FINAL CONTRACT REPORT

SENEGAL
AGRICULTURAL RESEARCH II
PROJECT

AID Contract No. 685-0957-C-00-8004-00

Submitted to the
United States
Agency for International Development
Dakar, Senegal

September 30, 1992
FINAL CONTRACT REPORT
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Submitted by
Michigan State University
Department of Agricultural Economics

To the
United States Agency for International Development
Dakar, Senegal

September 30, 1992
The Senegal Agricultural Research II Project (SAR-II) was originally designed as a limited continuation of institution-building support for ISRA (Institut Sénégalais de Recherches Agricoles) begun in December 1981 under the predecessor project, Senegal Agricultural Research and Planning (685-0223). SAR-II initially covered the period December 27, 1987, through June 30, 1990. It was later extended to June 30, 1992.

Although Modification No. 5 of the MSU contract eliminated mention of a final contract report, MSU is submitting this document as the final contract report. The report is largely administrative in nature. It summarizes the activities and accomplishments of the SAR-II project, with only limited mention of the scientific findings of the research programs supported by the MSU contract. Technical reports containing such information are cited in the publications list.

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ACKNOWLEDGMENTS

This report was prepared by Eric Crawford, Project Director, and Jim Bingen, Associate Director. Anne Williams and Jay Dee Siebert made a significant contribution to the report by assembling some of the detailed information, and by providing drafts and review comments on certain sections. Our thanks go to Pat Eisele for her fine secretarial work.

SAR-II project personnel express their collective appreciation to USAID/Senegal and to ISRA for their support during the project period.
ABBREVIATIONS

ACI  Africa Consultants International
ARS  Administrator/Research Specialist
BAME Bureau d'Analyses Macroéconomiques
CAT  Cereals Advisory Team
CDH  Centre pour le Développement de l'Horticulture (ISRA)
CILSS Comité Permanent Inter-Etats de la Lutte contre la Sécheresse dans le Sahel
CNCAS Caisse Nationale de Crédit Agricole au Sénégal
CRSP Collaborative Research Support Program
CSA Commissariat à la Sécurité Alimentaire
DRPV Direction de Recherches sur les Productions Végétales (ISRA)
DRSAEA Direction de Recherches sur les Systèmes Agraires et l'Économie Agricole (ISRA)
FAO Food and Agriculture Organization of the United Nations
GIE Groupement d'Intérêt Economique
GOS Government of Senegal
ICRISAT International Crops Research Institute for the Semi-Arid Tropics
INTSORMIL Grain Sorghum and Pearl Millet CRSP
ISNAR International Service for National Agricultural Research
ISRA Institut Sénégalais de Recherches Agricoles
LNERV Laboratoire National d'Elevage et de Recherches Vétérinaires (ISRA)
Lop Life of Project
LTTA Long-term technical assistance
MDR Ministère du Développement Rural
MSU Michigan State University
NGO Non-governmental organization
OIT Office of International Training
OMVS Organisation pour la Mise en Valeur du Fleuve Sénégal
PIL Project Implementation Letter
PRISAS Programme Régional d'Renforcement Institutionnel en Matière de Recherches sur la Sécurité Alimentaire au Sahel
PSR Production systems research
SAR-II Senegal Agricultural Research II Project
SARP Senegal Agricultural Research and Planning Project
SENCHEIM Société de Commercialisation de Productions des Industries Chimiques du Sénégal
SONACOS Société Nationale de Commercialisation des Oléagineux du Sénégal
STTA Short-term technical assistance
TDY Temporary duty
UNIVAL Unité d'Information et de Valorisation (ISRA)
USAID U.S. Agency for International Development
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1. OVERVIEW

1.1 Project Background

Understanding the design of the Senegal Agricultural Research II Project (SAR-II) requires a brief review of its historical context. SAR-II was intended as a relatively short-term successor to the Senegal Agricultural Research and Planning Project (685-0223, December 1981 through December 26, 1987), for which Michigan State University (MSU) was also the institutional contractor.

SAR-II initially covered the period December 27, 1987, through June 30, 1990. It was conceived as a modest "bridging" project to maintain USAID's institution-building support for ISRA (Institut Sénégalais de Recherches Agricoles), initiated under SARP and expected to continue under a subsequent USAID-funded large-scale agricultural research support project. When this subsequent project was not implemented, USAID extended the SAR-II project to June 30, 1992, and increased its funding from $3.596 million to $5.093 million to cover the MSU contract and related activities (see section 2.1.1).

SAR-II was implemented not by designing a new project, but by restructuring an existing one.¹

[The SAR-II Project] was originally the Senegal component of the regional Organisation pour la Mise en Valeur du Fleuve Senegal (OMVS) Agricultural Research II Project (625-0957) authorized on August 11, 1983. In December 1987, the Senegal component was bilateralized with a Project Authorization Amendment, a Project Paper Supplement was issued, and the SARI project implementation began.²

Both the "bridging" nature of SAR-II, and its origins in the OMVS-II project, had important implications for the focus and outcomes of SAR-II. The short time horizon (30 months, with a 24-month extension) constrained the recruitment of long-term personnel. The Fleuve region orientation of SAR-II, inherited from OMVS-II, created a disparity between the types of activities that could be justified as Fleuve related, and those that ISRA wanted to have supported, and which the SARP project had successfully supported.³ Compared to SAR, SAR-II had a greater emphasis on support for crop research and for research planning and management, and less emphasis on support for applied economics and production systems research.

