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**EVALUATION OF THE SEMI-ARID FOOD
GRAINS RESEARCH AND DEVELOPMENT
(SAFGRAD) PHASE II PROJECT**

**A.I.D./IQC NO. PDC-0085-I-00-6097-00
Delivery Order No. 38**

Submitted to:

USAID/Burkina Faso

By:

**Checchi and Company Consulting, Inc.
Washington, D.C.**

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Table of Contents

	<u>Page</u>
EXECUTIVE SUMMARY	i-iii
PROJECT IDENTIFICATION DATA SHEET	iv
ACRONYMS	v-vi
Section I	
INTRODUCTION	1
A. Purpose and Study Questions of the Evaluation	1
B. Economic, Political and Social Background to SAFGRAD II	4
C. Team Composition and Study Methods	6
Section II	
EVIDENCE/FINDINGS	8
A. SAFGRAD Coordination Office	8
1. Performance of SCO in SAFGRAD II	8
1.1 Crop Networks	8
1.2 Other Network Activities of SCO	11
1.3 SCO Activities of Direct Project Implementation	12
1.4 SCO Activities During the Second Phase of SAFGRAD II	14
2. Financial Support to SCO	16
3. Alternative Organizations	17
B. Networking Activities	19
1. Development, Leadership and Evolution of Networks	19
2. Effectiveness of Network Coordinators in Supporting NARSS	20

Table of Contents .../...

	<u>Page</u>
3. Emergence of NARS Scientists into Leadership Roles	22
C. International Agricultural Research Centers (IARCs)	24
1. IARC Support to the Networks	24
2. IARC Commitment to Networks and Coordination with SCO	26
3. Relevance of IARCs' Research to NARSs	28
4. Resident Research Evaluation	29
Section III CONCLUSIONS	30
A. SAFGRAD Coordination Office	30
B. SAFGRAD Networks	31
C. International Agricultural Research Centers	32
Section IV RECOMMENDATIONS	33
A. SAFGRAD Coordination Office	33
B. International Agricultural Research Centers	34
C. SAFGRAD Networks	36
D. USAID	36
 APPENDICES	
I SCOPE OF WORK	
II LOGICAL FRAMEWORK MATRIX	
III DOCUMENTS CONSULTED	
IV INDIVIDUALS AND ORGANIZATIONS CONTACTED	

EXECUTIVE SUMMARY

This is a summary of the findings and recommendations of consultants employed by USAID/Burkina Faso through Checchi and Company Consulting, Inc., under contract number PDC-0085-I-00-6097-00 (Delivery Order No. 38). The consultant team consisted of John H. Sanders (Senior Agricultural Research Administrator and Team Leader), Joseph Y. Yayock (Agricultural Scientist) and Ruben H. Puentes (Research Agronomist). The team's assignment was to conduct the mid-term evaluation of the Semi-Arid Food Grains Research and Development (SAFGRAD) Phase II Project. The evaluation took place in July-August 1988.

SAFGRAD II is concerned with increasing food production in the semi-arid tropics of Sub-Saharan Africa. SAFGRAD II phased out its direct agricultural research activities at two International Agriculture Research Centers (IARCs), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the International Institute of Tropical Agriculture (IITA). The project subsequently provided substantial resources to these same IARCs and to a regional unit of the Organization of African Unity/Scientific Technical and Research Commission (OAU/STRC), the SAFGRAD Coordination Office (SCO), to set up four regional crop Networks.

The problem of increasing food crop productivity in 26 countries through agricultural research is an enormous one. By reducing the focus to establishing four effective crop research networks, SAFGRAD II attempted to increase the impact of the IARCs on the National Agricultural Research System (NARS) in a manageable, well defined manner. A primary goal was for African scientists to have more impact in defining realistic research priorities in their own systems and ultimately in the international agricultural research institutions.

The purpose of the evaluation was to determine the effectiveness of the four crop research networks and to assess the performance of the African regional management unit, the SCO. Two secondary purposes were to increase the effectiveness of IARC support to the Networks and to evaluate the field research of the IARCs in the transition period. The evaluation method entailed reading file documents and conducting extensive interviews with scientists and research administrators in several countries.

One principal finding was that the IARCs provided very effective Network Coordinators and the SCO provided commendable administrative and political support. The Evaluation Team identified the principal constraint to the evolution of African leadership in the Networks to be the formal training of the NARS Network scientists. One principal recommendation is that plans for the obtaining of M.S. and Ph.D. degrees by NARS scientists be developed by the SCO in collaboration with the leaders of the various NARS.

The Evaluation Team recommends the continuation of the SCO at its present USAID funding level for the duration of SAFGRAD II. It is further recommended that major new functions in pursuit of donor funding or in direct implementation of other activities, besides Network support, be deferred until the re-evaluation of 1991 for a SAFGRAD III. A critical component of SCO maintenance of present and future Network support will be an SCO/USAID budget re-allocation to pay for the two top management personnel supported by the International Fund for Agricultural Development (IFAD) until April 1989. If increased funding can be obtained for the SCO without major management effort, the SCO is encouraged to pursue this. Certainly both the OAU/STRC and the African Development Bank should be approached for some supplementary funding. Various other management suggestions have been made for both the SCO and the IARCs to improve their support of the Networks.

Among lessons learned, the Team believes that SAFGRAD II was appropriately designed to have a narrow focus on crop specific networks in the NARSSs. In many of the countries of the Semi-Arid Tropics of Sub-Saharan Africa, the development of the scientific capacity of their research institutions is a critical component of their agricultural development. This project directly focuses on improving that management capacity, on obtaining more indigenous scientific capacity, and on better utilizing the well trained African scientists already in the field. Future projects may benefit from observing the narrow focus of the Network concept, especially its emphasis on national human capital development. The regional focus of this project also seems to be appropriate. In planning for SAFGRAD III, the Evaluation Team is concerned with the recent A.I.D. initiative calling for all regional projects to be funded from operational year budgets (OYB) of country missions.

PROJECT IDENTIFICATION DATA SHEET

1. Country: Regional
2. Project Title: Semi-Arid Food Grain Research and Development (SAFGRAD) II
3. Project Number: 698-0452
4. Project Dates:
 - a) First Project Agreement: August 1986
 - b) Final Obligation Date: FY 88 (planned)
 - c) Most recent Project Assistance Completion Date (PACD): September 30, 1991
5. Project Funding: (amounts obligated to date in dollars or dollar equivalents from the following sources)
 - a) A.I.D. Bilateral Funding (grant and/or loan) US\$ 8,553,000
 - b) Other Major Donors US\$ _____
 - c) Host Country Counterpart Funds US\$ _____
US\$ 8,553,000
6. Mode of Implementation: Grants to OAU/STRC, IITA, ICRISAT
7. Project Designers: A.I.D./W
8. Responsible Mission Officials: (for the full life of the project)
 - a) Mission Director(s): Herbert Miller, USAID/Burkina Faso
 - b) Project Officer(s): Michael Sullivan, OGD/USAID/Burkina Faso
9. Previous Evaluation(s): None

ACRONYMS

ACPO	Accelerated Crop Production Officer
AFDB	African Development Bank
CEAO	Economic Community of West African States
CGIAR	Consultative Group for International Agricultural Research
CILSS	The Permanent Interstate Committee for Drought Control in the Sahel
CIMMYT	International Center for Improvement of Maize and Wheat
CIRAD	French International Program in Agricultural Research
CRSP	Collaborative Research Support Project
ECA	Economic Commission for Africa
ECOWAS	Economic Community for West Africa States
FAC	Fonds d'Aide et de Coopération
FAO	Food and Agriculture Organisation
FSR	Farming Systems Research
FSU	Farming Systems Unit (Purdue University Contract)
GOE	Government of Burkina Faso
IARC	International Agriculture Research Center
ICARDA	International Center for Agricultural Research in Dry Areas
ICRAF	International Council for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDRC	International Development Research Corporation (Canada)
IFAD	International Fund for Agricultural Development

IITA	International Institute of Tropical Agriculture
INERA	Burkina Institute for Crop and Animal Husbandry Research
INSAH	Institute of the Sahel
INTSORMIL	International Program for Sorghum and Millet Research (CRSP) Cooperative
IRAT	Institute for Research in Tropical Agriculture and Food Crops (French Organization)
IRCT	Institute of Cotton and Textile Research
ISC	ICRISAT Sahelian Center, Niamey, Niger
ISNAR	International Service for National Agricultural Research
NARS	National Agricultural Research System
OAU/STRC	Organization of African Unity/Scientific, Technical and Research Commission
OICD	International Organization for Cooperative Development
ORSTOM	Office for Scientific and Technical Research Overseas (France)
SACCAR	Southern African Center for Cooperation in Agricultural Research
SADCC	Southern Africa Development Coordination Conference
SAFGRAD	Semi-Arid Food Grain Research and Development Project
S and T	Science and Technology Division of USAID
SAT	Semi-Arid Tropics
SCO	SAFGRAD Coordination Office
SPAAR	Special Program for African Agricultural Research
TROPSOILS	Tropical Soil Management: CRSP
TSMM	Technology for Soil Moisture Management Project
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

