	1990-91		1990-91
575049-CEV- 69.1	1987-88	1990-91		1990-91
381380-1-13	1987-88	1990-91		1990-91
381382.34FV				

Other Varieties Resistant to Bacterial Wilt and likely to be released soon

- 381388.34
- 381382.34
- 381381.90
- 379633.93
- 381397.31

APPENDIX XIII

POTATO COMMODITY RESEARCH TEAM
(KABALE HIGHLAND RESEARCH STATION)

1. Mr. Mafulira Tim (Director)
2. Mr. Kanzikwera Roger (Agronomist)
3. Rubumba N. Dominic (Seed Multiplication)
4. Mr. Akimanze (National Potato Coordinator)
5. Dr. L. Sikka (Breeder)

APPENDIX XIV

BEAN COMMODITY RESEARCH TEAM

1. Coordinator
2. Pathologist (2)
3. Breeders (2)
4. On-farm Agronomist (3)
5. Agricultural Economist (1)
6. Virologist (1) (Makerere University)

In Training

Agronomist (1) PhD. level

Weed Scientist (1) MSc. level

APPENDIX XV

BEAN VARIETIES RELEASED OR PENDING RELEASE

Variety	Date of Initiation of station testing	Date used on Farm trials	Date released
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RUBONA 5

WHITE HARICOT

G 13671
(Climbing variety)

TA Schedule

	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		Tot mo											
	'88	'89	'89	'90	'90	'91	'91	'92	'92	'93												
	O	N	D	J	F	M	A	M	J	J		A	S	O	N	D	J	F	M	A	M	J
COP/Arsoott	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
COP/Calhoun					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	42
Crop Prod Simkins	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	52
Ag Ed/Denton				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	33
Ag Economist/Ngumbeki					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	30
Ag Econ/Vanegas	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	30
Hort/Bhagari				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	30
Ag Engia/Arnold				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
Crop Breeder/Baker				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
Sust Ag/Calhoun			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	5
Ag. Res. Adv. Fenster	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
Rehab/Boyd	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	27
Rehab/Baume	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	44
Rehab/Lane	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19
											Total	391										

SUMMARY SCHEDULE OF PERSONNEL ASSIGNMENTS

Degree Training Matrix (Summary to date & proposed for 1990-91)