During the lifetime of SAR-II, ISRA underwent significant organizational and personnel changes in response to severe budgetary constraints. ISRA reduced its personnel complement

¹This decision reflected USAID's belief in the importance of irrigated agriculture, as well as a desire to speed implementation and take advantage of existing funds.

²Contract No. 685-0975-C-00-8004-00, Modification No. 5, p. 3.

³The term "Fleuve" will occasionally be used as a synonym for Senegal River Valley.
from 885 employees in June 1990 to 560. Some research stations were closed, and others were
designated substations or appended administratively to larger centers. The Agrarian Systems
and Agricultural Economics Department was eliminated, and the Bureau of Macro-Economic
Analysis was revived. Lastly, in early 1991, the number of research programs was reduced from
64 to 23.

1.2 Project Purpose and Goal

Modification No. 5 of the contract states (p. 3):

The project purpose is to strengthen ISRA's cereal-based research system in the Senegal
River Basin, focusing on the development of Senegal agricultural research capacities in the
Senegal River and on the improvement of the overall national research capacity of ISRA
to support cereals-based research in the Senegal River Basin. The project goal is to
improve the capacity of Senegal to plan and implement agricultural development activities
in the Senegal River Basin more effectively.

The overall SAR-II project included two activities managed by USAID/Senegal outside
the MSU contract: construction and rehabilitation of research facilities in the Senegal River
Basin including irrigated perimeters and the Fanaye station, and a grant agreement with ISNAR
to support ISRA's human resource management capacity.

1.3 Contract Objectives

The objectives outlined in the original contract were:

a) To strengthen and improve the effectiveness of the Crop Production Research
Department's cereals-based research programs.

b) To integrate cereals-based research into the Senegal River Valley research program
and into ISRA's overall national research plan.

c) To upgrade the technical and professional skills of ISRA researchers and
technicians.

d) To consolidate production systems and applied economics research programs.

Subsequent contract modifications added the following objectives:

e) To conduct a study of agroforestry issues, including factors related to regeneration
of the *Acacia albida* in the Peanut Basin of Senegal (Modification No. 3, October 24,
1989).

f) To strengthen ISRA's capacity to set research priorities and align budgetary and
infrastructure resources (Modification No. 5, September 18, 1990).
g) To strengthen ISRA's capacity to complete [its] institutional building process (Modification No. 5).

h) To strengthen applied economics programs, and improve their linkages with policymakers and with cereals-based research (Modification No. 5).

In order to achieve contract objectives, the following inputs were provided under the contract (cf. section 2 for details): long- and short-term technical assistance; degree (M.Sc. and Ph.D.) and non-degree training, including in-country workshops; funding for short-term study trips by ISRA personnel to the U.S. or other countries; local currency support for ISRA research program costs; commodities; and on-campus and in-country contract administrative support.

Other inputs provided outside the MSU contract contributed to the achievement of contract objectives. These included purchase of vehicles and allocation of local currency (USAID), and office space and counterpart personnel (ISRA).

1.4 Organization of Report

Section 2 describes contract inputs. Section 3 summarizes the activities, outputs and achievements resulting from contract inputs. References are given to technical reports which contain information on the design and results of the scientific research supported under the contract. Section 4 discusses lessons learned in implementing contract activities, and makes recommendations for the design and implementation of future projects of this type. A number of Appendices contain details on contract inputs and outputs.

2. CONTRACT INPUTS

2.1 Funding

Contract activities were funded partly from a U.S. dollar budget under the MSU contract, and partly from a local currency budget provided from USAID project (not MSU contract) funds and managed by in-country contract personnel.

2.1.1 U.S. dollar budget and contract amendments

The amount of $700,000 was initially obligated for the contract. Subsequent contract amendments were enacted to increase the funding level and modify contract provisions:

- Modification No. 1, March 11, 1988: changed the Paying Office.

- Modification No. 2, October 3, 1988: increased total obligated funding from $700,000 to $1,933,442; authorized conversion of $10,000 in MSU funds into local currency for in-country expenses; increased the maximum housing allowance; allowed MSU to pay for all travel/tickets; and amended participant training from 2 Ph.D. and 2 M.Sc. to 1 Ph.D. and 3 M.Sc. programs.
- Modification No. 3, October 24, 1989: deobligated $31,531; decreased the level of effort; incorporated the latest indirect cost rate; added an agroforestry study; and extended the expiration date from June 20 to June 30, 1990.

- Modification No. 4, June 12, 1990: provided a no-cost extension of the contract from June 30 through September 30, 1990.

- Modification No. 5, September 18, 1990: obligated an additional $1,064,535; extended the expiration date from September 30, 1990 to June 30, 1992; and revised the scope of work.

2.1.2 Local currency budget and Project Implementation Letters

The MSU contract budget did not include funds to support the operating costs of ISRA research programs. For this purpose, local currency was provided by USAID from SAR-II funds outside the MSU contract. Local currency was used to support workshops and research programs on cereals production, production systems in the Fleuve, food security, cereals marketing, livestock marketing, agroforestry, statistical analysis, and computer use.

The local currency funds were provided under the terms of five Project Implementation Letters (PILs). The amounts provided, and other stipulations, were as follows:

- PIL No. 6 (July 14, 1988): allocated $330,000 in local currency for the period through June 30, 1990; included a plan of work and budget.