Section I

INTRODUCTION

A. Purpose and Study Questions of the Evaluation

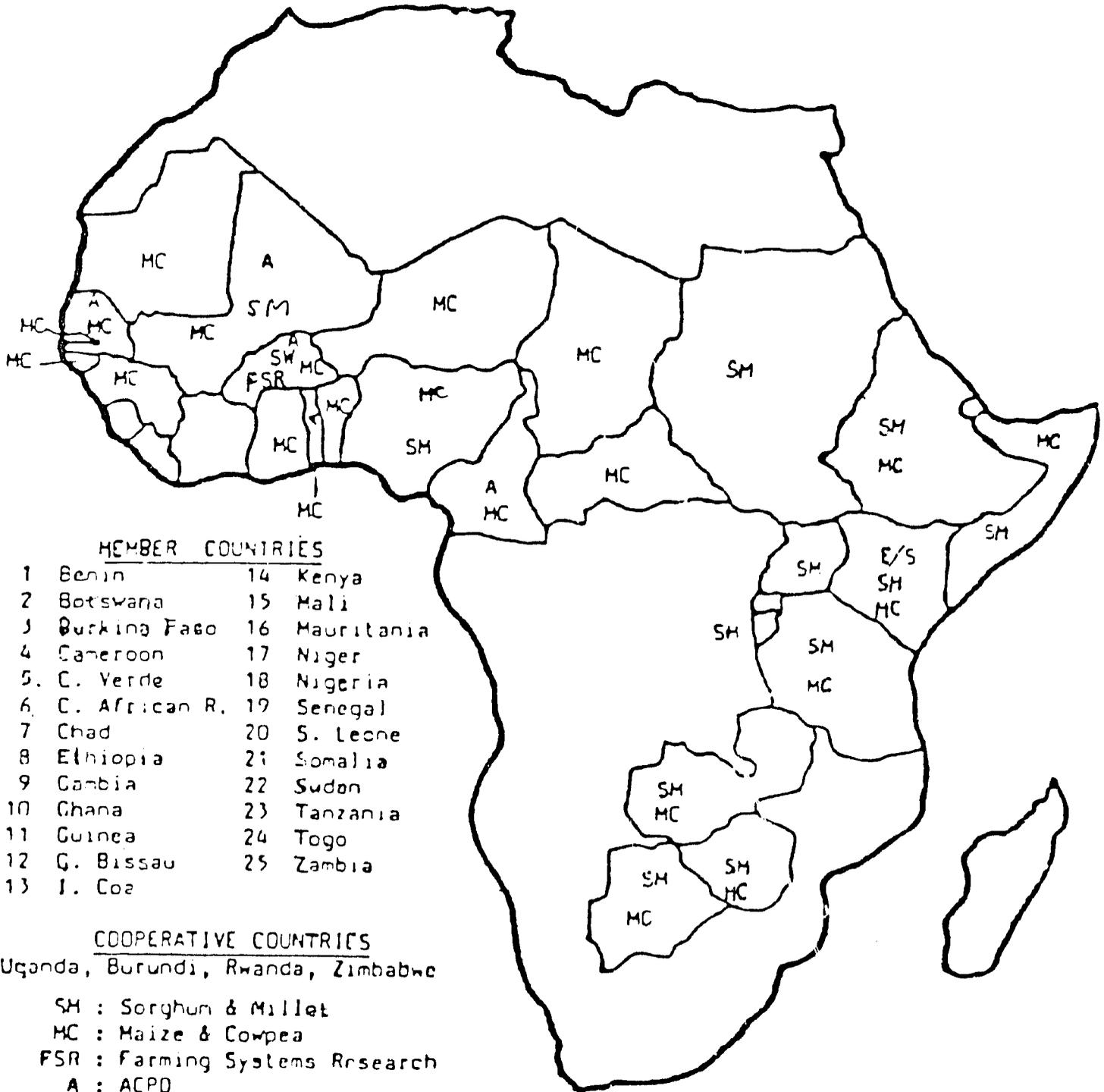
"The project purpose is to increase the efficiency and effectiveness of agricultural research on identified staple food crops (sorghum, millet, maize and cowpeas) in the SAFGRAD region by strengthening specific agricultural research networks for those food crops and to improve the service capability of regional and national research institutions to assist with those efforts." (Project Paper, p. 2)

In SAFGRAD II the principal activity is to strengthen four crop research Networks. These Networks involve the International Research Centers (IARCs) of IITA and ICRISAT and the national agricultural research centers (NARSS) in the semi-arid countries. These Networks and related activities now include 26 countries, so there is an important coordination role (See Figure 1). There are substantial differences between the NARSS in both scientific capacity and technical training. The interaction in Networks is expected to help the NARSS avoid duplication, focus their research priorities, create incentives for further professional advancement, and ultimately form a political framework which would allow them to influence the research priorities in the IARCs. Most of the NARSS in the semi-arid regions have shortages of professionally trained people at the M.S. and Ph.D levels and many suffer from inadequate national support of research. So they often have little infrastructure. Moreover, many NARSS chronically suffer from shortages of operating funds.

To facilitate the formation of the Networks, an intermediate scientific organization, the SAFGRAD Coordination Office (SCO), was established in SAFGRAD I and its financing was continued

Figure 1

SAFGRAD - CURRENT RESEARCH AND ACPO NETWORKS



MEMBER COUNTRIES

- | | |
|-----------------|---------------|
| 1 Benin | 14 Kenya |
| 2 Botswana | 15 Mali |
| 3 Burkina Faso | 16 Mauritania |
| 4 Cameroon | 17 Niger |
| 5 C. Verde | 18 Nigeria |
| 6 C. African R. | 19 Senegal |
| 7 Chad | 20 S. Leone |
| 8 Ethiopia | 21 Somalia |
| 9 Gambia | 22 Sudan |
| 10 Ghana | 23 Tanzania |
| 11 Guinea | 24 Togo |
| 12 G. Bissau | 25 Zambia |
| 13 I. Coz | |

COOPERATIVE COUNTRIES

Uganda, Burundi, Rwanda, Zimbabwe

- SM : Sorghum & Millet
- MC : Maize & Cowpea
- FSR : Farming Systems Research
- A : ACPD
- E/S : Eastern & Southern Africa Regional Office (Sorghum & Millet)

during the first two years of SAFGRAD II. One of the principal objectives of this review is to evaluate the performance of the SCO, especially its activities, to promote NARS leadership in the Networks. (Project Paper, p. 7). Besides serving as a "political umbrella" to facilitate the NARS scientists in their international participation in Networks and on the Oversight Committee, to expedite the international travel of NARS scientists as well as the movement of germplasm, and to facilitate information exchange, the SCO was expected to become:

- a) a secretariat for the Networks;
- b) an effective spokesman for the NARSS and the Networks to the IARCs; and
- c) a fund raiser to help increase financial support of research networking and the individual NARSS.

This evaluation is intended to identify an organizational framework for the rest of the project by either making specific suggestions for the SCO or recommending alternative institutional arrangements.

One measure to insure more NARS leadership in the Networks was to set up an Oversight Committee by election from the leaders of research in the NARSS in SAFGRAD member countries. This body was to serve as the "policy, technical, and operational decision making body for the Networks" (Project Paper, p. 7). A principal evaluation criterion of both the IARCs and the SCO is the degree to which they are facilitating an increasing role for NARS leadership in the Networks. The effectiveness of the Networks in improving research efficiency in the NARSS is another central component of the evaluation scheme.

Most of the budget for SAFGRAD II went directly to IITA and ICRISAT. Of the \$9.8 million budgeted over the 1986-1991 period,

\$3.1 million was obligated to ICRISAT and \$4.1 million for IITA. This direct support to the IARCs enabled some resident research during the first two years of the project. However, the principal task of the two IARCs in SAFGRAD II was to coordinate those Networks and to develop the NARS leadership capable of assuming control of the Networks. IARC leadership in these Networks was only seen as a temporary phenomenon until NARS scientists could do this. The planning of the four IARC Coordinators to turn over the leadership of those Networks is an important component of this evaluation. Finally, in this review the performance of the IARCs in attaining the performance targets identified in the project implementation documents is also considered.

In summary the mid-term evaluation will consider:

- a) the effectiveness of the Oversight Committee and the Networks in reaching the scientific goals and promoting NARS scientist participation;
- b) the effectiveness of the SCO and the IARCs in supporting the Networks and promoting scientific advancement in the basic food crops of the semi-arid region; and
- c) alternative management strategies for the second half of SAFGRAD II and into SAFGRAD III.

B. Economic, Political and Social Background to SAFGRAD II

Since the Green Revolution of the late '60s the principal success story in international agricultural development has been the IARCs. Their support evolved from Ford and Rockefeller foundation initiatives into multi-lateral donor support in the seventies and eighties through the CGIAR. The basic concept of the crop IARCs was that a multi-disciplinary team of well-trained professionals working in an integrated specific commodity program

over a sufficiently long time of assured funding could utilize applied scientific knowledge to increase food crop yields in developing countries.

The IARC successes have been dramatic for wheat and rice under good agronomic conditions of irrigation or adequate rainfall and moderate to high chemical fertilizer. Progress has also been made in maize and common beans. However, in Sub-Saharan Africa, food crop yields continue to stagnate or even decline in spite of substantial IARC involvement over the past decade. Due to increasing population pressure there has been a disappearance or decline of the fallow system method of soil fertility maintenance. This has not been replaced with additional purchase of farm inputs. Hence, soil depletion and erosion have accelerated in much of Sub-Saharan Africa.