	Name	MU or MOA	Degr.	Posted Field	Actual Field	Univer sity	Date Depart	Date Return
1	Ijoyi Fondru	MU	PhD	Ag. Econ.	Rurai Soc.	OSU	Dec-88	Dec-91
2	Lawrence Wabwire*	MU	PhD	Ag. Econ.		Mo	Aug-90	Aug-93
3	To be named**	MU	PhD	Ag. Econ.				
4	To be named**	MU	PhD	Ag. Econ.				
5	Joseph Kibalama	MU	PhD	Ag. Engin.		OSU	Dec-88	Dec-91
6	Moses Tenywa*	MU	PhD	Ag. Engin.	Soil Conserv	OSU	Sep-90	Sep-93
7	John Steven Tenywa	MU	PhD	Soil Sci.		OSU	Sep-89	Sep-92
8	Mary Silver	MU	PhD	Soil Sci.	Soil Micro	Fla	Aug-89	Sep-92
9	Adipala Ekwamu	MU	PhD	Crop Sc.	Plant Path	OSU	Sep-88	Sep-91
10	Robinah Ssonko	MU	PhD	Crop Sc.	Horticult.	Fla	Sep-89	Sep-93
11	Charles Ssekabembe	MU	PhD	Crop Sc.		OSU	Aug-88	Sep-91
12	David Mutetika	MU	PhD	Anim. Sci.		OSU	Sep-89	Sep-92
1	Biryabano Matsiko	MU	MSc	Ag. Ed/Ext		Minn	Sep-88	Jul-90
2	Margaret N.-Kasujja	MU	MSc	Ag. Ed/Ext		OSU	Sep-88	Apr-90
3	Jovan Tibeziinda	MU	MSc	Ag. Ed/Ext		Wisc	Sep-89	Aug-91
4	George Ruhara	MU	MSc	Ag. Ed/Ext		W Va	Aug-89	Aug-91
1	Benson Odongo*	MOA	PhD	Crop Sci.			Sep-90	Sep-93
2	Justice Imanyoha	MOA	PhD	Crop Sci.	Forages	Ut. St	Dec-89	Dec-92
3	Johnson J. Hakiza	MOA	PhD	Plant Br.		OSU	Jun-89	Jun-92
4	L.K. Serunjoji	MOA	PhD	Plant Br.		OSU	Sep-89	Sep-92
5	Christopher Butegwa*	MOA	PhD	Soil Sci.			Sep-90	Sep-93
6	D. Kyetere*	MOA	PhD	Soil Sci.	Crop Sci.		Sep-90	Sep-93
7	Matthias K. Magunda	MOA	PhD	Soil Sci.		Minn	Sep-88	Sep-91
8	Peter P. Esele	MOA	PhD	Plant Path.		TAMU	Aug-88	Sep-91
9	Gloria Mukulu	MOA	PhD	Entomol.		OSU	Sep-89	Sep-92
10	P. Padde*	MOA	PhD	Ag. Ed/Ext		Auburn	Sep-90	Sep-93
1	Drake Mubiru*	MOA	MSc	Soil Sci.		Ky	Sep-90	Sep-92
2	Patrick K.-Jjemba	MOA	MSc	Soil Sci.		Minn	Sep-88	Jul-91
3	O. Semalulu	MOA	MSc	Soil Sci.		Ky	Jan-90	Jan-92
4	George Lukwago	MOA	MSc	Soil Sci.	Ag. Econ.	Fla	Dec-89	Dec-91
5	Peter Mijumbi	MOA	MSc	Ag. Econ.		Fla	Jan-89	Jan-91
6	Mary Mugisa	MOA	MSc	Ag. Econ.		OSU	Sep-89	Sep-91
7	Gaudesius Opio	MOA	MSc	Ag. Engin.		Minn	Sep-88	Sep-90
8	Y. Obong	MOA	MSc	Ag. Engin.	Crop Sci.	WVa	Aug-89	Aug-91
9	J. Ssembatya (dec.)	MOA	MSc	Ag. Ed/Ext		OSU	Aug-88	Apr-89
10	Amos Edukut-Okiria	MOA	MSc	Ag. Ed/Ext		OSU	Sep-88	Dec-89

* Proposed candidates for 1990

** To be replaced by 3 MSc and 1 Makerere PhD.

APPENDIX XVIII

GOVERNMENT OF UGANDA CONTRIBUTIONS

	<u>Shillings</u>
A. PROFESSIONAL SERVICES	
Administrators (3 @ 50% time *40,000/- per month*12mo.)	720,000
Researchers (20 @ 75% time *15,000/- per mo.*12)	2,700,000
Technicians (40 @ 75% time*10,000/- per mo.*12)	3,600,000
SUBTOTAL A =	<u>7,020,000</u>
B. GOODS AND SERVICES	
1. Housing for TAG	
Makindye (\$3000/mo*400*12mo)	14,400,000
Entebbe (\$1800/mo*400*12mo)	8,640,000
Namulonge (\$1800/mo*400*12mo*3)	25,920,000
Kabanyolo (\$1600/mo*400*12mo*7)	53,760,000
SUBTOTAL B.1. =	<u>102,720,000</u>
2. HOUSING FOR MOA AND MU/PAP ADMINISTRATIVE & STAFF	
Administrative (\$1900/mo*400*12*3*5)	13,680,000
Researchers (\$1000/mo*400*12*3*5)	72,000,000
Technicians (\$600/mo*400*12*40*75)	86,400,000
SUBTOTAL B.2. =	<u>172,080,000</u>
3. OFFICE SPACE	
MU/PAP (\$300/off.*15 off.*400*12mo)	21,600,000
MOA(\$300/off.*11 off.*400*12mo)	15,840,000
SUBTOTAL B.3. =	<u>37,440,000</u>
4. RESEARCH STATION AND FACULTY FACILITIES	
Land for research at NRS, KRS and MUARIK (100ac*40000/- per ac)	4,000,000
VTC facilities for research (50ac*25000/- per ac)	1,250,000
Laboratories at NRS, KRS & MUARIK (50*\$500/mo*400*12mo)	12,000,000
SUBTOTAL B.4 =	<u>17,250,000</u>
SUBTOTAL B. =	<u>329,490,000</u>