- PIL No. 10 (February 8, 1990): added $10,000 in local currency.

- PIL No. 11 (July 19, 1990): extended the expiration date to September 30, 1992; and increased the total life-of-project (LOP) budgeted amount from $340,000 to $465,733.

- PIL No. 12 (September 20, 1990): extended the expiration date to June 30, 1992; amended the LOP budget from $465,733 to $716,791, the most significant additions being for CAT activities, contract support, cereals marketing, and research planning programs; and ended support for the Fleuve region production systems research team.

- PIL No. 15 (October 14, 1991): allowed USAID to purchase subscriptions to scientific journals; and realigned the budget.

Of the total amount of $716,791, $228,393 was allocated for activities in the Fleuve region, with the funds managed directly by ISRA/St. Louis. The remaining $488,398 was managed by MSU contract personnel in Dakar.
Actual local currency expenditures (in dollar equivalents) for activities managed by MSU contract personnel in Dakar were slightly lower than the budgeted amount, as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>$49,925</td>
</tr>
<tr>
<td>1989</td>
<td>$89,203</td>
</tr>
<tr>
<td>1990</td>
<td>$94,467</td>
</tr>
<tr>
<td>1991</td>
<td>$101,531</td>
</tr>
<tr>
<td>1992</td>
<td>$76,701</td>
</tr>
<tr>
<td>Total</td>
<td>$411,827</td>
</tr>
</tbody>
</table>

A detailed breakdown of local currency expenditures, by program and department supported, is shown in Appendix 1.

2.2 Technical Assistance

2.2.1 Long-term

A four-person team was fielded to provide long-term technical assistance. All positions were specified for 24 person-months in the original contract. Modification No. 3 of the contract (October 24, 1989) reduced the level of effort for the Research Planner to 14.3 months, and increased the level of effort for the Agricultural Economist to 30.7 months. The extension of the contract from July 1990 through June 1992 (Modification No. 5, September 18, 1990) added 18 person-months for the Research Planner/Chief of Party, and 12 person-months for the Agricultural Economist.

Research Planner/Chief of Party. Difficulties arose in recruiting a qualified person. The position was filled from January 1989 to January 1990 by Dr. Taart Schillhorn van Veen (Michigan State University). Dr. Schillhorn van Veen, a veterinary scientist and specialist in parasitology, with long experience in Nigeria and elsewhere in West Africa, was coordinator of international programs in the MSU College of Veterinary Science.

Because of uncertainty about possible extension of the project beyond June 1990, Dr. Schillhorn van Veen elected to return to campus in January 1990. After a lengthy recruitment process, the position was refilled by Dr. Jay Dee Siebert (Kansas State University) for the period April 1991 through June 1992. Dr. Siebert, a millet breeder and farming systems agronomist, had long field experience including eight years in a farming systems research project in Botswana.

Cereals Agronomist. Following some difficulty in identifying a candidate with suitable experience (research, previous overseas work) and French language fluency, and after a change in the directorship of ISRA's Crop Production Department, MSU proposed a Cereals Advisory Team approach to achieving the objectives of a Cereals Agronomist position. In July 1988 ISRA stated its agreement with, and preference for, the Cereals Advisory Team approach instead of a single, in-country Cereals Agronomist. The contributions of the CAT were well received, and its funding was extended through June 1992.
Agricultural Economist. This position was filled by Dr. Ismaël Ouédraogo, an agricultural economist with previous field experience in a multidisciplinary rice research project in Mali, and with cereals marketing research under the SARP project in Senegal. Dr. Ouédraogo was at post from December 1987 to February 1991. Dr. Ouédraogo also served as Chief of Party from December 1987 through December 1988, and again from February 1990 through January 1991. Following Dr. Ouédraogo’s resignation prior to the end of his contract (June 30, 1991), tasks remaining in his plan of work were completed by on-campus personnel and short-term consultants.

Administrator/Research Specialist. The original contract called for a half-time administrative assistant. Ms. Anne Williams-Sidibé, an M.Sc. degree graduate in agricultural economics with field experience in Zaire and Senegal, filled this position from June through September 1988. The position was subsequently reclassified to full-time administrative assistant/research assistant for the period October 1988 through September 1989. It was again reclassified to administrator/research specialist on October 1, 1990. Ms. Williams-Sidibé continued to occupy the position until the end of the contract. During February and March 1991, Ms. Williams-Sidibé acted as MSU’s contract representative in Senegal.

In addition to these four contract-funded positions, a data entry operator and a driver were funded out of the local currency budget. In October 1990, the data entry position was upgraded to secretary/administrative assistant. Ms. Faty Mbengue Ba served as data entry operator and secretary/administrative assistant throughout the contract period. Mr. Daouda Gning was the driver from July 1, 1989, to June 30, 1992.

