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INTERNAL EVALUATION
THE GAMBIA AGRICULTURAL RESEARCH
AND DIVERSIFICATION PROJECT
(GARD)

April 13 - May 1, 1987

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I. INTRODUCTION

Project Background

The Gambia is a small (10,690 square Km) densely populated country (over 65 persons per square km) located on the western coast of Africa and surrounded on three sides by Senegal. The economy of The Gambia is predominantly agricultural with groundnuts being the major crop. It is the most important source of export earnings and government revenues. Other crops include maize, rice, millet, sorghum and cocton. They are all grown on small farm units totalling approximately 41,000.

The Gambia's rapidly increasing population is placing an ever increasing burden on its land and water resources. In recent years erratic rainfall patterns have placed a severe constraint on agricultural productivity. The Government of The Gambia (GOTG) is naturally concerned about the need to produce more food while protecting the agricultural resource base of the country. The development of technologies' having the potential for improving productivity of agriculture through non-destructive use of soil and water resource are needed to improve on traditional practices. A strong program of agricultural research is seen as the key to development and adaptation of technologies appropriate for The Gambia.

The GOTG, in cooperation with USAID and 3 U.S. universities (Virginia State University and the Universities of Wisconsin and Michigan), developed a plan to initiate the Gambian Agricultural Diversification Project (GARD). This project was seen as a long-term (15-20 years) effort to develop a strong adaptive agricultural research system. As the research system is being developed and institutionalized in The Gambia, support is to be given to the testing, development and introduction of improved agricultural practices to meet farmers' needs and to diversify The Gambia's agricultural economy.

The task of institutionalizing a system of agricultural research while implementing stronger research programs is a difficult one, especially with limited resources. To accomplish this dual purpose, determined effort on the part of administrative leadership and researchers will be required. A

balanced system must be developed and made a part of the national fabric. External resources must be used wisely in this process and proven technology transfer mechanisms including effective use of the "counterpart system" is essential. This system implies that for each external input of technology there is a local acceptor.

Project Components

GARD consists of five distinct but mutually supportive components:

1. establishment of an Agricultural Research Management System (ARMS),
2. provision of long- and short-term training for Gambians, and improvement of the research support system,
3. support to on-station component research in crops, livestock, agro-forestry, socioeconomics and water resources,
4. expansion of on-farm research activities (FSR/E), and
5. design of and assistance to technology promotion activities.

GARD's Internal Evaluation

The GARD project is presently preparing to enter its second year of implementation. The evaluation plan in the GARD Project Paper, as well as the university contract, calls for an internal AID/GOTG/Contractor review early in the second year of the Project.

This evaluation took place in The Gambia April 13 to May 1, 1987. The main purpose of the internal evaluation was to make a self-assessment by the organizations involved in the Project, focusing on implementation and technical issues which had emerged to date and to examine original assumptions made in the Project's design. The findings and recommendations were to be used as inputs in developing the next annual workplan and to make any necessary changes in the Project design.

Since these types of issues are best addressed as part of the management control systems of the implementing agencies themselves, individuals from participating agencies with no day-to-day involvement in the Project were used as evaluators.

Team Composition

The evaluation team consisted of the following individuals:

- Paul Lippold*, USAID, REDSO/WCA (Team Leader) replaced by Ralph Conley, ADO, USAID/Banjul,
- John Murdock, University of Wisconsin,
- Winfrey Clarke, Virginia State University, and
- Mustapha Darboe, GOTG, Undersecretary for Projects replaced by Ken Johm, PPMU/GOTG.

Evaluation Methodology

Information for the evaluation was gathered from a number of sources, including review of Project documents, a series of interviews, group meetings and discussions with GOTG officials, GARD project representatives, Peace Corps officials and volunteers involved in GARD, and other relevant donor agencies/personnel (ADP II ODA, FAO) in The Gambia. Because of their familiarity with The Gambia, the AID and GOTG representatives did not participate in all of the interviews and meetings. The following is the internal evaluation team's assessment of GARD to date.

II. REVIEW OF MAJOR COMPONENTS OF GARD

Major components of the GARD project, to be addressed with assistance of a USAID financed USAID/University contract, include activities to establish a more effective agricultural research management system, strengthen the program of agricultural research and extension, and improve research support services.

The Agricultural Research Management System (ARMS)

The Government of The Gambia, USAID and the Contractor recognize that the institutionalization of an improved agricultural research management system is a long-term process. Institution building requires constant attention to

Dr. Lippold suffered an injury and was unable to participate in the evaluation.

the details of developing a strong national research philosophy, administrative and management structure, leadership, programs, resources, and internal and external linkages. This does not occur in a vacuum but requires careful thought and action by both national and external parties involved. Thus, counterpart relationships become an important part of the process.

The National System

The GARD project was initiated under the oversight of an Interim Project Committee (IPC), whose membership included the Permanent Secretaries of the Ministries of Agriculture, Economic Planning and Industrial Development, and Water Resources and The Environment, the Assistant Director for Research (Department of Agriculture), and the Chief of Party (USAID/University contract). An early action of the IPC was to appoint an ARMS Working Group to review suggestions for strengthening the agricultural research management system and to propose specific improvements in procedures and institutional mechanisms affecting the agricultural research system. This Working Group reviewed the current status of ARMS in The Gambia, suggested improvements in various components of agricultural research, and outlined an overall structure for ARMS. International Service to National Agricultural Research (ISNAR) provided short-term consultants through the USAID/University contract to support the development of the ARMS proposal. Their review and recommendations were reported to the IPC in August of 1986.

The ARMS Working Group identified the need for improved financial administration and research management capacity within the Ministry of Agriculture (MOA) as one of the critical needs for an effective ARMS. A subcommittee to study Financial and Administrative Research Management System (FARMS) was established to review relevant documentation, policies and procedures, and to draw up a statement of findings with guidelines and procedural outlines to address problem areas. The FARMS subcommittee submitted its Final Report on November 30, 1986.

The IPC accepted the Report of the ARMS Working Group and approved specific recommendations as outlined in the Ministry of Agriculture's (MOA) response to USAID regarding conditions precedent to disbursement of GARD Project funds. The IPC has also prepared a memorandum for Cabinet's approval to establish a National Agricultural Research Board (NARB) as a first step in implementing the ARMS Working Group's recommendations. The NARB would be served by a Technical Secretariat (TS). The duties of the NARB and the TS are outlined in the memorandum.