In the semi-arid regions of Sub-Saharan Africa the agro-ecological environment is particularly hostile. Rainfall is low and irregular. Soil fertility is generally low, especially phosphorous and nitrogen levels. Use of purchased inputs is minimal, and a deteriorating crop land base is forcing larger animals out of the farming system. Hence, the supply of animal manure is also declining. In this type of harsh environment with substantial variation of the stress factors, region specific research is necessary. The IARCs cannot do all of this research, hence, the development of the NARSS is commonly identified as the principal constraint to agricultural development in Sub-Saharan Africa (SPAAR, January 1986).

Donors are actively engaged in direct funding of NARSS. In 1986 bi-lateral USAID missions had projects supporting national research in 18 of the 26 SAFGRAD countries. Moreover, in most countries there were several programs so that in these 18 countries, 43 different projects had components directly supporting national research systems (Project Paper). Building up the NARSS is a long-term institutional development project. There are

undoubtedly economies of scale in developing different types of NARS for different countries depending upon their size and wealth. Some countries can take better advantage of developments in the IARCs and the more advanced NARSSs by just doing region specific adaptation of the technologies from those lead centers. To avoid some of the financial difficulties facing international donors and the excessive costs of all NARSSs trying to develop all of their own technologies, regional crop networks have been proposed by the donors (SPAAR).

These Networks would facilitate scientific interchange, help develop the weaker NARSSs professionally and ultimately financially, and in the long run provide the political strength for the NARSSs to influence the research agenda of the IARCs and even to control their own research agenda. Presently, the research agenda, especially in the smaller NARSSs, is largely influenced by donor loan conditions or the specific research requirements of different agricultural development projects. Greater scientific independence for NARS scientists is a major long run objective of SAFGRAD II. At the same time the project seeks to build on the demonstrated strengths in administration and finance of the IARCs.

C. Team Composition and Study Methods

The three-man Evaluation Team included:

John H. Sanders - Team Leader - Agricultural Economist at Purdue University - previously the technical adviser to the Purdue Farming Systems Unit in SAFGRAD I (1983-1986)

Joseph Y. Yayock - Agronomist - Director of the Institute for Agricultural Research at Ahmed Bello University in Samuru, Nigeria - previously a member of the Technical Advisory Committee of SAFGRAD I

Ruben H. Puentes - Soil Scientist - Program Manager of the Soil Management CRSP (TROPSOILS) West Africa, Texas A & M University

The Team read file documents and reports from USAID/Ouaga and SAFGRAD/SCO. Then numerous interviews were undertaken in Burkina Faso, Mali, Niger, Ivory Coast, Kenya and Nigeria. Those interviewed were in the IARC, NARS, Network members, African Development Bank, SCO and with USAID officials. The Evaluation Team attended the SAFGRAD Oversight Committee meeting in Nairobi from August 1-3, where Network Coordinators reported on their activities, and overall planning for SAFGRAD II networking activity took place.

The Team members were well received by all interviewed but are especially grateful to M. Sullivan, J. Menyonga, T. Bezuneh, R. Gibbons, J. de Wet, L. Stifel, P. Fall, G. Kingma, J. Ekebil, K. Fischer, and L. Fakambi for their time and patience in explaining complicated issues.

Section II

EVIDENCE/FINDINGS

A. SAFGRAD Coordination Office

1. Performance of SCO in SAFGRAD II

1.1 Crop Networks

These four crop Networks are currently operational: the West and Central Africa Maize Network, the West and Central Africa Cowpea Network, the West and Central Africa Sorghum Network, and the East Africa Sorghum and Millet Network. They are evolving and have had effective leadership provided by the IARCs. The Oversight Committee and the four Steering Committees are in place and functioning. The SCO is providing political, coordinating, and administrative support to these committees and to the overall Networks. This support is a difficult and often thankless job but absolutely critical in the socio-political environments in many African countries. The SCO leadership sees this coordination and political support at the level of Ministers of Agriculture/Science and Technology and Directors of Research as one of its primary functions. Since there are 24 countries in the four crop Networks and communication/transportation can be difficult, this coordination role is a big one.

Also on the positive side for the SCO, is the general respect for the hardworking Ph.D trained scientists in the two top management positions: the SAFGRAD International Coordinator and the Director of Research. Since the 1982 A.I.D. audit and the new top management, the SCO has received high ratings for financial management and responsibility. Moreover, the SCO is gradually becoming an effective lobbyist for the NARSs to the IARCs. This is a very important role, which needs to be aggressively pursued and diplomatically handled. There has been

some disagreement between ICRISAT and the SCO on several decisions relating to the West African Sorghum Network. However, there is now a genuine desire for collaboration on both sides and an improved dialogue. Since IITA headquarter is in West Africa, it is not surprising that relationships are better and that they are moving faster than ICRISAT in getting distinguished African agricultural scientists (but still from IITA) into the leadership roles of their two Networks.

On the negative side, the most serious problem is the lack of well-defined goals among the SCO management. The International Coordinator and the Director of Research are considered by the Evaluation Team to be good managers. They need to better define their objectives and go after them. This seems to the Evaluation Team to be a feasible change in organizational mentality.

Positive goals of improving the efficiency of the four Networks, producing a quarterly newsletter, holding bi-annual conferences, publishing, and more aggressively calling the attention of African government officials to the Networking Services of SAFGRAD could keep both the International Coordinator and the Director of Research fully occupied. Moreover, these would all be useful services to the Networks.

In the longer run (after 1991 - SAFGRAD III) the SCO should be able to evolve into a more effective fund raiser since the NARS plans are progressing for producing a scientific journal in SAFGRAD. Both of these functions have been promoted earlier but the Evaluation Team believes that the SCO is too understaffed to become very involved in those activities during the rest of SAFGRAD II. The SCO presently needs to consolidate its activities and become a more effective Network manager and become better known for that. This should be its principal objective for the rest of the SAFGRAD II. A better organizational identity

and more recognition for the SCO in the SAFGRAD countries will result from a concentration of the SCO leadership on the present and new Networks, and specifically on providing better services to them.

The termination of the IFAD financial support, in favour of bilateral loans to member countries, makes the SAFGRAD program less diversified. The SCO should gradually get more involved in fund raising as specific projects emerge from the Networks. To do this, the International Coordinator and the Director of Research need to provide good services to the Networks. They also need to become more familiar with the strengths and weaknesses of the various NARSSs. This support of the Networks is the comparative advantage of the SCO, and their two top managers have been gradually becoming more involved and effective in these roles. They do need to specifically recognize the new organizational chart brought about by the departure of IFAD and accordingly delineate their respective roles and responsibilities.

A smaller negative note has been the inability to establish linkages with either Collaborative Research Support Projects (CRSP - U.S.), the centrally funded USAID Science and Technology Projects, or other International Projects. The CRSPs on Sorghum/Millet, Cowpeas/Beans, and Soil Management would undoubtedly be overjoyed to have ties to the Networks. Individual CRSP scientists have been attending SAFGRAD sponsored events including Network workshops. More formal relations with the Management Entities, at least for information sharing, are being recommended here. These contacts with scientists from other projects would help diversify information sources and facilitate germplasm exchange and thereby help make the Networks and the NARSSs more independent of the two IARCs, IITA and ICRISAT. Interaction with the International Center for Improvement of Maize and Wheat (CIMMYT) is also encouraged.

1.2 Other Network Activities of SCO

The long-term objective of the SCO is to become a Secretariat for many networks and to have the Network Coordinators centrally located in the SCO headquarters in Ouagadougou or in the regional office in Nairobi. Presently, the Network Coordinators are designated by the IARCs, and operate out of different experiment stations, with their budgets coming from the SAFGRAD Project directly through the IARCs. There is undoubtedly some duplication of services here. However, this problem, and the takeover as coordinators of the NARS scientists, will need to be resolved in SAFGRAD III.

Some evidence of the recognition that the SCO is getting for services to the Networks is coming from the addition of new Networks. The SCO is now providing the organizational support for the West African Farming Systems Network. The Coordinator of this new Network works out of the SCO facilities. This Network pays 10% of its funding to the SAFGRAD for these services.

A West African Animal Traction Network has also been discussed with SAFGRAD. If this Network is able to obtain donor support, it would probably follow through on this plan of being operated out of the SCO headquarters. Also the International Council for Research in Agro-forestry (ICRAF) has discussed locating a Coordinator for an Agro-forestry Network in the SCO. So the concept of the SCO as a Secretariat for Networks seems to be emerging among scientists with a wide range of interests. The ICRISAT Sahelian Center (ISC) in Niamey is presently organizing workshops to start two new Networks on Millet and Groundnut.

The interest of these new Networks in the political and organizational services of the SAFGRAD/SCO is the most concrete positive endorsement that the SCO is doing a good job in facilitating the evolution of the four crop Networks supported by A.I.D.