2.2.2 Short-term

Short-term technical assistance (STTA) was provided in the following areas: crop production; research planning, management and institutional strengthening; agricultural economics (cereals marketing, food security, economic analysis of agricultural experiments); agroforestry; statistics and use of computers; and other (water management, farmer organizations). About 25 person-months of STTA were planned for Years 1 and 2 of the contract (December 1987 through December 1989), including 10 months for an agroforestry study, and 6.75 months for the CAT. Thirteen person-months were planned for Years 3 and 4 (July 1990 through June 1992), including five months for the CAT, two for research planning and management, four for agricultural economics, and two for other unspecified topics.4

Thirty-three consulting trips were carried out during the period January 1988 through June 1992 (Appendix 5). Actual person-months for this period totalled 23.19, compared to the planned total of 38 person-months. The shortfall resulted from cases where (a) the planned TDY was determined to be unnecessary, or the functions were carried out under another TDY; (b) no suitable candidate was found, and the advice was provided by in-country LTDA; and (c) a consultant was identified but was unable to travel due to restrictions during the Gulf war.

4Modification No. 5, pp. 7-8. Note that the original contract called for all activities except for participant training to cease as of December 31, 1989.
2.3 Training

The contract supported degree training for ISRA researchers at both the M.Sc. and Ph.D. levels. Other forms of training conducted under the contract included in-country workshops, and short-term study trips for non-degree training at universities or for observational visits to research or educational institutions outside Senegal.

2.3.1 Degree training

Four ISRA researchers received M.Sc. degrees funded by the contract, and two received Ph.D. degrees (Table 1). The disciplines covered were agronomy, agroforestry, forestry genetics, agricultural engineering, sociology, and agricultural economics.

2.3.2 Short-term non-degree training

This included workshops held in Senegal and trips to the U.S. and third countries, as discussed below.

2.3.2.1 In-country workshops and training

Twenty-eight workshops were conducted in Senegal under contract financing (Appendix 6.1). The average attendance at each workshop was 20 people, including ISRA researchers, farmers, decision makers, and donor representatives. Workshops covered topics in support of research programs on cereals production, food security, cereals marketing, and research planning, as well as activities of the socioeconomics disciplinary group.

The contract also supported in-country English language training, implemented by a local consulting firm, Africa Consultants International (ACI). This training began in October 1988. Participants included two proposed M.Sc. trainees and one nondegree trainee. Training continued in 1989 with participation by various senior ISRA research directors.

2.3.2.2 Short-term study trips

A total of 20 ISRA personnel made short-term study trips during the contract period, including seven research station managers who attended an ICRISAT/University of Arkansas workshop in Niger on experiment station management (Appendix 6.2). All other trips were made to various U.S. universities in order to consult with U.S.-based research colleagues, to attend workshops, or to take refresher courses.

2.4 Commodities

Contract funds were used to purchase furniture, household appliances, and selected office or scientific equipment for long-term technical assistance personnel, computer equipment and related hardware, and computer software.
<table>
<thead>
<tr>
<th>NAME</th>
<th>UNIVERSITY</th>
<th>SPECIALIZATION</th>
<th>TRAINING PERIOD (d/m/y)</th>
<th>ASSIGNMENT (PROGR./CENTER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mamadou NDIAYE, (M.Sc.)</td>
<td>U. of Minnesota</td>
<td>Agronomy (maize)</td>
<td>July 5, 1988-June 30,1990</td>
<td>DRPV/Nioro</td>
</tr>
<tr>
<td>Babou NDOUR, (M.Sc.)</td>
<td>U. of Idaho</td>
<td>Agroforestry</td>
<td>March 8, 1989-July 4, 1991</td>
<td>DRPF/Kaolack</td>
</tr>
<tr>
<td>Abibou GAYE, (M.Sc.)</td>
<td>M.S.U.</td>
<td>Forestry Genetics</td>
<td>March 19, 1989-September 18, 1991</td>
<td>DRPF/Dakar</td>
</tr>
</tbody>
</table>
2.4.1 Furniture/equipment purchased in-country

The contract was responsible for providing housing and furniture for long-term personnel in Senegal. A list of the items acquired is shown in Appendix 2.1. All items were turned over to ISRA upon completion of the contract.

2.4.2 Computer equipment

Desktop and laptop computers were purchased in support of the cereals production, research planning, applied economics, and forestry research programs. Related equipment such as printers, surge suppressors, back-up power supplies, hard drives, etc., was also purchased. To facilitate communication, modems were purchased for the MSU contract management offices and for ISRA offices in Dakar, Dakar-Hann, Bambey, and St. Louis. A list of computer and related hardware purchases is shown in Appendix 2.2.

MSU on-campus staff, including computer support personnel, were responsible for identifying the appropriate equipment, ordering it, and installing and testing each item before shipment to Senegal. All equipment items were turned over to ISRA.

2.4.3 Computer software

A wide range of software was purchased to support use of computers by ISRA research and management personnel (Appendix 2.3). This included programs for word processing, database management, spreadsheet analysis, statistical analysis, communications, graphics, project scheduling, virus scanning and cleaning, and general utilities.

MSU on-campus computer support staff prepared guidelines and other instructional materials on the use of this software. All software was turned over to ISRA, with the exception of a few items purchased to facilitate contract management by on-campus support staff.

2.5 Documentation and Publications

The contract contributed to ISRA’s documentation and publication program by funding the acquisition of scientific journal subscriptions and reference materials, by helping to fund the publication of research reports, by managing and funding the ISRA/MSU International Development Reprint Paper series, and by funding the reissue of selected reports by ISRA or MSU researchers in the ISRA-UNIVAL *Etudes et Documents* series.