Work during the year concentrated on reviewing ARMS in The Gambia and in making recommendations to substantially improve the organization of the national agricultural research system. Also, the first steps have been taken to institutionalize the recommendations developed during the year. The Project is on-schedule in this activity.

Coordination of Research Programs

Although administrative activities were focused on the important task of planning for the further development of ARMS, management at the operational level was not ignored. The IPC made use of existing mechanisms such as the Agricultural Research Advisory Board (ARAB), convened by the Assistant Director for Research in the Department of Agriculture (DOA). Although ARAB was established to coordinate and monitor research in the DOA, efforts were made to broaden its perspective to more effectively address multidisciplinary research utilizing the farming systems approach. Six multidisciplinary, multidepartmental Task Forces were formed to give direction to on-station component and on-farm research. Researchers from the Department of Animal Health and Production (DAHP), the Department of Forestry (DOF), PVO's, the Plant Protection Service (PPS), the Program Planning and Monitoring Unit (PPMU), WARDA and donor groups were invited to participate in the annual meeting of ARAB at the Agricultural Experiment Station at Sapu, April 13-17, 1987.

Substantial progress was made during the year in the process of reviewing existing research, selecting research topics and developing research plans. The Task Forces had met on a regular basis, held workshops, participated in village surveys, discussed their work in meetings of ARAB and had prepared papers for the annual meeting. The DAHP team also held a workshop and prepared a paper for the meetings, even though technical support to this team began in late 1986. Although no technical support has yet been provided to Forestry and they had not developed a research proposal, the DOF representative made an informal presentation.

Two core regional FSR/E steering committees and 4 FSR/E field teams were formed to plan and carry out FSR/E activities. However, these teams were not fully functional. Component on-station and off-station research is just getting underway and efforts to define geographic boundaries and characteristics of the Gambian farming systems have not yet been completed. These activities were not scheduled to be completely established until the end of year 2 of the contract.

Management of Research Support

A weak system of management of research support services has been a major constraint in the development of research activities in The Gambia. The GARD Project and the initiation of the USAID/University contract permitted the initiation of a temporary support system under contract management. This system greatly facilitated research activities during the year by by-passing some of the constraints which must be corrected before an effective system can be institutionalized. These constraints are being addressed in both the ARMS proposal and the Overseas Development Agency (ODA) structural review of the Ministry of Agriculture (MOA). One of the constraints to the orderly transfer of management of support services to the MOA research system is the failure to establish a counterpart relationship for the Project Administrator of the USAID/University contract.

Issues And Recommendations

1. The effective implementation of ARMS is an important step toward the institutionalization of agricultural research in The Gambia. A key element in this process will be effective leadership. Since ARMS represents a new concept in research management, it is recommended that leaders in this program be provided with the needed information to strengthen their knowledge of the system.
 - a. The Government of The Gambia should take the steps necessary to create the National Research Advisory Board (NARB) and provide support, including assignment of counterpart staff, to implement FARMS.
 - b. Seminars, workshops and written material should be prepared for members of NARB (possibly in cooperation with the Management Development Institute) stressing the importance of ARMS, the role of agricultural research in national development, and procedures required for the effective implementation of ARMS.
 - c. A long-term training program should be prepared for the Technical Secretariat with greater emphasis on leadership and management. This might include training abroad for key members of the secretariat.
 - d. Training programs should also be prepared for FARMS officials in financial management systems required to support ARMS procedures. This training cannot be

carried out effectively until counterparts are assigned by GOTG and selected recommendations in the FARMS report are carried out.

2. The shift in logistic support from USAID/University contract management to the MOA must be made on a gradual but deliberate basis to encourage the institutionalization of the research system.
 - a. The Project Administrator should work with a Gambian counterpart and other GOTG officials to outline an appropriate system of resource procurement and financial management for the support of research activities. Since this system will receive USAID/University contract funds, procedures must be consistent with GOTG, USAID and University of Wisconsin regulations. The team should then develop a time-phased plan for the orderly transfer of research support management to the GOTG. A critical element in this transfer is the assignment of counterparts at all levels necessary to implement the plan so in-service and special training can be provided as each phase of the plan is initiated.
 - b. The possibility of "physical" separation of the GARD-GOTG management from the University/USAID contract support functions at Mile 7-Cape should take place as the FARMS recommendations are implemented.
 - c. GARD leadership should establish deadlines for assigning counterparts and implementing the phased plan and begin to phase out the Project Administrator position. They should establish intensive contact with appropriate officials and allocate the resources which are needed to institutionalize the system of research support.
3. ARAB is proving to be an effective mechanism for encouraging multidisciplinary research and invites multidepartmental participation. However, heads of units external to the DOA Research Unit believe that their official appointment to such an advisory board is essential to full cooperation. It is recommended that this concern be taken into consideration in the implementation of ARMS.

Component Research

While GARD gives priority attention to the strengthening and institutionalization of an improved agricultural research management system in The Gambia, it also recognizes that short- and medium-term gains are needed to produce research results that could be extended to and used by farmers.

The objective of component research in the GARD project is to provide support for on-station component research in selected crops, livestock, socioeconomics and water resources.

The 1986 Annual Work Plan grouped component research into the following categories:

1. Crop Improvement, Cultural Agronomy and Farming Systems, Rice Agronomy and Horticulture
2. Soil Fertility and Soil Testing Laboratory
3. Animal Traction
4. Livestock
5. Water Control for Rice

To reflect the multidisciplinary and multidepartmental (including extension) approach to research and to avoid duplication, Task Forces were developed in the following categories for further development of research priorities and were the basis for reporting at the ARAB meeting mentioned previously.

1. Grain Legumes and Oil Seed Crops
2. Rice
3. Upland Cereals
4. Horticulture
5. Animal Traction
6. Cropping Systems and Resource Management

The objectives of each Task Force were threefold: 1) to review previous research literature, 2) initiate discussions and surveys in cooperation with extension workers to better

appreciate farmers' constraints, and 3) based on 1 and 2, establish research priorities for 1987.