1.3 SCO Activities of Direct Project Implementation

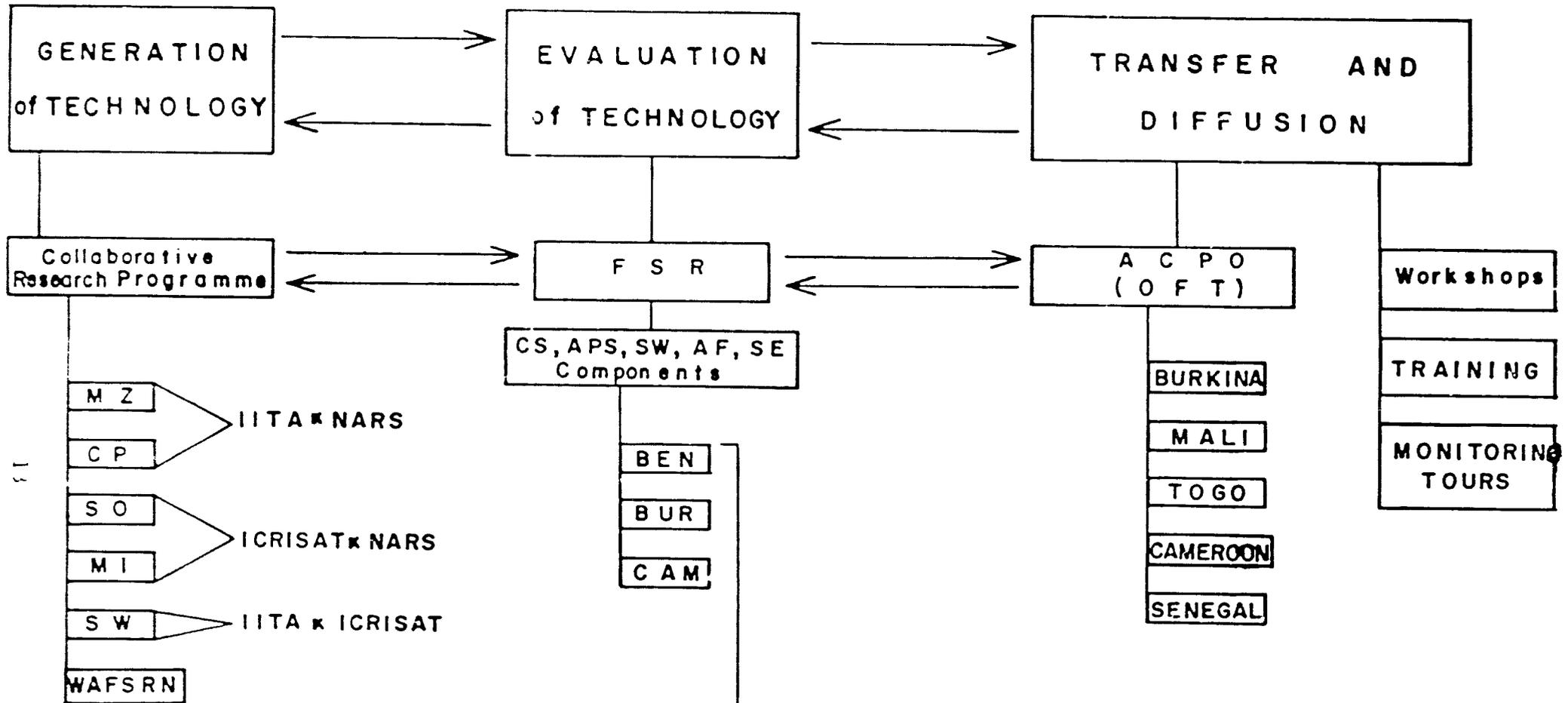
In 1986, the SCO became a direct project manager of three Farming Systems Research (FSR) programs in Burkina Faso, Benin, and Cameroon, funded by the International Fund for Agricultural Development (IFAD). This project hired African scientists and continued for three crop seasons (1986-1988). Then IFAD decided to make loans directly to individual African countries rather than make a grant to SAFGRAD. This policy shift will result in termination of the IFAD/SAFGRAD/FSR project in April, 1989. However, valuable financial management experience was obtained in the process which should enable the SCO to more effectively compete for direct management of other projects during SAFGRAD III.

Besides the Networks and the Farming Systems programs the SCO has been directly administering an extension-demonstration program in four countries (Figure 2). The ACPO programs were SAFGRAD efforts to improve the linkages between research and extension, by promoting testing and verification of new technologies by farmers, and providing feedback to the research station on the performance of the particular technologies. The IARCs recognize the need for region specific evaluations of new technology and their manpower limitations in doing this. In some countries, SAFGRAD is better known by the ACPOs than by the Networks.

The basic concept that extension should first test out new technologies in a wide spread fashion before lecturing farmers is important. The Accelerated Crop Production Officer (ACPOs) are increasingly producing data from these trials of the new technologies and this information should be useful to the IARCs and to other scientists (see the articles by two ACPOs in Menyonga, Bezuneh, and Youdeowei, pp. 633-672). However, in practice, the ACPO Program has just involved one individual in each country

Figure 2

Technology Generation and Diffusion Scheme of SAFGRAD



Research Networks

M Z = Maize
 CP = Cowpea
 SO = Sorghum
 MI = Millet
 SW = Soil-Water management
 WAFSRN = West African Farming System Research Network

FSR- Components

CS = Cropping System
 APS = Animal Production System
 SW = Soil-Water management
 AF = Agroforestry
 SE = Socio-Economic and Technology evaluation activities

carrying out a large number of demonstration trials. Improving the effectiveness of the extension service by linking it better to the agricultural research institutions is a national responsibility. In Mali and Cameroon, the ACPOs were integrated into the national system. The SCO needs to concentrate its attentions on the Networks and leave the ACPOs to the NARSSs.

1.4 SCO Activities During the Second Phase of SAFGRAD II

The Evaluation Team found that SAFGRAD has performed in a satisfactory manner the difficult political and administrative roles of supporting the four crop Networks. These Networks are now following the SPAAR collaborative research network model for establishing a Steering Committee for each, and one Oversight Committee to supervise them. Each Steering Committee is responsible for the review of research and network planning, whose activities are implemented by the Coordinator. The Coordinators are presently provided by the IARCs and are expected to remain in their positions for the duration of SAFGRAD II.

The Oversight Committee serves as a Board of Directors for the SAFGRAD/SCO and the four Networks. Members of the Oversight Committee are selected by the Directors of Research of the SAFGRAD countries. Besides overall direction to the SCO and the four Networks, the Oversight Committee is responsible for long run planning, and is also becoming involved in the search for additional financial support for the SCO.

The progress in implementing African leadership in the Oversight Committee, and the four Steering Committees, is an important achievement of the SCO. It is evident that NARS leadership is beginning to assert itself in terms of more intervention with the IARCs through the SCO and the search for funds. The critical bottleneck in obtaining a more rapid development of the NARSSs, according to general consensus of the Heads of NARSSs interviewed, and the Oversight Committee, is the

lack of academic training of their staff (M.S. and Ph.D degrees). This NARS opinion about lack of training being a major constraint, is supported by the World Bank's West Africa Agricultural Research Review. A limited number of NARS researchers have the depth of academic background and maturity of research experience that are required for dynamic leadership of a modern research program. Only five West African countries have the needed educational capacity to meet the estimated demand for M.S. national research scientists, i.e., Benin, Cameroon, Guinea, Côte d'Ivoire and Nigeria. All but Nigeria will have to rely largely on external training for the Ph.D degree (World Bank, West Africa Project Department, 1987).

Given the good performance on Network support, and the need to actively participate in strengthening training programs, it is imperative that the SCO management continue to receive USAID support for the balance of SAFGRAD II. One of the two pillars of the SCO, IFAD, will no longer be financing approximately one-half of the SCO staff after April, 1989. To maintain and improve services to the Networks, the SCO will need to maintain a Director of Research, and supporting staff. The job description of the Director of Research must be redefined according to his new responsibilities in support of networking activities including: leadership on technical matters among Network Coordinators, preparation of research proposals in support of Networks (e.g. proposal for training program), periodic contacts with research leaders of IARCs, CRSPs and other non-SAFGRAD Networks, etc.

The shift in organizational structure of SAFGRAD from the early eighties is dramatic (Figure 2). The three prongs of the SAFGRAD in Network Implementation, On-Farm Testing, and Extension, have now been reduced to only the Networks, as the funding for most of these two other activities has been withdrawn. There is a strong desire within the SCO to remain a diversified agency

so as to attract a wide range of funding. However, the Evaluation Team believes that the SCO should now specialize in Networks. It has demonstrated some competence in this activity. By strengthening its delivery of services to the Networks, the SAFGRAD will create an effective lobby for its services in the NARSSs, and thereby be in a better position for the negotiations on SAFGRAD III.

2. Financial Support to the SCO

Since its beginning in SAFGRAD I (1977), to the present time, the principal financial supporter of the SCO has been USAID. Since the 1982 audit, the SCO and OAU/STRC have contracted excellent financial administrators. From 1983 until the spring of 1989, IFAD has been a co-sponsor for the SCO to directly implement a program of Farming Systems Research in three countries. The USAID financial people expressed satisfaction with the financial administration in SAFGRAD II.

The government of Burkina Faso provides free office space and has promised to increase this space so that the SCO can expand and provide facilities to more Network Coordinators.

The OAU/STRC provides \$20,000 per year and some financial and administrative services. There will be a major review of SAFGRAD at the OAU Headquarters in Addis Ababa in September. At that time, the proposals of changing SAFGRAD from a project to an institution, and of increased financial support from the OAU will both be reviewed. The case for an increased role for the SCO in SAFGRAD III would be strengthened by increased OAU/STRC financial support. This Team endorses the initiatives by the SCO to pursue funding for the additional support staff for the SCO. However, the SCO is not encouraged to devote much of its energies to other fund raising efforts. Rather the SCO needs to consolidate its support to the present and future Networks during the rest of SAFGRAD II.

The West African Farming Systems Network has just joined the SCO. This Network pays 10% of its funding to the SCO. Both the SCO and this new Network are reasonably happy with this arrangement. If the SCO is to attract other Networks, it needs to be continuously reviewing, and even expanding, its services. Then, future Networks may be willing to pay higher overhead charges.