2.5.1 Subscriptions and reference materials

Contract-funded subscriptions to scientific journals or other reference materials are listed in Appendix 4.1. Reference books purchased under the contract are shown in Appendix 4.2. Subscriptions and reference materials were identified primarily by ISRA researchers and long-term contract personnel in Senegal, and were shipped to Senegal during the project period. A few duplicate reference works (e.g., French/English dictionaries and glossaries) were used by on-campus support staff.
2.5.2 Publications

Publications are listed in Appendix 3.1 by program area and publication type. This includes technical reports by long-term technical assistance personnel and by ISRA researchers whose programs were supported under the project; trip reports by short-term consultants; trip reports by ISRA personnel on short-term study tours; seminar proceedings; M.Sc. and Ph.D. theses; ISRA-UNIVAL reprints (Etudes et Documents); ISRA-MSU Reprint Papers; and video films produced. Appendix 3.2 contains an alphabetical list of all publications.

2.5.3 ISRA/MSU Reprint Paper series

Twenty-four research reports prepared under the SARP and SAR-II projects were published by MSU as ISRA/MSU International Development Reprint Papers. (See section X, Appendix 3.1). All papers were thoroughly edited, and most were made available in both French and English.

2.5.4 ISRA-UNIVAL/MSU reprint series

Sixteen research reports were published jointly by ISRA-UNIVAL and MSU in a new UNIVAL Etudes et Documents series (see section IX of Appendix 3.1). Four of these reports were based on work done under SAR-II; the remaining twelve are reprints of reports prepared under the SARP project. The purpose of this publication activity was to increase the availability of these reports within Senegal, and to give ISRA the opportunity to obtain revenues from sales of the publications.

2.6 Contract Management

Contract management was ensured by a combination of in-country and on-campus personnel.

2.6.1 In-country personnel and activities

In-country management personnel paid under the contract consisted of the Chief of Party and the Administrator/Research Specialist. Project local currency funds also paid for a secretary/administrative assistant and a driver.

The role of Chief of Party was fulfilled by the Research Planner. Thus, Drs. Schillhorn van Veen and Siebert acted as Chief of Party during their respective field assignments. When neither Schillhorn van Veen nor Siebert were in country, Dr. Ouédraogo or Ms. Williams-Sidibé acted as Chief of Party.

The Chief of Party was responsible for representing MSU in all field matters pertaining to the contract, preparation of annual field reports, overall coordination of field contract services, and, with the assistance of the Administrator/Research Specialist, administration of in-country recruitment, procurement, expenditure of and accounting for contract and project local currency funds spent in country, and planning and facilitating short-term consultant missions. Official
contacts between USAID and MSU and between ISRA and MSU were made through the Chief of Party.

The Administrator/Research Specialist (ARS) had primary day-to-day responsibility, under the direction of the Chief of Party, for coordinating in-country contract activities, including short-term TDYs, contract support for ISRA research programs, participant training, and workshops. Coordination included working with other MSU contract, USAID, and ISRA personnel to plan, supervise, and facilitate implementation of in-country activities supported by the contract. The ARS supervised the disbursement, accounting, and justification of in-country expenditures, including MSU contract funds and local currency funds for ISRA research programs. The ARS supervised the work of the secretary/administrative assistant and the driver.

The secretary/administrative assistant was responsible for secretarial and computer data entry duties, and for assisting with the disbursement, accounting, and justification of in-country expenditures. The driver played an important role in assisting the ARS with procurement, photocopying, and communications, reducing the number of time-consuming trips made by the ARS from the contract office at Dakar-Hann into the center of Dakar.

2.6.2 On-campus personnel and activities

On-campus contract management and support activities were carried out by a team of faculty and staff who devoted part of their time to the contract. During the period December 21, 1987, through June 30, 1990, a total of 2.0 person-equivalents times 30.3 months, or 60.6 person-months, was budgeted for this support, made up as follows:

2 Co-Directors (Eric Crawford and R. James Bingen), each at 40%
Computer analyst, at 5%
Administrative assistant, at 30%
Secretary, at 40%
Graduate assistant, at 25%
Student assistant, at 5%
Translator, at 15%

Dr. Crawford had primary responsibility for backstopping the applied economics research and computer support activities. Dr. Bingen had primary responsibility for backstopping the cereals advisory team and research planning activities. The actual number of person-months devoted to on-campus support during this period was 593.

During the period July 1, 1990, through June 30, 1991, a total of 1.8 person-equivalents times 12 months, or 21.6 person-months, was budgeted for on-campus support, made up as follows:

Project Director (Eric Crawford), at 30%
Associate Director (R. James Bingen), at 30%
Computer analyst, at 10%
Graduate assistant, at 25%
Administrative assistant, at 25%
Participant Training and Travel Officer, at 30%
Secretary, at 15%
Translators, editors, student assistants, at 15%

Drs. Crawford and Bingen retained their previous responsibilities for program area backstopping. For the period July 1, 1991, through June 30, 1992, the time budgeted for the Participant Training and Travel Officer was reduced from 30% to 20%, reducing the person-equivalents to 1.7 and the person-months to 20.4 for that twelve months.

Actual person-months during the 24-month period from July 1, 1990 through June 30, 1992, was 33.2, compared to the budgeted amount of 42.0. This shortfall resulted from a vacancy in the Participant Training and Travel Officer position during part of the period, and to lower-than-budgeted amounts of time charged for the Project Director and Associate Director. Over the full contract period, actual on-campus support time totalled 92.5 person-months, compared to 101.1 person-months budgeted.