These Task Forces met on a regular basis throughout the year to develop research proposals that were presented for discussion and approval at the April 13-17, 1987, ARAB meeting at Sapu. After much debate, some portions of each Task Force's ambitious research proposals were approved by ARAB, a composite of which will serve as the 1987 priority research program.

Information gathered from interviews and reports provides a strong indication that the 1987 Annual Meetings of ARAB were much improved over 1986. The Task Forces were better prepared, they had received past research, carried out analysis of research results and had used multidisciplinary input in completing their proposals. One noticeable change was the FSR/E approach which involved more people in the process. Another was that some very basic concepts in research began to be put in place.

1. A decision was made to terminate the practice of putting in a wide range of "imported" variety trials, replacing them with national trials from which promising selections could be made for further testing.
2. Socioeconomic considerations were used in developing plans for testing of agronomic practices.
3. The idea of adjusting fertilizer recommendations to cropping and management practices rather than to use a general recommendation was introduced.
4. A decision was made to establish modal "bench mark" sites where field research can be carried out to test practices as they relate to specific soil, management, climatic and cultural conditions. Information collected on these sites can be extrapolated to other sites with similar conditions.
5. Research proposals were subjected to "peer review" or at least to general debate

The importance of these decisions to agricultural development in The Gambia should not be underestimated. They represent a determination to establish appropriate levels of cooperation with external agencies and to initiate a systematic approach to agricultural research in The Gambia.

Although the proposals were generally good, not enough "hard" decisions were made to set priorities based on greatest need and the ability of the unit to carry out the work with the resources at hand. After prolonged discussion the group results were still inconclusive. The final decisions were left to the administrative committee.

Another result of ARAB activities was that various recommendations for fertilizer application, seed selection and planting principles were made by the Assistant Director of Research, DOA, to extension workers at an extension workshop April 21-24, 1987, at Yundum.

GARD inputs of technical assistance, logistic support (including computerized analysis of data) and training of personnel contributed to the ARAB meetings. Significant contributions were also made by WARDA, the FAO Fertilizer Use Project, ADP II, the Italian Fertilizer Project and PVO's.

The reports to ARAB, interviews with members of the component research task forces and other research units reflect a number of issues which must be addressed by GARD.

Issues and Recommendations

1. Continuing effort is needed in research planning. The Project should maintain the momentum gained with the work of the Task Forces during the past year to continually improve research planning and coordination.
 - a. The long-term staff, with short-term assistance as required, should continue to work with team leaders and researchers to conduct workshops and/or seminars on research planning. Emphasis should be placed on setting realistic goals for research and developing priorities consistent with resource constraints (budgeting resources).
 - b. A program should be established to provide support in technical writing, reporting and information management. Continuing emphasis needs to be given to the analysis of research data.
2. Strong multidisciplinary programs are essential to the FSR/E approach of ARAB and its Task Forces. Particular attention should be given to avoiding gaps in the program. Although it is beyond the technical and time constraints of the team to make specific project level recommendations, several issues were raised.

- a. Greater attention should be focused on livestock and forage production.
- b. A program in agro-forestry needs to be developed.
- c. Consideration of future relationships between the Soil & Water Management Unit (SWMU), the Crop Protection Service (CPS) and GARD should be addressed. The contribution of these units to the research efforts is essential.
- d. There is an immediate need to develop the soil testing laboratory to support resource survey and agronomic research.
- e. There is a need for a full-time senior social scientist.

Although it will be impractical for GARD to effectively address all levels and areas of research, the team finds it difficult to see how a balanced program of agricultural research can be carried out without the inclusion of livestock, forage and agro-forestry activities. These elements are very important to the development of rational land-use programs which replace the rapidly vanishing "fallow" system. Perennial legume forages and manure, not "weed fallow" protect and rebuild soil resources. The addition of these research elements will increase the need for the research teams and ARAB to set priorities in ongoing research programs.

Farming Systems Research/Extension (FSR/E)

One of the objectives of GARD is to establish FSR/E as an effective tool in the Gambian Agricultural Research Program. The 1986-87 workplan projected the establishment of FSR/E Core Teams and Field Teams, with training in FSR/E methodologies and initiation of pilot efforts utilizing the field teams.

Following an April 1986 workshop sponsored by the Farming Systems Support Project (FSSP), two regional FSR/E Steering Committees were established at Yundum and Sapu. These teams were composed of representatives from the research programs in DOA, DAHP, and PPMU. Four village level teams were also established utilizing Research Assistants of the DOA and part-time services of field staff of DOA, DAHP, PPMU and Peace Corps Volunteer (PCV).

The Yundum Steering Committee and its village level teams carried out the following activities.

- 1) A series of surveys looking at general farming systems, groundnuts, millet and livestock were carried out.
- 2) Draft reports based on these surveys were prepared and circulated for review.
- 3) Research based on earlier reconnaissance surveys was conducted in 2 districts.
- 4) The teams participated in the National Fertilizer Demonstration Trials supported by the FAO Fertilizer Use Project.

The Sapu Steering Committee and its village level teams carried out the following activities:

1. Implementation and monitoring of on-farm trials designed by Cultural Agronomy and Rice Programs.
2. The development of strategies and procedures for FSR/E work in 1987.
3. Draft report of District Agricultural Profile of Fulladu West prepared.

These activities were reported to ARAB at the annual meeting in Sapu and suggestions were developed for the 1987 season.

Issues and Recommendations

The reports to ARAB and interviews with members of the FSR/E teams reflect a number of issues which must be addressed by GARD/GOTG.

1. As yet there is no unified concept of FSR/E among team members and the leadership of the Project. Some tend to look at FSR/E as a "discipline", some view it as a mechanism which gathers information about the farm and the farmer as an input to guide component research, while others see it as a multidisciplinary approach to research. This is not surprising in view of the fact that the concept is new to The Gambia. Not all members of the Teams (especially the Field Teams) have received FSR/E training and leaders in participating agencies have not all accepted the concept as the appropriate approach to the

implementation of their programs. It is recommended that Project leaders look carefully at the intended role of GARD in relation to the need and the potential for implementing a strict FSR/E model. A common understanding on this point is essential for effective implementation of the research program.