3. Alternative Organizations

As part of this Evaluation, two regional organizations were considered to do the SCO Network management functions, the African Development Bank (Abidjan - headquarters) and the Institute of the Sahel (INSAH), which is the technical and scientific institute for the Permanent Interstate Committee for Drought Control in the Sahel (CILSS).

The African Development Bank (AFDB) is modeled after the World Bank and the other regional development banks in Asia and Latin America. Their regional mandate is wide enough to handle the Network; however, the bank is a financial institution. They develop projects and then finance them. Their staff is kept very busy in project work.

The AFDB often contracts individuals or institutions to execute specific projects, and this could be done with the SAFGRAD-SCO functions. The quantity of money involved in the SCO management function is relatively small compared to the types of lending activity to the African national governments financed by the AFDB.

There would be no particular advantage to asking the AFDB to manage the entire loan for SAFGRAD III. This would be enough money to interest the AFDB, but the Bank would still have to contract a third party and supervise them. To do this, the AFDB would want some overhead and use some of its staff time. This

activity would have to be approved by their Board of Directors. The Bank brings no particular competence to this, outside of having 5 regional offices in Sub-Saharan Africa. In short, A.I.D./Ouaga and A.I.D./Washington can more efficiently identify and contract a management entity. Leaving this function with the SCO seems to the Evaluation Team to be more technically and cost efficient.

One further note on the AFDB. The principal activity of the Bank is to make project loans. However, as a public institution it makes development grants from its profits. In 1987, the AFDB put 1.5 million dollars into core financing for the IARCs (into the CGIAR). Moreover, bank staff have been increasingly recognizing the importance of agricultural research to African regional development. Many agricultural development projects have a component to finance specific research. For example, a recent loan to Chad to support increased export activities specifically includes support to the IRCT to develop improved cotton varieties. The East-North African Division of the AFDB only recently made its first loan to improve a national agricultural research system (Tanzania). The SCO management needs to be commended for making periodic visits to the AFDB to keep them informed about project activity relevant to NARS research and to see about grants for its, or related NARS', activities. The SCO is presently developing a project for AFDB financing

INSAH is the technical institute of the CILSS and is located in Bamako. Its regional focus is the 3 countries of the Sahel. INSAH has already been the coordinator for millet and sorghum regional trials. They handled the money (\$900 to \$1,200 per trial) and assembled the data but did no regional supervision. The level of technical competence and experience in Network coordination is substantially higher in the SCO than in INSAH. There is no advantage to asking INSAH to manage the grant. Moreover, the SAFGRAD project goes beyond Sahelian countries.

Again, the SCO needs to be congratulated for making a collaborative agreement with INSAH for the Sahelian countries and Southern African Center for Cooperation in Agricultural Research (SACCAR) for the Southern African countries. Further collaboration is encouraged.

B. Networking Activities

1. Development, Leadership, and Evolution of Networks

The primary focus of SAFGRAD II is on networking. This networking exposes the NARSSs at different stages of development to agricultural technologies developed by the IARCs, and by NARSSs that are relatively strong. Evidence of the emphasis given to networking in SAFGRAD II can be seen in the allocation of 75% of the USAID grant in direct support of the four Networks.

The four crop Networks evolved out of regional variety testing in the IARCs. The movement of these Steering Committees into the planning and research priority identification process for their Networks is the crucial evolution of the system. At the start, these Networks tend to be dominated by the IARC Coordinator. Ultimately, there will be more equality, and the Coordinator will become the implementor of a Steering Committee, which will become an effective Board of Directors. The steering Committees were found to be moving in this direction and to be beginning the research priority identification process.

Implicit within the concept of networking, is the gradual shift of the management and control of Networks from the IARCs to the NARSSs. The transfer of control, in terms of a timeframe and conditions required, remains unanswered. In fact, it is not clear who will take the initiative on this issue. Meanwhile, the West African Farming System Network, with multi-donor support, and originally under IITA management, has become the first Network under national control.

Both ICRISAT and IITA personnel agreed that the NARSSs will be able to appoint some of their own Network Coordinators in a period of 3 to 5 years. The timeframe depends heavily on strengthening of training programs, which, up until now, are the most important constraint. The permanence of IARC technical backstopping after the takeover would be assured by including an IARC representative in the Steering Committees.

2. Effectiveness of Network Coordinators in Supporting NARSSs

As mentioned earlier, the Network Coordinators have an important responsibility in the success or failure of the Networks. Their responsibilities are quite varied, including:

- a) Promotion of NARSSs leadership;
- b) Implementation and coordination of the Networks;
- c) Assistance to NARSSs scientists in conducting field research and interpreting their results;
- d) Enhancement of linkages within NARSSs (workshops, monitoring tours) and promoting NARSSs involvement in Network activities;
- e) Assistance to NARSSs in developing national research programs;
- f) Information to NARSSs on technology developments; and
- g) Evaluation and inventory of NARSSs needs, including training needs, and informing the SCO about them.

Promoting national leadership is the most important objective. This is a long-term task, consequently, difficult to evaluate in the short term. All the Network Coordinators have demonstrated their efforts in promoting national leadership by organizing strong Steering Committees and promoting short-term training activities. Lack of available funds for long-term training programs is the main constraint to these efforts. Elsewhere, the Evaluation Team has suggested that the SCO prepare a document on training needs of its member NARSSs and make this information available to potential donors.

The four commodity Networks are well organized and operational, to the credit of the Network Coordinators. Lists of research needs have been prepared. However, when NARSSs scientists and research managers were asked their opinions on the effectiveness of the Networks, they invariably expressed some concerns. The Steering Committees have classified the various NARSSs as either "strong" or "weak", depending on their state of agricultural research capacity and development. Much of the concern about the Networks come from the NARSSs that are classified as "weak". Common complaints are that: a) visits by Network Coordinators are infrequent; b) funds provided are not enough to conduct trials; c) technical assistance is very low; d) exchange of information is scarce; and e) training opportunities are minimal. In conclusion, the "weak" NARSSs are concerned that they are not getting from the Networks what they expect. Contrasting opinions are raised by the few "strong" NARSSs who are largely appreciative of the germplasm, supplies, and funds provided by the Networks. If such a preferential treatment towards "strong" NARSSs is generalized, the end result would be a widening of the gap in research capabilities between SAFGRAD member countries. Hence, it is imperative for the SCO management to know better the institutional and financial constraints in the weaker NARSSs and to work with ISNAR and the donors to help develop these weaker NARSSs. The four Network Steering Committees have prioritized research topics by individual countries as

background information for the development of appropriate research programs.

Although not specifically included in their job descriptions, some Network Coordinators have taken the initiative in preparing project proposals for funding with the objective of increasing donor support to their respective Networks. One example is the proposal for a sorghum and millet improvement program prepared by the East Africa Sorghum and Millet Network and submitted to the SPAAR. These activities are highly beneficial for the Networks, and the initiative must be welcomed.

Much of the effectiveness of the Network Coordinators relies on the stability of their positions. Promoting leadership among NARSS scientists, enhancing communications among NARSS, and relationships between NARSS and IARCs, are long-term jobs that require uninterrupted efforts. The development of strong personal relationships facilitates this process. Rapid turnover of technical coordinators (less than 5 years) should be avoided by the IARCs.

3. Emergence of NARS Scientists into Leadership Roles in the Networks

Both the IITA and ICRISAT see the leadership role which they presently play in support of the Networks as a temporary arrangement. As the NARSS become experienced in networking and the coordination of Networks, NARSS scientists will be identified for leadership roles. While there are, presently, institutions and individuals among SAFGRAD member countries who are amply qualified to take on leadership roles of Networks, the problem remains that of members. In most of the Networks less than one-third of participating staff of NARSS possess more than an undergraduate degree. An even smaller number have the experience that would command the respect of colleagues as Network Coordinators.

The Evaluation Team believes that the Network Coordinators should continue to be appointed by the IARCs throughout the duration of SAFGRAD II. In order to insure a subsequent smooth and effective transfer of Network leadership from IARCs to NARSS, the following criteria should be used:

- a) There must be evidence of a stable and strong Network based on an evaluation report.
- b) There should be evidence of a functional and effective Steering Committee.
- c) The state of technological development of the crop should be taken into consideration.
- d) It would be desirable to have a well developed manpower situation in member countries, especially in terms of appropriate qualifications and relevant experiences.
- e) The selection process of the Network Coordinator must be based on international criteria and conditions in order to ensure that the best NARS material is attracted and retained.
- f) Whoever is to be appointed Coordinator must have adequate research and management experience in the Network region; must command respect among his research colleagues; must be judged to have a commitment to regional cooperative research and the concept of networking; must have a willingness to travel extensively, and should be bi-lingual.

C. International Agricultural Research Centers

1. IARC Support to the Networks

The whole concept of networking is predicated on the understanding that scientists of the national programs participating in Network activities should identify and prioritize the common constraints affecting each crop and decide how best to tackle the problems. This is one of the main tasks presently being addressed in the four Networks. NARSS scientists and research managers should be aware of the strengths and weaknesses of each other and find ways of exploiting their strengths and of reducing their weaknesses. The role of the IARCs is very significant at the initial stages of Network development, by providing both technical and management leadership.