The major activities carried out by on-campus staff included (a) management of the participant training program, (b) identification of candidates for LTTP and SPPA assignments, (c) identification of opportunities for TDYs and short-term training or workshops, (d) editing, translation, and publication of project-related reports, (e) procurement, testing, and shipment of computers and related hardware and software, (f) guidance, diagnostic and repair services related to ISRA's use of computers, (g) management of the U.S. dollar budget, including accounting and personnel management, and preparation of cost proposals and financial reports, (h) travel arrangements for U.S. and international travel under the contract, (i) procurement and shipment of subscriptions and reference books, (j) review of budgets, workplans, and progress reports for in-country activities, and (k) modem communications between MSU and Senegal.

The in-country management team collaborated in carrying out the above activities by (a) planning STTP visits and workshops, (b) obtaining USAID/Senegal or ISRA approvals regarding changes in participant trainee programs, (c) translating certain documents into French, and (d) assisting with in-country diagnosis or repair of computer equipment, when possible.

2.7 Related Inputs and Activities

Various contributions from outside the contract budget per se contributed to the achievement of contract objectives.

2.7.1 ISRA

ISRA provided office space and access to telephone and photocopy services for the Research Planner/Chief of Party at the ISRA Direction Générale, and for other in-country contract personnel at Département Systèmes office on the grounds of the Laboratoire National d'Elevage et de Recherches Vétérinaires (LNERV) located in Dakar-Hann.
2.7.2 USAID

USAID procured and used SAR-II project funds to pay for four vehicles used in contract activities. Two vehicles were assigned to long-term contract personnel, and two were assigned to ISRA for use in support of contract-related activities. One vehicle assigned to ISRA was used by the contract agroforester during his 10-month study. USAID funding for construction and rehabilitation of facilities at the Fanaye research station contributed to research activities in the Fleuve region. Local currency provided by the project was used to cover a large part of the in-country costs of ISRA research programs supported by the MSU contract. Lastly, ISNAR studies of personnel and financial management issues at ISRA, funded by the USAID project, were complementary to the research planning and management support provided under the MSU contract.

2.7.3 MSU PRISAS-funded activities

One component of MSU's AID-funded Food Security in Africa Cooperative Agreement is an activity to support food security studies by local institutions within the Sahel region. This activity, the Programme Régional d'Enforcement Institutionnel en Matière de Recherches sur la Sécurité Alimentaire au Sahel (PRISAS), provided funding for attendance by ISRA economists Mamadou Sidibé (BAME) and Pape Abdoulaye Seck (CDH) at workshops on food security studies and research priorities held in Bamako, Mali, in May and November 1991. ISRA economists Sidibé and Moustapha Gaye, ISRA/St. Louis, also received PRISAS funding for an expansion of their previous modelling studies of improved farming systems in the Delta of the Fleuve region. Lastly, PRISAS funding supported a trip to Senegal by Josué Dioné, MSU's PRISAS representative in Bamako, for purposes of discussing food security issues and research methods at a workshop organized by the socioeconomics disciplinary group of ISRA in September, 1990. These PRISAS-supported activities were complementary to those funded under the MSU SAR-II contract.

3. CONTRACT ACTIVITIES AND ACHIEVEMENTS

The following sections summarize the main activities and achievements of the contract. The first five sections discuss achievements that relate to the directly stated objectives of the project. The remaining two sections cover support services that contributed indirectly to contract objectives.

3.1 Cereals-Based Research

The concept of a Cereals Advisory Team as a research support model was based on the notion that the work of ISRA scientists could be accelerated through collaboration with senior U.S. university-based scientists who had substantial expertise conducting similar research programs. As in the CRSP approach, the model included collaboration in the review and identification of major constraints and opportunities for addressing them, and in the development of work plans, the execution and evaluation of experiments, and the analyses of results. The approach also provided opportunities for both short- and long-term training for participating ISRA scientists.
The first meeting of the Cereals Advisory Team was held in Dakar during the last week of September 1988. During this meeting it was proposed that David Andrews (University of Nebraska-Lincoln/INTSORMIL) would work on millet and flood recession sorghum; Kent Crookston (University of Minnesota) would develop a collaborative program for maize, including research on fertilizer responsiveness of maize under irrigated conditions; and Tony Hall would expand the cowpea research program to include a series of trials on cowpeas under rainfed and flood recession conditions in the Fleuve Region. Additional CAT support was received from Pierre Robert in soils mapping and Larry Claflin in cereal phytopathology.

The Team's specific terms of reference, plans of work and budgets were developed jointly with ISRA research scientists and administrators. A preliminary review of the accomplishments of ISRA's crop production research prepared by the first MSU Research Planner helped in the development of these plans of work. Financing for the activities of the Team was continued when the project was extended through June 1992.

In order to maximize the impact of the cereals production research programs supported by the CAT, ISRA and the Team agreed to incorporate cereals breeding programs at Bambey in order to produce genetic material for use in the research trials on irrigated crops in the Senegal River Valley. As a result, local currency funds were provided throughout the life of the project to conduct breeding and fertilizer response trials on maize, sorghum and millet at Bambey and Nioro. Similarly, work on cowpeas in the Louga area helped to advance cowpea research in the Senegal River Valley. Most of the first-year trials were carried out according to plan, despite delays in USAID financing to improve the infrastructure at the Fanaye Station which seriously delayed many of the CAT trials.