2. In 1986 the Steering Committees and the Village Teams were rarely able to function as "teams". Major responsibility for the work fell on the shoulders of a few members of the Steering Committees and the R.A.'s who had FSR/E as their exclusive assignment. This problem is related to the critical shortage of qualified personnel, divided responsibility, and lack of unified commitment to the FSR/E as a priority approach. These factors severely limited multi-disciplinary and multidepartmental collaboration. It is recommended that the organization and function of the teams be re-examined in light of decisions made in 1 above and in relation to personnel limitations.
3. Effort should be made to avoid unnecessary duplication in FSR/E surveys and the National Agricultural Sample Survey (NASS) to encourage a broader level of cooperation with PPMU in the field surveys.

Promotion Activities

One of the major constraints to strengthening the agricultural research system in The Gambia is non-recognition of the potential contribution that research can make to national development. This problem must be addressed if the public is to understand the significant benefits that research brings to agricultural productivity. Although the activities of the Project are primarily directed toward the improvement of agricultural research, GARD recognizes the essential need and importance of close ties to the extension system. Thus, one of the objectives of GARD is to support the "design of and assistance to technology promotion activities for farmers at large, including training of field workers, monitoring and feedback of results and financing for specific pilot-promotional efforts." In addition to developing close working relationships with extension, the basic concept of this component of the Project was to assist in the organization and support of activities to promote specific recommendations and packages of new technology. However, the team questions the need for promotional efforts as a separate component of the project. It may well detract from the aforementioned task of

establishing strong, continuing linkages with extension. If it is set up as a separate activity, extension may well see GARD in a competing role. If, on the other hand, GARD is effective in developing its linkages with extension, promotional activities will be an integral part of this relationship.

During the first year of the project support was given to research-extension linkages, including joint participation in the FSR/E activities and participation of the Research Extension Liaison Officer (RELO) in district extension meetings and training. Research information was reviewed and promising technologies were identified in cooperation with extension. The Project obtained seeds of an improved variety of groundnut which had shown promise in earlier tests. These seeds were used by extensionists as part of the FAO Fertilizer Use Project.

Researchers and extension counterparts have now identified two specific promotional activities, i.e., the multiplication of two varieties of groundnuts and a campaign for cowpea production. Several other activities that are being studied for possible introduction include animal traction, grain mills and windmills for lifting water.

Issues and Recommendations

Any pressure to initiate a major promotion program during the early phase of Project implementation, implies that technology appropriate to The Gambia is waiting to be used. Most researchers do not believe this is the case. Rather they believe (and we concur) that caution should be taken in developing promotional campaigns until more information from on-farm trials is available. When such efforts are developed they should be carried out as a continuation of working relationships between research and extension. In addition, when specific recommendations for treatments, varieties, or practices are brought forward as recommendations from ARAB, Fact Sheets or Technical Bulletins should be prepared to inform extension agents.

The major value of pilot promotional programs is to provide a mechanism for GARD to work closely with extension. These activities should be viewed as a part of research-extension liaison and should not be carried out simply because promotion is listed as a component of the Project.

Research Support

Although the development of a management system to provide research support is outlined in the section on ARMS, the importance of these activities in strengthening the research program merits further consideration. Research support provided through GARD includes training, technical assistance and logistic support to research programs.

Training

The development of human resources is a critical element in strengthening the Gambian agricultural research system. Initial studies (Agricultural Research Manpower Survey, GARD, 1986) of the system accounted for approximately 44 Gambian agricultural researchers who devote approximately 15 full-time equivalents (FTE) to research activities. Sixteen additional staff who are away on long-term training programs have the potential for providing an additional 7 FTE of research (assuming the amount of time they will devote to research is equivalent to that provided by researchers who are in-country). When this number of FTE of research time is desegregated by department, task force or discipline, it is an understatement to say that coverage for agricultural research is thin. At this point it hardly seems necessary to comment further on the shortage of researchers - every individual interviewed in The Gambia recognizes the problem. However, the difficult situation is further aggravated by low levels of training of principal researchers and a shortage of qualified research support staff, especially at the level immediately below the principal researcher. The 34 persons responding to the Agricultural Research Manpower Survey (plus one researcher who has since completed degree training) are segregated by unit and highest degree in Table 1.

TABLE 1.
Agricultural Researchers By Unit and Highest Degree Held, 1986.

UNIT	H I G H E S T D E G R E E L E V E L			Total
	PHD/ DVM	MS/ Post Graduate/ Engineer	BS or Below	
DOA	1	3	4	8
AH	2	2	4	8
PPMU	-	4	2	6
CPS	-	3	3	6
Water Resources	-	3	3	6
Forestry	-	1	-	1
Total	3	16	16	35

Although this does not account for the total number of researchers, it probably overestimates the total FTE's dedicated to research. In any case, it illustrates both problems mentioned above, i.e., the relatively low level of training and the shortage of qualified staff working at the level immediately below the principal researcher. Project leaders interviewed (M.S. Level) indicated that they needed at least 2 to 3 B.S. level assistants to make their programs function effectively. The ratio is now 1:1 even if Higher Degrees in Agriculture and Certificate holders are included.

In 1986 the GARD Project began to address this problem by initiating the following training activities for Gambians.

1. Two (2) M.S. Degree Programs (Wisconsin and Cornell).
2. Three (3) B.S. Degree Programs (Wisconsin).
3. Nine (9) short-term Training Programs (USA)
4. Three (3) short-term Training Programs (Third Countries)
5. 20 Researchers and Extensionists (11 financed by GARD) in FSSP - April 7 - 25.
6. One hundred and nineteen (119) extension staff GADS Training for FSR/E and Water Control Studies.
7. Seventeen (17) Agricultural Data Systems short-course --February 23 - March 6.
8. Eight (8) Administrators in Networking Activities.

Issues and Recommendations

Present training plans do not adequately address either the question of improving the quality of researchers who flow into the research system, the gap between the principal researcher and the field laborers, or the need for highly trained and/or experienced research leaders. These concerns will be addressed in order.

The "Junior Scientist" gap - This group of employees is extremely important to the future of Agricultural Research in The Gambia. They are needed not only to fill an important gap between the researchers and the field laborers but also to provide the pool from which future researchers are selected. The quality of these individuals sets the standard for the whole system. In view of the fact that there are relatively

large numbers of persons in the MOA who may be qualified to enter an undergraduate degree program (Amann and Snyder reported 432 "O" level and 381 certificate holders in 1984), the problem of recruiting staff from these levels should not be too difficult.