Technical backstopping to the Networks from IARCs Headquarters is expected to be provided in the following areas:

- a) Network Coordinators attend in-house IARC reviews relevant to the commodity, hence they become acquainted with the latest state of the art information regarding this crop. This also gives the Network Coordinator the opportunity to present to his peers the work he is coordinating. (It is expected that the Network Coordinators will provide feedback to the IARCs of the research needs and problems from the NARSS).
- b) Provision of germplasm.
- c) Consultant visits to the Networks in the field by Headquarters research scientists to provide technical guidance.

- d) Training both on an individual basis and in group course training for NARSS scientists participating in Network activities.
- e) Participating of core IARC research program scientists in internal reviews of individual national research programs.
- f) Participation of core IARC research program scientists in monitoring tours and in project evaluation.
- g) Assistance to Network Coordinators in the elaboration of funding project proposals for either a national program or a group of national programs, for submission to donors.

It is the view of the Evaluation Team that the IARCs have provided satisfactory support on items a), b) and d). These are, perhaps, the most important. There is little evidence of active participation of core IARC research program scientists either in field research activities or in internal reviews of NARSS programs. An additional observation is that although Network Coordinators are invited to attend in-house IARC reviews relevant to specific crops, no NARSS researchers are invited to participate. Such NARS participation would encourage national involvement on Network activities, promote national leadership, and develop higher commitment to the overall Network strategy by the NARSSs.

Some proposals have been prepared by the Steering Committees and Network Coordinators with the objective to strengthen Network activities. No evidence has been found of active participation from IARCs core research program scientists in these efforts. Another area of potential technical support from the IARCs is in research station management. Little has been done on this topic.

2. IARC Commitment to the Networks and Coordination with the SCO

There is a general consensus that IITA has a strong commitment with the SAFGRAD Networks. IITA's Coordinators for Maize and Cowpea Networks have been appointed in consultation with the SAFGRAD/SCO, USAID/BF, and the GOB. Both are located in Ouagadougou and are on full-time coordinating functions.

There is consideration of shifting these two Network Coordinators to the Ivory Coast and Nigeria respectively, to accompany larger research teams. These relocations of Network Coordinators are a departure from the wishes expressed by the SCO and the Oversight Committee about centralization of Network Coordinators at its headquarters at Ouagadougou. The Evaluation Team recognizes the advantages of having the Coordinators in Ouagadougou. If there are other pressing research reasons for locating them elsewhere, provisions should be made for regular (monthly) meetings between the SCO management and the Coordinators. It is also important that SCO be fully informed and be allowed to participate in the discussion on the location of the Coordinators. Many misunderstandings can be avoided by improving communication.

The commitment to the SAFGRAD Networks from ICRISAT was not as evident as the one from IITA. Both ICRISAT Network Coordinators share the Network coordination responsibility with the leadership of their research team in their specific regions (West and East Africa). NARS directors and members of the Oversight Committee have stated that Network coordination should be a full time job and must not be combined with other IARC regional activities.

A collaborative research endeavor such as the SAFGRAD Networking requires close linkages among the different agencies involved. As stated earlier, most of the problems between

institutions during SAFGRAD II could have been avoided with more open and frequent communication. While the principle of networking under SAFGRAD is a shared responsibility of all agencies involved, the role of the IARCs in promoting these relationships is of major importance. Both IITA and ICRISAT are strong, multi-donor supported research institutions with highly qualified scientists. It would be easy to believe that they do not need networking activities with NARSSs to assure their survival and justify their existence. However, the final goal of the IARCs has to be kept in mind. Their purpose is to increase food production in their mandate regions on a long-term basis through technological advances. This can only be achieved with strong NARSSs. Networking has been identified by the donors as the most appropriate way to attain this goal. The IARCs are expected to take the leadership during the initial phase, by providing technical and logistical backstopping. This also includes the utilization of their senior personnel to promote close relationships among the institutions involved.

Within this framework, decisions that affect the SAFGRAD Networks have to be taken in consultation with all participants as a condition for the development of stable relationships. Some of the decisions such as those concerning Network Coordinator relocations are more important for the Network functions than for the IARC operations. Lack of open communication on these matters does not facilitate the development of partnership relationships. As most of these decisions are IARC initiatives, it is the opinion of the Evaluation Team that the IARCs have to avoid decisions that might be interpreted as "unilateral", especially on matters of common interest.

Network management is conceptualized as a Board of Directors function for the Steering Committee with the Coordinator as the principal implementing officer. The Steering Committee would provide the guidelines for the Coordinator and would identify research priorities and do planning. In the early stages of

implementation, there has been substantial input from the Coordinators. The Steering Committees and the Oversight Committee, with substantial input from the SCO, should be able to assume progressively more leadership in these Networks over time. This process will be accelerated as the formal training level in these Networks increases.

3. Relevance of IARCs' Research to the NARSS

There were some setbacks at the beginning of IARCs' involvement in Africa. For example, when ICRISAT started its activities in the late seventies and early eighties, sorghum and millet varieties developed in India were tested. Most failed due to different soil, climatic, and socio-economic conditions. Presently, the research approach is being adjusted to the conditions of the African farmer: infertile soils, low and unpredictable rainfall, minimum utilization of purchased inputs, seasonal labor bottlenecks, and high risk avoidance.

The Evaluation Team believes that there is an overemphasis on breeding in the regional trials by all Networks. This is not surprising since the Green Revolution conventional wisdom was that most production problems can be solved through breeding. Breeding programs, however, have not been very successful in generating an impact on Semi-Arid Sub-Saharan food production. Several reasons for this failure have been discussed elsewhere (see Matlon, 1987 and Sanders, 1988). The Network trials should not become just regional cultivar trials.

The Evaluation Team feels that many NARSSs can profit from the basic technology generated by IARCs, enabling the NARSSs to concentrate on adaptive research to meet specific regional requirements. For example, soil fertility and water conservation requirements and techniques vary by soil type, rainfall regime, and other factors. NARSSs need to devote substantial energy to integrated programs to resolve region specific constraints. In

general, the level of agronomic practices, soil-water-crop management, will have to be improved before breeding alone will have much impact. The NARS scientists need to concentrate on the technical and economic factors associated with region specific agronomic improvements for their particular crops.

4. Resident Research Evaluation

In SAFGRAD II, resident research was supported for another 18 months. During that period, the IARCs completed some work initiated during the previous SAFGRAD.

The IITA program for maize and cowpeas was very comprehensive including breeding, agronomy, entomology, and soil and water management. The main objective of the maize breeding program was how to deal with drought stress, through drought resistance and drought escape. The cowpea breeding program (co-funded by the IDRC) focused on resistance to drought and Striga. The agronomy components included effects of fertilization, tillage, surface water management systems, and crop residues. Experiments included pure stands as well as intercropping and relay systems. The soil-water management component focused on two main topics: tied ridges and minimum tillage systems. Results for different agroecological conditions and specific management recommendations were made. (SAFGRAD-IITA, Final Report, Resident Research, Phase II 1988).

The ICRISAT program was heavily focused on breeding, with a small component on food quality, i.e. grain hardness and processing quality, and "dolo" (sorghum beer) quality evaluation (Pattanayak, 1988).

Section III

CONCLUSIONS

A. SAFGRAD Coordination Office

1. The SCO has done a good job organizing and implementing the four crop Networks. It is effective in providing a political umbrella to NARS scientists for Network activities. The SCO has obtained good financial management experience through its internal re-organization after 1982 and through the management of the IFAD Farming System Project.

2. The SCO needs to concentrate its activities and consolidate them around the Networks, and then become known as an efficient Network manager. It needs also to better promote itself as such. The support and services offered to the Networks by the SCO can be significantly increased:

- a) SCO has become a good lobbyist to Networks but needs to be a more effective one.
- b) More projects can be promoted in support of the Networks, including:
 - training programs;
 - newsletters, bi-annual conferences; and
 - a scientific journal in SAFGRAD III
- c) Circulation and dissemination of scientific and technical information can be improved. The SCO needs to be congratulated for their publication in 1988 of their International Drought Symposium of 1986. Now this publication needs to be widely distributed.

3. The SCO needs to be a much more effective fund raiser for its own operations. The present profile of funding for the SCO (almost total USAID support) must be modified. However, this also is a responsibility of the Oversight Committee and of OAU/STRC. For the rest of SAFGRAD II, the SCO should concentrate on servicing its Networks better and becoming more familiar with the pressing constraints in the NARS. Fund raising as a major activity is more appropriate in SAFGRAD III with a larger SCO staff.

4. The SCO should be congratulated for the addition of the West African Farming Systems Network and potentially several other new Networks. Future Network activities should be clearly related to their present Networks or to their previous project implementation activities.

5. There are no alternative viable regional institutions to the SAFGRAD/SCO for providing the regional political and administrative services to these Networks.

B. SAFGRAD Networks

1. In SAFGRAD II the Networks have gotten off to a good start. The Networks now have good Coordinators, Steering Committees, and there is a SAFGRAD Oversight Committee. These Committees are beginning to exercise leadership.

2. The IARCs are providing able leadership with IITA moving faster than ICRISAT in putting well respected African scientists into Network leadership positions on a full-time basis and collaborating closely with the SCO.

3. There is a consensus that the present IARC leadership of the Networks is temporary and that gradually responsibilities will be assumed by NARS scientists.

4. Lack of trained personnel has been identified as a major constraint for emergence of greater national leadership.

5. There are presently informal meetings between the SCO and Network Coordinators and between the SCO and the IARCs. However, there need to be regular management meetings involving the SCO and the Coordinators to provide built-in opportunities for brain-storming on vital issues before they are brought up at Steering and Oversight Committees. The meetings of these committees are only occasional and their roles are advisory.