The creation in late 1991 of a separate ISRA research department for irrigated crops based at St. Louis will probably seriously jeopardize much of the research progress achieved by the CAT on irrigated millet and sorghum. Neither the research staff nor the funds are available to continue many of the CAT trials and it will be extremely difficult to continue the supportive breeding work at Bambey.

From June 1988 until the arrival of the second Research Planner (Siebert) in March 1991, the contract Administrator/Research Specialist coordinated the activities of the Cereals Advisory Team and assured the flow of information concerning these activities between USAID and ISRA. In addition, throughout the life of the project the Administrator/Research Specialist visited each project-financed crop researcher to discuss their trial activities and special problems. Special attention was paid to progress made in the implementation of CAT recommendations concerning collaboration between agronomy, breeding and phytopathology, seed storage, irrigation and trials.

The scope of work for the second Research Planner included specific reference to encouraging more interdisciplinary and cross-departmental research. During his short period of time in Senegal, the Planner frequently visited with crops production researchers throughout the country. In addition, the Planner helped to facilitate the work of the CAT scientists and sometimes accompanied them during their trips within Senegal. Finally, the Planner worked closely with ISRA scientists and administrators to organize and implement a major 1992 research planning exercise for the sorghum and millet programs. This workshop was held at
Bambey in May 1992 in order to identify perceived constraints on production, key research themes and types of collaboration between farmers' groups, NGOs, the regional development agencies, agro-industry, non-ISRA research and training organizations and other ISRA research programs.

In summary, some of the principal accomplishments of the Cereals Advisory Team include (see Appendix 3.1, section I, for references to the CAT technical reports):

Cereals Research Program Technical Results and Approaches

- confirming the performance of several irrigated millet and sorghum varieties, initiating collaborative millet phytopathology and breeding trials and adding an agronomy component to the irrigated millet research program
- providing seed material from US university and CRSP programs in the US
- completing several maize fertilizer response trials as well as manure vs. chemical fertilizer sensitivity testing
- improving the scientific rigor of experimental design and statistical analysis in the cereals research programs
- examining possible relationships between cereals, agroforestry, and economic research programs

Research Infrastructure

- improving the ISRA/Bambey cereal phytopathology laboratory, irrigation system, and seed packaging and coldroom storage facilities

Research Program Support

- facilitating access to scientific publications
- assisting in formulating medium- and long-term objectives and strategic plans for the cereals program
- preparing (with significant on-campus support) a major review of research in Senegal on millet, sorghum, maize and cowpeas

3.2 Applied Economics Research

The major applied economics research activities concerned cereals marketing, production economics and food security analysis, agricultural policy analysis and policy extension, livestock marketing, and meetings of the socioeconomics disciplinary group. Contract personnel involved in these activities included Agricultural Economist Ouedraogo, Administrator/Research Specialist Williams-Sidibé, Project Director Crawford, Graduate Assistant Boughton, and consultants Martin, Staatz, Tefft, and Dioné. ISRA researchers included agricultural economists Sidibé, O. Ndoye, Moustapha Gaye, Ch. Mbaké Ndione, and P. A. Seck (Coordinator, socioeconomics disciplinary group).
3.2.1 Cereals marketing

This research program was initiated under the SARP project by Mark Newman, Ousseynou Ndoye, and continued by Ismaël Ouédraogo. Research under SARP focused on millet marketing in the Peanut Basin. During SAR-II, the research focus shifted to the Fleuve region, and expanded to include market information systems, rice processing, agricultural input distribution, and farmer groups. Ouédraogo, Ndoye, and Williams-Sidibé were the principal researchers involved, with the support of ISRA technicians Babacar Faye and Alioune Dieng.

3.2.1.1 Rice processing

A census of village-level rice hullers was conducted from June-December 1988 in the Delta zone of the Fleuve region. Following an earlier census by Morris in 1985, the 1988 census showed that private traders continued to be involved in rice processing. Information was gathered on number of hullers by type, acquisition and operating costs, working condition, origin of rice brought for processing, and destination of milled rice. Results showed an increase in number of hullers since 1985, a variety of both new and second-hand machines, and hence a variety of repair and operating cost levels (Ouédraogo, 1991d). These results, and methods used in the survey, were helpful to an ISRA/FAO team conducting a subsequent 1989 survey on post-harvest technology for rice.

3.2.1.2 Agricultural input distribution (St. Louis region)

The involvement of private traders in distribution of fertilizer and other agricultural chemicals in the St. Louis Region was studied in 1990 and 1991. Private traders were much more active in distributing inputs in this region than in the Peanut Basin. This was explained by the lower risks associated with irrigated agriculture, by liberalized but reasonable input prices, and by effective demand by farmers, who had access to inputs credit provided to farmer groups by the Caisse Nationale de Crédit Agricole au Sénégal (CNCAS). SENCHIM-affiliated traders dominated the business. Traders in the Fleuve seemed to have a better relationship with SENCHIM than traders in the Peanut Basin have with SONACOS (Kelly and Ouédraogo, 1990). There was evidence of pressure by some CNCAS officials, traders, and heads of farmer groups to channel input orders to particular traders (Ouédraogo, 1991a,b).