	Shillings
C. TRAINING	
1. Continuation of salaries, housing & benefits during training. Value/mo=15000/- + 400,000/- = 415,000/participant (415000*426.5 person months)	176,997,500
2. Training facilities (45 days @ 12000/- per day)	540,000
3. Trainers from MOA & MU Staff @ 360 pers dys*750/- per day	270,000
SUBTOTAL C. =	177,807,500
D. ADMINISTRATIVE & FIELD SUPPORT SERVICES	
Field Workers (100@75% time*5000/- per mo.*12)	4,500,000
Secretary & Clerical (15 @ 60% time *7500/- per mo*12)	810,000
SUBTOTAL D. =	5,310,000
TOTAL II =	519,627,500
III. GOVERNMENT OF UGANDA CONTRIBUTIONS (U.S. GENERATED LOCAL CURRENCY)*	
MPAD Support	139,550,000
Ministry of Agriculture Research	129,524,070
MUARIK Research, Teaching & Maintenance	80,925,930
SUBTOTAL III =	350,000,000
TOTAL GOVERNMENT OF UGANDA CONTRIBUTIONS (II + III) =	869,627,500

*Reference FY 1990-91 Plan of Work.

Doc. PIL51/jk/4

(Accounting Officer - Permanent Secretary to the Ministry of Agriculture)

1	2	DETAILS	Estimate 1990/91	Approved 1989/90	Approved 1988/89	Actual 1987/88
05		RESEARCH	Shs'000	Shs'000	Shs'000	Shs'000
		10. Employee Costs:				
	110	Staff.....	0	21,517	17,254	3,568
	140	Group Employees.....	0	129,605	73,030	9,580
	150	Allowances, Overtime, etc	33,537	11,735	7,951	45
	210	Travelling and Transport of Persons (Inland)	100,000	25,946	19,626	4,266
	230	Travelling and Transport of Persons (Abroad)	16,175	4,178	6,735	334
	380	Recreation, Welfare and Entertainment	4,500	1,033	3,226	455
	390	Training	12,000	4,931	11,305	380
		20. Administration Costs:				
	330	Office Expenses	27,502	7,070	12,536	880
	350	Advertising and Public relations.....	1,800	920	2,307	23

(Accounting Officer - Permanent Secretary to the Ministry of Agriculture)

1	2	DETAILS	Estimate 1990/91	Approved 1989/90	Approved 1988/89	Actual 1987/88
		30. Supplies and Services:	Shs '000	Shs '000	Shs '000	Shs '000
	280	Hired Transport of Stores		0	1,922	0
	370	Computer Charges	3,740			
	410	Materials, Supplies and Manufactured Goods	35,779	15,320	34,740	1,263
	420	Books and Periodicals	40,000			
		40. Transport and Plant Costs:				
	250	Operation and Maintenance of Vehicles	138,168	43,050	15,446	544
	260	Operation and Maintenance of Vehicles (Operational).....		25,115	6,802	5,759
	720	Production and Machinery.....		0	0	565
		50. Property Costs:				
	310	Electricity, Water and Other Utilities.....	10,928	2,246	5,938	115
	340	Maintenance and Upkeep of buildings etc.....	2,821	1,816	11,795	73
	350	Rents, Rates and Conservancy.....		1,563	1,270	0
		TOTAL - Programme 05. Research	426,951	236,111	231,936	27,225
06		AGRICULTURAL EDUCATION TRAINING				