6. The present management process of the SCO and the Networks does not allow for sufficient internal self-appraisal.

C. International Agricultural Research Centers

1. The Evaluation Team has confirmed the IARC commitment to the Networks, including the gradual shift of Network leadership from IARCs to NARSS. IITA is perceived as going faster towards a partnership relationship, while ICRISAT has been following a more independent position.

2. The Evaluation Team has noticed an over-emphasis on breeding in the regional trials of all the Networks. In the harsh environment of low and irregular rainfall and low fertility soils characterizing most of the semi-arid region, breeders cannot do miracles. The first priorities of region-specific research should be improvements in water conservation and soil fertility. Moderate purchased input utilization also needs to be encouraged. Then breeders can develop new cultivars for these moderately improved agronomic environments.

Section IV
RECOMMENDATIONS

A. SAFGRAD Coordination Office

1. A Strategy Document needs to be prepared as soon as possible and adapted to the current financial constraints and to the new role of the SCO of principally providing services to present and new Networks during the remainder of SAFGRAD II. This document would include:

- a) short/long-term activities in support of the Networks;
- b) other long-term activities not related to Networks;
- c) a continuation of the program for diversification of funding for the SCO, thereby decreasing the dependency on USAID funds;
- d) a clear definition of the roles of the SCO and the Oversight Committee;
- e) a clear definition of the roles of the International Coordinator and the Director of Research within the SCO;
- f) the needs for staff expansion and new sources of funding; and
- g) an updated organizational chart.

2. In collaboration with the NARS and the Network Coordinators, the SCO should take leadership in preparing an

inventory of the long-term training requirements of the scientists in the NARSSs. This document should then be brought to the attention of various donors.

3. The SCO should re-establish the publication of a newsletter and set up a desk top publishing unit in support of the Networks. Some additional funding may need to be sought for this.

4. The SCO should request the Oversight Committee to negotiate with the OAU/STRC for increased financial support, a delegation of authority in certain managerial matters, and the eventual institutionalization of the SCO within the OAU/STRC.

5. The SCO should be congratulated for implementing collaborative relationships with regional projects especially INSAH (Sahel) and SACCAR (Southern Africa). The SCO should help their Networks broaden their scientific contacts by also establishing relationships with the CRSPs, USAID S and T projects, and the French and other Networks.

6. The SCO is encouraged to continue seeking funding for staff expansion from the OAU/STRC for an administrative assistant and from the Ford Foundation or similar entity for a full-time scientific editor.

B. International Agricultural Research Centers

1. The Network Coordinator position is a demanding one and should not be combined with the leadership of a regional research team. Both the SCO and USAID need to make this particular point to ICRISAT.

2. Nevertheless, Network Coordinators should be allowed to continue some research (up to 20% of their time) to maintain their credibility with their fellow scientists in the NARSSs and

in the IARCs. Some of the field and logistic support for this research will need to come through a cooperative agreement with the appropriate NARSSs.

3. In collaboration with the SCO, the Network Coordinators and the IARC staff should develop a comprehensive plan of human capital development for the NARS scientists in the Networks. This plan should include turning over the Network Coordinator positions to NARS scientists in 1991 with the commencement of SAFGRAD III. This plan will involve, as its central component, the identification of NARS scientists, who will be sent to obtain M.S. and Ph.D. degrees. The IARCs should collaborate with the SCO in searching for donor support of the long-term training discussed above.

4. Some NARS representatives from the Networks should be invited to participate in the annual internal reviews of the IARCs.

5. A plan for more direct support of the Networks from the central research stations (Ibadan for IITA and Niamey for ICRISAT) by other research scientists should be developed and implemented before the end of SAFGRAD II.

6. More regular consultation between IARC managements and the SCO is necessary to create a more collegial environment and to strengthen the Networks.

7. Cultivar testing in the NARSSs and in the Networks needs to be preceded by region-specific experiments designed to economically increase water availability and improve soil fertility. The IARCs and their Network Coordinators should take the lead in designing these types of experiments in collaboration with NARS scientists.

C. SAFGRAD Networks

1. A plan for turning the Network coordination positions over to NARS scientists at the start of SAFGRAD III needs to be developed in each Network by the Steering Committees. This plan should include a timeframe.

2. A program for monthly meetings between Network Coordinators, the International Coordinator and the Director of Research needs to be established. The agenda should include: a) common operational constraints and ways to overcome them, b) internal evaluation, c) budget matters, d) NARS needs, and e) dissemination of scientific information within the Networks.

3. The Steering Committees should continue to take an active role in periodic research priority reviews in their respective Networks.

D. USAID

1. USAID should continue the support of the SCO at approximately the present level of funding for the duration of SAFGRAD II.

2. A Director of Research position and support staff, both supported by the IFAD until April 1989, needs to be retained in the SCO to support the Networks for the duration of SAFGRAD II.

3. USAID can stop looking for alternative organizations to manage the Networks as long as the SCO retains adequate staff and continues to concentrate its activities on the Networks.

4. USAID and other donors can further strengthen the crop Networks through specific financing of their research projects in specific countries.

APPENDICES

Appendix I

SCOPE OF WORK

Appendix I

SCOPE OF WORK FOR INTERIM EVALUATION OF SAFGRAD II

This evaluation has two purposes:

(1) To determine the effectiveness of the four crop research networks funded by SAFGRAD.

(2) To assess the performance of the SAFGRAD Coordination Office (SCO).

First, with regard to crop research networking, the evaluation will specifically:

(a) Review project progress in attracting national agriculture research system (NARS) leaders to take leadership of the SAFGRAD Oversight Committee and verify that the Oversight Committee is properly functioning as a policy, technical, and operational decision-making body for the networking funded by SAFGRAD;

(b) Determine whether the research networks are fully operational with NARS representatives in leadership roles;

(c) Ascertain International Agricultural Research Centers (IARC) headquarters' support to their network coordinators in the field.

Second, with regard to SCO performance, the evaluation will:

(a) Appraise the SCO's performance in promoting African leadership in networking;

(b) Study the appropriateness of the SCO, as opposed to other African organizations, to continue its ongoing role as the SAFGRAD coordinating/facilitating entity;

(c) Review SCO progress in obtaining other donor support for national operational research and for networking.

1. Specific Responsibilities with Regard to the SCO

(a) Document the SCO's contributions to and its performance in network implementation.

(b) Assess the continued appropriateness of the SCO umbrella as an institutional coordinating mechanism for research, training, and technology transfer for cereals and grain legumes in the semi-arid zones of Africa.

(c) Assess the capability of other organizations, specifically the African Development Bank (ADB), to carry out the SCO's coordinating functions, including technical, administrative, and political abilities. If the assessment is positive for another organization, it should also include the costs/disadvantages involved in switching from one organization to another.

(d) Specify issues and recommend actions which will increase the effectiveness of the SCO through coordination of research and networking among participating national programs and international centers.

(e) Assess whether the SCO's role as manager (for IFAD) of farming systems research in three West African countries has increased its capacity to provide financial management services for research and development projects and whether this is a desirable direction for the SCO to take.

(f) Assess the ability and appropriateness of the SCO to take on coordinating responsibility for other networks, such as the West African Farming Systems Research Network.

(g) Assess the appropriateness of the SCO acting as a fund raiser on behalf of the national agricultural research systems, as requested by SAFGRAD member countries.

2. Specific Responsibilities with Regard to IITA and ICRISAT

(a) Assess the relevance of resident research to the needs of the NARS in the semi-arid regions of Africa.

(b) Assess the effectiveness of network coordinators in maintaining contacts with the NARS, involving them in network activities, and keeping them informed of technological developments.

(c) Assess IITA's and ICRISAT's support for commitment to the concept of networking and NARS involvement in the network.

(d) With the East African Sorghum/Millet Coordinator in Nairobi and the West African Sorghum Coordinator in Bamako, assess the effectiveness of liaison between ICRISAT, the Network Coordinators, the SCO, and USAID/Burkina.

(e) Assess the effectiveness of the Network Steering Committee and whether they are performing their functions as outlined in the Project Paper.

3. Recommendations

Based on assessments above, make recommendations to improve the functioning of the IARC crop networks and the SCO.

Appendix II

LOGICAL FRAMEWORK MATRIX

LOG FRAME -- SAFGRAD II

Narrative Summary

Program or Sector Goal

To increase the productivity and production of maize, sorghum, millet, and cowpeas among small scale producers in the SAFGRAD member and cooperating countries.

Program Purpose

To increase the efficiency and effectiveness of agricultural research on identified staple food crops in the SAFGRAD region by:

- strengthening commodity specific research networks to plan, broaden their base of support and make productive use of resources; and
- strengthening the service capacity of the OAU/STRC/SCO to facilitate the NARSs' participation in networking and obtain internal and external support for national research programs to accomplish this purpose.

Objectively Verifiable Indicators

Measures of Goal Achievements

- Increased yields
- Increased production
- Increased adoption of improved technologies.

EOP Status: Conditions to Indicate Achievement

- Effectively operating collaborative research networks (West Africa sorghum, East Africa sorghum/millet, maize and cowpeas starting in West and Central Africa) which operate by the following criteria:
 - establish common goals;
 - leadership by an apolitical entity with continuity;
 - policy set by advisory committee of researchers;
 - conducts, at least, annual meetings to identify objectives, technical problems, review past research, and plan future research
 - effective linkage to Southern Africa sorghum/millet network
- Effectively functioning service Oversight Committee established
 - analyzes and plans for the future;
 - facilitates information exchange on research.