However, educational and work profiles need to be developed on potential candidates to ensure the selection of highly qualified individuals. To prepare candidates in this area, consideration should be given to the development of in-country or a combination of in-country/external training. This plan would help to develop the long-range potential of an institution of higher agriculture education in The Gambia to provide a continuing flow of graduates to federal services, agro-business, PVO's and agricultural production. The cost of training 20 B.S. level persons abroad would go a long way towards establishing that capability in-country. This program might be developed around a plan in which a 3-year Higher Diploma in Agriculture, (HDA) would be offered at the Gambia College with an agreement by external universities (U.W., VSU or other) to provide a year of training to complete the B.S. degree.

In order to illustrate how this system would work, assume that the total research program would need 36 B.S. level persons; that 15 participants from agricultural research could enter the HDA program each year; that 10 of these would graduate in 3 years and that 5 of each year's graduates would be selected for 1 year of B.S. study abroad. The pattern of B.S. level persons for this program is illustrated in the following table.

TABLE 2.
The flow of H.D.A. and B.S. level researchers
in a 10-year program

Year	Newstarts In H.D.A.	Graduates H.D.A.	BS Training	BS Staff In Research
1	15			11*
2	15			11
3	15			11
4	15	10	5	11
5	15	10	5	16
6	15	10	5	21
7	**	10	5	26
8		10	5	31
9		10	5	36
10			**	36

* Assume some of present staff leave for advanced degree training.

** Training should continue to provide staff for replacement and expansion.

2. The Graduate Degree Problem - The evaluation team believes that a stronger program of graduate training is needed. However, the major change being suggested is to add a plan for a doctoral level program. The arguments for the addition of this program are as follows.

- a) The concept that adaptive research programs can be effectively carried out by researchers with good technical skills but relatively low levels of scientific training is simply not borne out by the realities with which agricultural researchers work. Farming Systems, traditional or otherwise, are extremely complex. Unless the researcher thoroughly understands the basics of the discipline(s) with which he/she works (and its relationship to other disciplines), serious errors in judgement can be made in the adoption of practices developed elsewhere. One could rationally argue that a higher level of scientific training is required for successful research in the field than would be required at a university or international center where high levels of scientific support services are available.
- b) The level of remuneration and other factors which motivate researchers in The Gambia is low. In spite of this, many Gambian colleagues demonstrate an unusual level of dedication to their tasks. Why remove one of the motivating factors, i.e., the opportunity to improve professional qualifications through a higher degree?

The team recognizes the "catch 22" that the project faces in regard to increasing the amount of advanced degree training. There are simply not enough qualified Gambian researchers in the existing system to support ongoing research and to provide adequate numbers of staff for the level of training required to institutionalize The Gambian research system. This is further complicated by the fact that staff numbers have been frozen at present levels.

The team believes that the project has the flexibility and mechanisms needed to overcome this problem. Most of these mechanisms are already in use at some level.

- a) Improved logistic support is being provided to increase the effectiveness of researchers in the program. This must be continued with implementation of FARMS recommendations.

- b) More qualified assistants are needed to support researchers. The source of these assistants may require shifts of staff from lower grades. These transfers would receive short-term or in-service training to prepare them for their new task. This problem should be relieved as more H.D.A. and B.S. level persons enter the system.
- c) Consideration should be given to the possibility of developing a cooperative program with the Gambia College. The College could provide training and could assign a number of its higher level students to work in MOA research programs on internships.
- d) Plans to provide qualified expatriate Project Associates (PA) to substitute for research leaders while they are away for degree (M.S. or PhD) training. These researchers would basically fill gaps in the research programs developed and approved by ARMS. This might include Project Associates with M.S. or PhD degrees and the continued use of qualified Peace Corps Volunteers (PCVs). The role of these PA's and PCV's would be one of providing technical knowledge and skills and not to serve as advisers. If the research program assigned to the PA's should yield data suitable for use in developing a thesis at a later date there should be no objection. However, work in-country would not be directed toward a thesis.

The following tables illustrate the flow of Doctoral and M.S. degree training which might be developed to provide a minimal staff of 6 Doctoral and 12 M.S. graduates in research.

TABLE 3.
The Flow of Doctoral Level Training and
Numbers of Doctoral Level Researchers On-site During a 10-Year
Period.

Year	New Starts	Return	Gambian Researchers	Contract Researchers	Total Researchers
1			1	4	5
2	1		1	4	5
3	1		1	4	5
4	1		1	4	5
5	1	1	2	2	4
6	*	1	3	2	5
7		1	4	1	5
8		1	5	1	6
9		1	6	0	6
10			6	0	6

* Need to continue training for replacement staff

TABLE 4.
The Flow of M.S. Level Training
and
Numbers of M.S. Level Researchers On-site During a 10-Year Period.

Year	New Starts	Return	Gambian* Researchers with M.S.	P.A or PVO's M.S. or PhD	Total Researchers with M.S.
1	2		7	5	12
2	2		6	5	11
3	2	2	7	5	12
4	2	2	8	4	12
5	1	2	9	3	12
6	**	2	11	1	12
7		1	12		12
8		**	12		12
9			12		12
10			12		12

* Discounting for flow to Doctoral Program

** Need to continue training for replacement staff.

Although the amount of training projected in the preceding tables is slightly higher than that projected in the Project Paper, it is still too low and unrealistic. No projection is made for flow through the system, i.e., promotion, retirement, etc., nor does it account for expansion or attrition. If these losses are estimated at 20%, training would need to be increased accordingly.

3. The Project should also continue to recognize that experience is a valuable teacher and that a combination of work experience and appropriate formal training may be adequate to prepare staff to do a better job in their leadership roles. An effort should be made to work with individuals within the system, to develop specific programs for them and to provide appropriate certification to give official recognition to professional development.

Technical Assistance

To help achieve Project objectives GARD provides several types of support. This section discusses the technical assistance supported by GARD to date.