ESTIMATES FOR JOINTLY FINANCED PROJECTS

HEAD: 110 - MINISTRY OF AGRICULTURE

SECTION 2

PLAN CODE	PROJECT DESCRIPTION	LOCATION OF PROJECT	DONOR	TYPE OF ASSISTANCE	ESTIMATED EXPENDITURE 1990/91		
					DONOR US\$ '000	LOCAL US\$ '000	TOTAL US\$ '000
AG 23	SOUTHWEST REGION AGR. REHABILITATION PROJECT	MBARARA	IFAD & IDA	LOAN LOAN			
	Purchase of vehicles				57,499	0	57,499
	Consultancy fees				111,752	0	111,752
	Project staff allowances				11,304	16,183	27,487
	Transport of staff abroad				2,313	0	2,313
	Recreation welfare and entertainment				0	900	900
	Training				9,793	0	9,793
	Books & periodicals				1,083	0	1,083
	Operation & maintenance of vehicles				24,098	17,800	41,898
	Assistance to coo. groups				19,033	0	19,033
	Govt contribution to projects building				0	70,000	70,000
	PROJECT TOTAL				232,872	104,883	337,755
*/AG 37	ESTABLISHMENT OF PLANT PROTECTION & QUARANTINE SERVICES	KAWANDA	FAO	GRANT			
	Assets				24,041	0	24,041
	Purchase of vehicles				10	0	10
	Salaries (specialist)				26,435	0	26,435
	Staff allowances				4,508	5,161	9,669
	Operation & maintenance of vehicles				2,003	120	2,123
	Redesigning & plant quarter house				0	20,000	20,000
	Promises				20,756	0	20,756
	Miscellaneous				401	1,890	2,291
	Training				14,024	0	14,024
	PROJECT TOTAL				92,178	27,171	119,350
UG 6007	FARMING SYSTEM SUPPORT PROGRAMME		EEC	GRANT			
	Assets				293,299	10,000	303,299
	Purchase of vehicles and equipment				696,995	0	696,995
	Forex salaries & wages				143,473	0	143,473
	Operation & maintenance of vehicles				386,173	50,000	436,173
	Office expenses				171,511	0	171,511
	Others				188,377	0	188,377
	PROJECT TOTAL				1,879,827	60,000	1,939,827

ESTIMATES FOR JOINTLY FINANCED PROJECTS

HEAD: 110 - MINISTRY OF AGRICULTURE

SECTION 2

PLAN CODE	PROJECT DESCRIPTION	LOCATION OF PROJECT	DONOR	TYPE OF ASSISTANCE	ESTIMATED EXPENDITURE 1990/91		
					DONOR USHS '000	LOCAL USHS '000	TOTAL USHS '000
* AG 8657	AGRIC. INFORMATION & DOCUMENTATION SERVICE PROJECT	UWANDA RESEARCH STATION	FAO	GRANT			
	Equipment				39,060	0	39,060
	Furniture				0	1,046	1,046
	Foreign consultancy fees and allowances				6,010	0	6,010
	Operation & vehicle maintenance				0	949	949
	Office expenses				2,003	0	2,003
	Book & periodicals				1,202	480	1,682
	Printing & binding				0	23	23
	PROJECT TOTAL				44,276	2,098	46,374
* AG 63	UGANDA NATIONAL BEAN PROGRAMME	UWANDA	CIAT	LOAN			
	Forex salaries & wages				57,038	0	57,038
	Purchase of vehicles				4,007	0	4,007
	Local salaries and wages				10,478	0	10,478
	Project allowances				3,486	4,719	8,205
	Operation & maintenance of vehicles				20,034	344	20,378
	Other office expenses				4,648	792	5,440
	Training				18,933	0	18,933
	Lab. equipments				2,003	2,487	4,490
	PROJECT TOTAL				120,627	8,342	128,969
AG 22	NATIONAL CENSUS OF AGRICULTURE AND LIVESTOCK PROJECTS	NATIONAL	UNDP	GRANT			
	Assets				0	45,000	45,000
	Forex salaries & wages				42,818	0	42,818
	Purchase of vehicles				46,500	0	46,500
	Local salaries and wages				17,029	0	17,029
	Project allowances				13,323	45,000	58,323
	Operation & maintenance of vehicles				32,458	20,112	52,570
	Other office expenses				13,227	0	13,227
	Training				25,059	0	25,059
	Extending census to 6 other districts				0	5,448	5,448
	PROJECT TOTAL				180,311	115,560	295,871