Means of Verification

- Government statistics

- Annual Reports
- Attendance at oversight committee meetings.
- Attendance at network meetings.
- Reports from country missions.
- Information from SCO, networks, and NARSs.

Important Assumptions

- Increased allocation of national resources to research and extension.
- Availability of needed inputs and credit
- Incentive price policies.

- All interested parties willing and able to participate
- NARSs actively participating and eventually willing and able to assume leadership
- IARCs willing to assume leadership roles and operate networks in participatory manner.
- Improved prioritizations of research work by NARSs through participation in the networks.

Outputs

- An effectively functioning African Coordinating Organization
- SAFGRAD Oversight committee meets annually.
- Research for network reviewed and evaluated annually.
- Future reasearch activities identified, planned and allocated among participants.
- In country research implemented by NARSSs.
- Varieties released and cultural practices recommended.
- Responsive technical back-stopping by IITA and ICRISAT.
- Network priorities are reflected in NARS decision-making.
- Opportunites for the future donor support at regional and national levels clarified.

Magnitude of Outputs

- Annual Meetings of Oversight Committee provides guidance for IARCs
- Annual meetings of scientists, monitoring tours and advisory committee meetings.
- Network planned agronomic trials.
- Relevant varieties released in each commodity crop, based upon thorough testing and cultural practices.

- Reports by SCO, IITA, and ICRISAP.
- Monitoring of SAFGRAD and network meetings.
- Visits to and data from NARSSs
- Visits to and data from SCO, IITA, and ICRISAT

- Able leadership in Africa Regional Coordinaton and network meetings coordinators
- NARSSs willing to review plan, and allocate research responsibilities.
- NARSSs will fund in-country research costs.
- IARCs, CRSPs, and AID directly-managed centrally funded projects will interact responsibly with NARSSs.
- Technologies will be developed, involving improved multi-disciplinary participation and on-farm testing and it will be diffused to farmers.

Inputs

USAID Inputs

SCO - Years 1 & 2 of Project

- Salaries and allowances	\$ 337,641
- Technical assistance	140,000
- Operations	67,200
- Capital	65,200
- ACPO's	350,000

Networks for sorghum, millet, maize and cowpeas

- Salaries and allowances	\$3,283,884
- Operations	3,080,573
- Overhead	492,583
- Capital	345,500

Project Management and Long-term Technical Assistance

- Salaries and allowances	\$1,230,000
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Evaluation \$200,000

Inflation and Contingency \$281,550

Country Inputs

National Program Expenses

Other Donor Inputs

- IFAD
- FAC

- Reports by SCO and Oversight Committee

- Reports by IITA, ICRISAT and others
- Evaluations
- Final reports

- AID funding available
- IITA and ICRISAT continue to be willir to coordinate
- NARSs continue to support project and provide for national program resources

Appendix III

DOCUMENTS CONSULTED

Appendix III

DOCUMENTS CONSULTED

Achievement of SAFGRAD-ICRISAT-NARS Collaborative Research Project in East Africa, July 1988.

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Appendix IV

INDIVIDUALS AND ORGANIZATIONS CONTACTED

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INDIVIDUALS AND ORGANIZATIONS CONTACTED

Name	Organization
Dr. Emil Deganus	Administrator, IITA.
Dr. Joseph B. Suh	Cowpea Program Leader-Kamboinse Entomologist, IITA.
Dr. Alpha O. Diallo	Former Maize Network Coordinator, CIMMYT - Kamboinse.
Dr. Joseph Fajemissin	Present Maize Network Coordinator, IITA - Kamboinse.
Mr. Michael Sullivan	Project Director, USAID/Burkina Faso.
Dr. Joseph Menyonga	Director, SCO/SAFGRAD - Ouagadougou, OAU/STRC.
Dr. Taye Bezuneh	Research Coordinator-SCO, Crop Pathologist, SAFGRAD, OAU/STRC.
Dr. Nyanguila Muleba	Cowpea Network Coordinator, IITA, Kamboinse.
Dr. Papa D. Fall	Deputy Executive Secretary, OAU/STRC, Lagos.
Ing. Ag. Belem Pegda Celestin	Director INERA (National Ag. Research Institute), Burkina Faso.
Ing. Ag. Leopold Some	Assistant to Director, INERA, Burkina Faso.
Dr. Ronald Gibbons	Director, ICRISAT Sahelian Center, Niamey, Niger.
Mr. Roger Bloom, Mr. Quincy Bamble	USAID/Niamey.
Dr. K. Anand Kumar	ICRISAT - Millet Breeder, Team Leader, Millet, ISC.
Dr. Bruno J. Ndungura	ICRISAT - Principal Groundnut Agronomist, ISC.
Mr. Moussa Oumarou	Deputy Director General, INRAN, Niamey.

<u>Name</u>	<u>Organization</u>
Mr. Bonkula Abdullahi	Chief, Dept. of Agricultural Research, INRAN, Niamey.
Dr. John Clark	Sorghum Breeder, Purdue University Program with INRAN, Niamey.
Dr. I. Babiker	Member of Oversight Committee, Director of Gezira Research Station, Agricultural Research Corporation, Medani, Sudan.
Dr. Mercer-Quarshie	Member of Oversight Committee, Co-manager of Nyankpala Agricultural Experimental Station, Crop Research Institute, Tamale, Ghana.
Dr. S. Da	Member of Oversight Committee, Station de la Recherche Agronomique, de Farako-Ba, Bobo-Dioulasso, Burkina Faso.
Dr. J.M.J. de Wet	Director, Cereals Program, ICRISAT, Hyderabad, India.
Dr. G. Kingma	Senior Project Advisor, OAU/STRC/SAFGRAD.
Dr. Jacques Faye	Coordinator of West African Farming System Research Networks, Ouagadougou, Burkina Faso.
Dr. Vartan Guiragossian	SAFGRAD/ICRISAT Regional Coordinator, East Africa Sorghum and Millet Research Network, Nairobi, Kenya.
Dr. S.Z. Mukuru	SAFGRAD/ICRISAT, East Africa Sorghum and Millet Research Network, Nairobi, Kenya.
Dr. K.W. Ramaiah	SAFGRAD/ICRISAT Regional Coordinator, West and Central Africa Sorghum Network, Bamako, Mali.
Dr. E. Washington	USAID/Mali.
Mr. A. Dember	USAID/Mali.
Mr. Dolo	Director of IER/CRCVO, Bamako, Mali.

Name	Organization
Dr. S.K. Shetty	ICRISAT, Project Leader, Joint Regional Sorghum Program, Bamako, Mali.
Dr. Kassu Yilala	Animal Production Specialist, FSR Team in Burkina Faso, IFAD Supported Program of SAFGRAD.
Mr. Ernest Gibbons	Agricultural Development Officer, USAID/Niger.
Mr. Wayne King	USAID/REDSO.
Mr. John Schneider	USAID/REDSO.
Ms. Nancy Nolan	USAID/REDSO.
Dr. S.K. Reddy	USAID/REDSO, former USAID/Mali Project Manager of SAFGRAD SCPO Program.
Mr. Steve Donovan	Acting Executive Director, U.S. Representative to African Development Bank.
Mr. P. Mutalemwa	Principal Loan Officer, African Development Bank.
Dr. M. Abdoulah Yacoubi	Agronomist, Technical Advisor from REDSO to AFDB.
Mr. N. Sangbe	Chief of Irrigation, Agro-Industry and Forestry, East and North Africa, AFDB.
Mr. Makiese Dikombe	Principal Agro-economist, West and Central Africa, AFDB.
Dr. Y.C. Prudencio	Agricultural Economist, IITA, formerly FSR Economist in IFAD-SAFGRAD Project in Burkina Faso.
Dr. L.K. Fakambi	Chairman of Oversight Committee, FSA/UNB, Benin.
Dr. M. Emechebe	Member of Oversight Committee, Dept. of Crop Protection, IAR/ Faculty of Agriculture, Ahmadu Bello University, Zaria, Nigeria.

Name	Organization
Dr. G. H. Semuguruke	Member of Oversight Committee, Tanzania Agricultural Research Organization, Dar Es Salam, Tanzania.
Dr. Z. Zanogo	IER, Director of Agricultural Research, Bamako, Mali.
Dr. D. Dotienga	IER, Director of Research, Bamako, Mali.
Dr. J. Chivarioli	Director, USAID/Mali.
Dr. P. K. Kusewa	Director of Katumani National Dryland Farming Research Station, Kenya
Mr. A. Ragua	Millet Breeder, Katumani National Dryland Farming Research Station, Kenya.
Mr. B. M. Kamyenji	Sorghum Breeder, Katumani National Dryland Farming Research Skation, Kenya.
Dr. J. P. Ekebil	Deputy Director for International Cooperation, IITA, Ibadan.
Mr. Adanlete Evenuwre	SAFGRAD/SCO.
Mr. Antoine Zongo	Acting Chief Accountant, USAID/Burkina Faso.
Dr. Bonaventure B. Traore	Agricultural Economist, USAID/Burkina Faso.
Dr. Tadesse Kireab	Soil Scientist, Team Leader, FSR Team of IFAD/SAFGRAD, Burkina Faso.
Mr. David Shinn	United States Ambassador to Burkina Faso.
Mr. Issa Koussoube	AID Evaluation Office.
Mr. Calvin Martin	AID, Washington, D.C.
Mr. Alan McSwain	AID, Washington, D.C.