GARD made a decision in the Project Paper to keep long-term technical assistance at a minimum for the following reasons:

- 1) To avoid the syndrome of expatriate scientists "taking over" research programs or developing an enclave
- 2) To ensure that Gambians provide program leadership
- 3) To encourage the long-term university/Gambian relationship expected to develop from the short-term exchange visits

The estimated level of effort and the subject matter disciplines projected for long-term personnel in the GARD five-year implementation plan is illustrated by the following Table:

TABLE 5
Estimated Implementation Schedule LTTA

	1986	1987	1988	1989	1990
Chief of Party/ Socioeconomist	1	1	1	1	1
Administration/ Finance	1	1	-	-	-
Research Extension Liaison Officer (Sapu)	0.5	1	1	1	1
Crop Agronomist	1	1	1	1	1
Horticulturist	-	-	1	1	-
Forage Agronomist	0.5	0.5	-	-	-
Livestock Specialist	-	-	-	1	1
Agricultural Economist/ Rural Sociologist	0.5	1	0.5	-	-

In addition to the preceding long-term personnel, GARD called for supplementary personnel described above including approximately nine expatriate Research Associates (post-doctoral researchers and advanced graduate students), who would work with Gambian counterparts. They would work for periods of approximately twelve to eighteen months on research programs of high priority in The Gambia.

The Project support also called for short-term trainers/advisors (STTA's) to make a total of 91 visits of 1.5 months each. There were 22 visits in 1986 and 25 visits planned for 1987. The STTA's were to be selected (based on need) from a host of disciplines and would include, but not be limited to, the improvement of the National Agricultural Sample Survey, micro-economic studies, technical and policy studies, improving the research library, improving data collection and analysis and improving research station management.

All of the long-term technical advisors projected for 1986 (with the exception of the Forage Agronomist and the Agricultural Economist/Rural Sociologist positions), are in place and seem to be functioning well in the Project. The long-term IA position in Forage Agronomy was advertised. However, following a visit and recommendation by the STTA in Agronomy and the result of the Mixed Farming Project's Terminal Evaluation, this position was abolished.

The Chief of Party (COP) has served as part-time senior agricultural economist for GARD. By his own admission, the COP duties and responsibilities make it extremely difficult to devote adequate time to the socioeconomic aspects needed in agricultural research. While the COP has provided some help in this area, the bulk of this effort has been carried out by many individuals including short-term technical advisors, research associates and an individual supplied by ODA. The ODA researcher has done the lion's share of the socioeconomic support of the research task force at Sapu. However, he now feels he is nearing the end of his professional capacity in terms of new research efforts.

In addition to the long-term technical assistance, GARD has supported three Research Associates (RA's) and more are programmed for future use. The existing RA's have done a credible job in their technical areas. However, difficulties arising from their personal and professional relationships with Gambian researchers and the fact that some are conducting doctoral research work on the Project has surfaced as a problem.

During the past year, a total of twenty-nine (29) short-term advisors participated in GARD activities. Based upon interviews and discussions with GARD and Gambian personnel, the usefulness of these STTA visits varied, ranging from of great use, of some use, of little or no use. These reactions seem to vary according to the short-term advisors' prior knowledge and understanding of The Gambia and its research capability, their understanding of Project objectives, the frequency of visits by individual STTA's and their relationship to the Gambian researcher. Research counterparts and those who participated in workshops and short courses generally felt very positive about the STTA's. Administrators seemed to feel that there were "too many, too soon" and that in-country preparations for their visits were not adequate to make maximum use of their expertise.

Issues and Recommendations

1. Certain concepts of the GARD project are very complex in terms of administrative management and the development of working relationships necessary to affect true institutionalization of a national agricultural research system in The Gambia. In this context, there is no substitute for the Chief of Party (COP) as a full-time manager, coordinator and salesperson of a project. GARD's COP has been performing these duties and doubling as a part-time senior agricultural economist for the Project. Division of responsibilities has tended to leave the objectives of each area unfulfilled to the maximum extent needed in GARD.

The specific tasks and responsibilities of the COP should be reexamined and redefined in light of recommended changes in the administration of the Project.

The situation described above has also effected the socioeconomic component of GARD. Work has been done in this area by the COP with additional inputs by short-term technical assistants, research associates, Peace Corps volunteers and two ODA agricultural economists. One of the ODA's is a trainee, the other has more experience and feels that he has reached the end of his professional capability in his research programs.

It is recommended that the Chief of Party, in conjunction with Project principles, make a definite decision as to which position better suits his qualifications and personal preferences. Based on this decision, the following actions would be taken:

- a. One LTIA (the existing COP or other person) would be a full-time manager of the Project placing particular emphasis on the problems of the institutionalization of ARMS.

- b. One LTTA (present COP or other person) would be nominated to fill the role of senior long-term advisor in the social sciences. This position is critical to improvement in the research program.
2. The RA's play an important role in the overall plan for technical assistance under the contract. However, the fact that they are doing research for their theses, and the constraints that Gambians believe this places on their dedication to the national research plan, places considerable stress on relationships between the Gambians and the RA's. There also appears to be a need for senior persons on the TA team to give more guidance to them in regard to appropriate roles and relationships. The following are recommendations:
 - a. New RA's or PA's (if such a title change would be useful) should not be allowed to do "thesis research" but should work on projects of the national research system.
 - b. More in-country guidance should be given to the RA's by senior researchers and/or the COP.
3. In general, reactions of individuals interviewed regarding STTA's supported by GARD was good. However, some concerns were voiced about the selection process of STTA's, the number of STTA's used (a total of 29 in year one), and the usefulness of some information provided by STTA's. It is recommended that more effective use of STTA's could be achieved by the following:
 - a. The major problem of STTA's was that too many were sent to allow time for planning and effective use.
 - b. Project administration should make selection of STTA's based on specific requirements of Project researchers or administrators and not just on the availability of a qualified STTA. This may require improved procedure in the selection process and will certainly involve better written communication.
 - c. Greater care should be taken in scheduling visits to avoid undue inconvenience to the STTA, counterparts in the field and/or the logistic system of GARD.
 - d. It would appear to be useful for most STTA's to hold a series of seminars or a short workshop in an area of interest to a number of researchers. Also consideration should be given to the possibility of involving the Gambia College (Training trainers) in these short courses.