APPENDIX XIX

OTHER DONOR INVOLVEMENT IN UGANDAN AGRICULTURE

Other donors providing support to the agricultural research program of the MOA include the World Bank, European Economic Community and the Food and Agriculture Organization. The World Bank plans to provide about 6 million US Dollars of assistance to the MOA through a

"Headstart Program for Agricultural Research and Extension." This program will commence providing resources to strengthen research work on priority crops and extension activities. The purpose of the Headstart Program is to promote immediate actions that will impact on crop diversification and facilitate sustained agricultural growth and development. The priority areas of the program as planned are dairy production, fish culture, cotton, simsim and groundnuts and forestry. The Headstart program is being planned as a 3 to 4 year program and scheduled to commence implementation in 1991.

The European Economic Community (EEC) is providing grant resources to the MOA for a Farming System Support Program. It appears the EEC resources are being utilized to support transportation, salaries and program operational costs. The team believes the MOA Farming System research program fits nicely with the on-farm research work of the MFAD project.

The Food and Agriculture Organization (FAO), is providing resources to a project of "Development of the Horticulture Industry." The development objectives of the project are stated as "the achievement of food self-sufficiency through the increased horticultural crops and diversification of the export base through the promotion of non-traditional crops in the country." The project is for a 4 year period with a United Nations Development Program input of about 2 million dollars. The MFAD project cooperating with MOA/FAO is carrying out research on tropical fruit and vegetables.

APPENDIX XX

SUMMARY OF OSU CONTRIBUTIONS TO PROJECT 1988 - JUNE 30, 1990.

I.	Fellowships/Tuition Waivers		
	- Fee Waivers (1989)	\$83,970	
	- Fee Waivers (1990)	38,849	
	- Fellowships (Wafwoyo)	38,850	
	- Post Docs (Odwongo)	6,250	
	- Post Docs (Latigo)	8,900	\$176,849
II.	Office Backstopping		
	- Henderlong (1988)	6,598	
	- Norris	27,323	
	- Hansen	29,376	
	- Hansen, D.J.	564	63,861
III.	OSU Faculty Travel to Uganda		
	- Paul Hansen (1988)	20,477	
	- Pablo Jourdan (1989)	8,405	
	- Allan Lines (1988)	8,702	
	- Smeck (1988)	7,815	
	- Calhoun (1989)	9,000	
	- Hedges (1988)	13,000	
	- Riedl (1989)	8,500	
	- Romig (1990)	11,200	97,641
IV.	Backstopping Related Travel in U.S.		
	- Travel to Minnesota	692	
	- Travel to Fort Valley (Henderlong)	647	1,339
V.	Office Supplies/Communications, etc.		
	- Supplies	1,200	
	- Outside Copying	250	
	- Car Rental	306	1,756
VI.	Makerere University Visitor Travel		
	- Kirya	454	
	- Kiwuwa	891	
	- Mugerwa	5,608	6,953
VII.	Makerere University Library Donation		
	- Labor	1,061	
	- Books/Journals	84,025	85,086
VIII.	Liaison Committee		
	- Salaries (1989)	68,625	
	- Salaries (1990)	34,313	
	- Five Year Devt Plan (Salaries)	26,120	
	- Annual Reviews (Salary Cost Share)	13,725	142,783
	DIRECT COST TOTAL FOR 1988/1989		576,338
	Indirect Cost Total (45%)		295,307
	GRAND TOTAL.....		\$835,545