3. Other issues which relate to long-term TA staff have been raised in earlier sections on Administration of ARMS and Component Research.
 - a. If the institutionalization of ARMS and its research programs is to move ahead as rapidly as possible the "counterpart relationship" between external TA and Gambian colleagues should be given a high priority by project administrators. One critical area relates to the institutionalization of research support. The Financial Management Specialist is scheduled to leave the Project at the end of 1987. It is unlikely that adequate progress will have been made in transferring these responsibilities to MOA by this time, especially if the counterpart relationship is not soon developed. However, any extensions of this position should be kept to a minimum.
 - b. Serious consideration should be given to providing long-term TA to the combined area of animal husbandry, forage production and agro-forestry (silvopasture) with animal husbandry as the basic field.
4. The TA team should be given a stronger sense of direction of the Project and the role that each position/individual plays in its institution building goals. This should be the joint responsibility of the Campus Coordinator, COP and the GOTG senior counterpart.

Logistic Support

Researchers and extension workers participating in the GARD Project were unanimous in their expression of appreciation for the greatly improved system for providing research supplies and material on a timely basis. Vehicles and a whole range of services related to transportation were also much improved with the initiation of activities under the GARD Project. Staff of cooperating agencies also expressed their appreciation for improvements in the increased hours of electricity, the Mile 7 to Sapu radio link, the computer center, support in agricultural statistics and data analysis, and generally improved management. Only those departments who have not yet become directly involved in GARD activities felt left out of the support system. However, the major concern is not how well it is functioning now, but how it can continue to function as it is transferred from University/USAID Contract management to ARMS management. This is an essential step in institutionalization of the Project.

Contract Administration

The evaluation team did not visit the contractors' offices on the U.S. university campuses nor did it look at USAID administrative support in any detail. The following comments are based on the team's knowledge of these systems, reports and comments of project administrators.

U.S. Campus Backstopping

The University of Wisconsin is the prime contractor and has principal responsibility for backstopping the Project. However, the University of Michigan and Virginia State University provide support to their field staff and assist in training matters as required.

The only serious problem voiced in the support of field-staff was that Virginia State University encountered considerable difficulty in arranging and following through on shipping personal and household effects which resulted in a long delay in getting these items to The Gambia. In fact, they have not yet arrived. This has caused undue stress for the LTTA's. Steps are being taken by VSU to correct this deficiency.

Training

Although a need for greater emphasis on manpower development was discussed in an earlier section, the management of placement, program development and transport of the participants was handled by experienced staff. The major problems were largely unavoidable. One participant became ill and required a kidney transplant which created an unbelievable amount of administrative work. Thankfully the participant is now back in classes and progressing well. Another problem was the difficulty in completing arrangements to send some participants even though their programs had been arranged. This resulted in additional administrative load and strained relations with those who were to host the training program. As the project matures and the Training Committee has a more definite planning horizon for sending participants, this problem will no doubt be avoided. The team would like to suggest that the Training Committee develop staff profiles for MOA employees with "0" levels or above as a source of potential candidates for further training. What is suggested here is not a full-blown human resource survey, (this activity is being addressed by both ADP II and ODA efforts) but a survey of potential candidates to be trained to fill the gap below the

agricultural researcher. The team further recommends that responsible researchers be involved in developing a long-range training plan along the lines of the suggestions in the sections on training under Research Support.

Finance

Considerable difficulty was experienced in establishing a smooth flow of financial transactions. This was partly due to the rapid increase of in-country expenditures, both in-kind and amount, and in accommodating in-country needs with Wisconsin and AID regulations. The University of Wisconsin established an imprest account in the First Wisconsin National Bank. The first deposit of \$40,000 was made from a U.W. contingency fund. Checks are drawn on this account in The Gambia and expenses with receipts for everything from ferry crossings to participants tickets are paid for and submitted to U.W. on a line by line expense account. Sometimes the delay in this process was as much as 2 to 3 months, resulting in a complete depletion of the imprest account. AID advanced \$100,000 to the account to relieve this difficulty but the problem of the number of receipts to process continued to increase. From the first month of the project until the third quarter, the number of receipts grew from 25 to over 600 per month. This plus payrolls for 70 local-hire persons far exceeded the original expectations. Also, the University had to take on payrolls for foreign staff, finance construction and pay many other kinds of expenses which had never been a part of other AID contracts. Delays and confusion in procurement and difficulties in getting updated budget projections resulting from these difficulties was a source of frustration to smooth operation of the Project.

The University of Wisconsin, the local contract administrators and USAID have worked together in finding solutions to these problems. A new system of receipts along with computerized ledgers, use of a courier packet and other modifications promise to greatly improve the situation.

General

It is the observation of Project administrators that the Campus Coordinator has spent a considerable amount of his time during the first year working with University departments to obtain a high level of support for the Project and helping to resolve general administrative problems on-campus. They now have the expectation/hope that he will be able to devote more time to project operations in The Gambia. No further comment appears to be needed in regard to this item.

AID Administrative Support

The team had very little contact with USAID during the evaluation except for the participation of the ADO on the team and the valuable support and suggestions of the Deputy ADO. No particular problems were raised by University or Gambian officials regarding AID support and cooperation. Any comments made were generally positive with some feeling that approval processes were sometimes too complicated. It appears that USAID administrative support to the project has been excellent.

Linkages

A number of relationships among research units are needed to insure more effective use of scarce resources and to promote the objectives of the cooperating units with their respective clientele. These relationships or linkages are of particular importance to the development of the FSR/E approach to agricultural research. These linkages may be internal among disciplines, departments or other units having overall administrative relationships or they may be external linkages with other ministries and external agencies.

Internal Linkages

If the basic concept of the FSR/E approach in agricultural research is to function effectively, there must be interaction among disciplines and departments. A number of approaches have been used by GARD to encourage greater cooperation.

1. The Task Forces have multidisciplinary and in some cases, multidepartmental representation.
2. The FSR/E Teams combine research, extension and external agency cooperation.
3. The ARAB meetings involved disciplines, departments, ministries and external donors in its deliberations.
4. The plans proposed for ARMS establishes an administrative mechanism which should encourage closer relationships among researchers in agriculture.

These mechanisms and the efforts of researchers, extensionists and administrators have made an important contribution toward improving internal linkages. With continuing effort these linkages will be strengthened and areas of conflict will be diminished. Interviews with researchers,

extensionists and the heads of various departments reflected an attitude of cautious optimism about this process. Departments external to DOA felt that structural changes in ARAB, making it a multidepartmental unit, improved communications among departments and a greater sharing of resources (especially of GARD resources) were essential to improving these linkages. One administrator suggested that it would be useful to have representation of the Ministry of Education in the IPC and later in ARMS, to strengthen the linkage with the potential supplier of agricultural researchers. Specific suggestions regarding means for improving these linkages have been made in previous sections.

External Linkages

The question of donor coordination in development projects is, and probably will continue to be a concern of USAID, contractors and host governments. Conflicting agendas, different organizational objectives and accountability mechanisms (who takes credit for what) are among the reasons for difficulties in donor coordination. The relationships between donors in the GARD project is no exception. However, based on interviews, observations and actual working situations during Project evaluation, GARD has done a credible job working with ADP II, ODA, FAO, the Peace Corps and other donors involved in The Gambia.

At the technical level, two ODA agricultural economists and 3 PCV's have made direct contributions to MOA's research and extension programs. The FAO Fertilizer Use Trials have also made significant contributions in these activities. RELO represents the agricultural research system in extension workshops and is developing collaborative efforts with the extension representatives of the ADP II project.

Summary of Issues and Recommendations

Given the normal constraints of project start-up, the GARD project has made very good progress toward its objectives in the first year of work. The initial efforts to put an agricultural research management system (ARMS) in place have proven fruitful. The technical assistance (short- and long-term), logistic support and training provided by the GARD project has supported the Gambian agricultural research system in the implementation of its 1986 research agenda, the analysis of research data, surveys of farmers' needs in developing future research plans and establishing priorities for 1987.

In order to continue this progress toward GARD's objectives, an internal evaluation of the Project offers the following summary of findings and recommendations.

Finding I

Institutionalization of a national agricultural research system in The Gambia is the highest priority of GARD. The effective implementation of ARMS is an important step toward this end. The preparation of agricultural leaders to administer ARMS, the gradual but deliberate shift in logistic support from USAID/University contract management to the MOA and the broadening of ARAB to officially include other departments are key elements in this process. GARD personnel should continue to emphasize this institutionalization.

- a. Programs should be developed to provide appropriate levels of information and/or training for various levels of the proposed research system.
- b. A time-phased plan should be developed and implemented for institutionalizing components of the research support system with the MOA.
- c. The phased plan for shifting responsibility for research support, intensive contact with leaders responsible for the implementation of ARMS and allocation of resources should be used to motivate planned changes in the research system.

Finding II

The ARAB meetings of 1987 were much improved over 1986. The multidisciplinary, multidepartmental Task Forces were better prepared and presented good research proposals for consideration by ARAB. Some very basic research concepts began to be put in place. However, continued effort is needed in improving planning of projects, setting research priorities and coordinating activities.

1. GARD should continue to stress contact and communication among staff and researchers across disciplinary and departmental lines.
2. GARD should develop workshops and seminars to assist Gambian researchers in establishing research priorities related to research needs and resource constraints (resource budgeting).

3. GARD should provide assistance to improving technical writing, data analysis, reporting and information management.
4. Training programs should be developed and technical assistance provided to research areas where "gaps" in the programs have been identified.

Finding III

Although the FSR/E approach played a major role in Task Force activities and teams were developed which carried out some on-farm FSR/E activities, the limited number of qualified persons for Task Forces, FSR/E Steering Committees and Village Teams created problems in carrying out projected duties and responsibilities.

GARD leadership should look carefully at the concept of FSR/E in the Project context and develop a common understanding of FSR/E as it relates to future activities of GARD. The Project should also reexamine the Teams' organization and functions in light of common understanding of FSR/E and the realities of staff limitations.

Finding IV

Any pressure to initiate a major promotion program during the early phase of project implementation, implies that technology appropriate to The Gambia exists. Most researchers disagree with this notion. Caution must be taken in developing major promotional campaigns until research from on-farm trials under Gambian conditions provides information necessary to support a promotional package. The need to have a promotional program separate and apart from continuing research-extension liaison is questionable.

Finding V

If a national agricultural research system is to be developed in The Gambia, trained manpower needed to expand and maintain this system is of paramount importance. While GARD gives high priority to training, the present training plans do not adequately address the question of improving the quality of researchers entering the research system (the gap between the principal researcher and the field laborers), or the need for highly trained and/or experienced research leaders.

1. GARD should assess the potential for developing a combination of in-country/external training for a Higher Degree in Agriculture and/or B.S. degree program in cooperation with the Gambia College.
2. Doctoral level training should be provided for selected Gambian researchers. This will require careful attention to finding means by which existing staff can be released for training without substantially reducing research efforts.
3. The GARD training program should consider the needs of senior staff on a case by case basis and develop technical or administrative training programs to complement their present level of experience. Certification should be provided to recognize combined professional expertise.

Finding VI

Technical assistance provided by th. USAID/University contract, with additional assistance from PCV's, ODA and others, has given strong support to Project development. However, continued attention needs to be given to means of improving the distribution and effective use of technical assistance to GARD.

1. The COP position should be a full-time job activity, with attention being focused on overall management of GARD and the institutionalization of ARMS.
2. The socioeconomic component of GARD should be strengthened by adding a long-term advisor in this area and by developing closer cooperation with PPMU.
3. LTTA in financial management should be phased out as quickly as is practical.
4. Consideration should be given to LTTA in livestock and forage production.
5. Criteria for the appropriate selection, scheduling and use of STTAs in the Project needs to be improved.
6. The policy of RAs doing "thesis research" on the GARD Project should be reconsidered and RAs should be given more guidance by senior researchers.

Finding VII

Although the evaluation team did not look at backstopping and monitoring activities of the contractor and of USAID in any detail, no serious problems were identified that were not already being addressed. A few observations of the team are listed below.

1. Logistic support to the Project has been good with few exceptions.
2. Backstopping of IA by the contractor has been good.
3. The management of placement, program development and transport of participants for training has worked well.
4. After initial difficulty, a smooth mechanism for flow of financial transactions is being developed and implemented by the prime contractor.
5. Important linkages (internal and external) have been developed through the activities of ARAB, the FSR/E teams and through associations developed with a number of international research organizations.