Results of this study were presented by Ouédraogo at three seminars attended by ISRA, Government of Senegal (GOS), and donor representatives. Ouédraogo also met with certain traders in Dakar to discuss the results.

3.2.1.3 Farmer groups (St. Louis region)

Since 1984, new farmer groups have been established in the St. Louis Region. Called Groupements d'Intérêt Economique (GIE), these groups are more independent than previous government-dominated cooperatives such as the Section villageoise or Groupement de producteurs. In early 1989, a change in the GIE's registration fees threatened to slow down their growth. A survey of this issue was conducted in 1989, and the results circulated to the ISRA director and various relevant ministries (Ouédraogo and Faye, 1989). The study showed that
the increase in the registration fee was an unintended result of the implementation of two series of independent laws enacted by the GOS. It also revealed poor communication of information and inconsistency in implementation of government regulations across the various regional administrations. This study made an important contribution to improving communication between farmer groups and government agencies, and to identifying desirable changes in tax policy.

3.2.1.4 Cereals marketing (Peanut Basin)

Information collected on cereals prices in rural markets, trader characteristics, and cereals transactions by farmers served as the basis for a variety of reports by Ouédraogo and Ndoye and their colleagues. These were presented at national and international seminars, including the ISRA/MSU/USAID Conference on Food and Agricultural Policy held in Dakar, July 7-8, 1988 (cf. Bingen and Crawford, 1989, and various papers by Ouédraogo and Ndoye). Topics treated in these reports include the variability of market prices of cereals (Ndoye and Ouédraogo, 1988), the behavior and marketing costs of wholesalers and rural collectors (Ouédraogo and Ndoye, 1988; Williams-Sidibé, 1991), the (limited) impact of efforts by the Commissariat à la Sécurité Alimentaire (CSA) to support a floor price for cereals, and the impact of structural adjustment programs on agriculture in Senegal (Commander et al., 1989).

Ouédraogo led ISRA’s evaluation of the CSA’s market price information service. Reports on this evaluation led to improvements in the CSA’s methods of price collection and reporting, and have been used as key references by other Sahelian countries that are establishing similar price reporting services (Ouédraogo et al., 1989; Ouédraogo and Sidibé, 1990, 1991). One benefit of the PRISAS-funded visit to Senegal by PRISAS coordinator Josué Dioné in September 1990 was to allow discussion of the respective experiences of Senegal and Mali in establishing market information systems. An interesting by-product of this study, conducted by ISRA on contract to CSA, was to demonstrate ISRA’s capacity to supply analytical services to local public institutions, and to earn revenue that would otherwise have gone to outside consulting firms.

Ouédraogo and others also analyzed the nature, causes, and significance of the rice trade between The Gambia and Senegal. A report on this study was presented at a CILSS conference in Lomé (Ndoye, Ouédraogo, and Goetz, 1989).

Ndoye, assisted by Graduate Assistant Boughton and Project Director Crawford, prepared a synthesis of the literature on cereals pricing policy in Senegal (Ndoye, Boughton, Crawford, 1991). This review included a wide range of studies in addition to those conducted under the SARP and SAR-II projects. Ndoye’s Ph.D. dissertation, completed in July 1992, provides an in-depth study of the cereals marketing subsector in the Peanut Basin, including analysis at the farmer, trader, and rural market levels.

3.2.2 Food security analysis

The principal ISRA researcher in this program was agricultural economist Mamadou Sidibé. Sidibé’s research addressed a range of topics related to production economics and food
security. Collaborating with Sidibé were Moustapha Gaye, economist attached to the St. Louis production systems research team, and Mamadou Ndiaye, maize agronomist posted in Nioro. Short-term technical assistance to this program was provided by Frederic Martin, Laval University, and by Crawford and Staatz (MSU).

During the project period, Sidibé updated the comprehensive set of crop budgets prepared by Martin under the SARP project. This involved periodic collection of current input costs and product prices from researchers at ISRA stations and from private firms. New budgets were prepared for onion, potato, and recessional sorghum cultivation (sorgho de décru) in the Fleuve region. Sidibé used these budgets, or similar ones, to analyze the profitability of vegetable crops (Seck and Sidibé, 1991) and of crops in the southeast Peanut Basin (Sidibé, 1991c).

In a related exercise, Sidibé revised some of the regional representative farm linear programming (LP) models developed earlier by Martin and Sidibé, in particular the models for the Fleuve region (Zones 3, 4, and 5). These changes improved the specification of the rice and tomato production activities, and added the new production activities mentioned above. In 1989, Sidibé also prepared an information brochure about the regional and national LP models, which he circulated widely among government and donor circles (Sidibé, 1989d). In response, ISRA received several queries, from the CSA and Ministry of Rural Development (MDR) among others, regarding the possibility of using the models to analyze particular policy issues. Sidibé subsequently conducted training workshops on the use of the model at the CSA, ISRA headquarters, ISRA/Bambey, and ISRA/St. Louis.

Various studies were conducted by Sidibé using components of the model. These included studies of the effects of risk on farm-level resource allocation in the Fleuve region (Sidibé, 1989), the effect of population growth on food self-sufficiency and the cost of cereals (Sidibé, 1988; Sidibé and Sadio, 1988), the effect of incorporating gender considerations into the representative farm models (Arcia et al., 1990a,b), and the impact of decreased paddy prices on cropping patterns in the Middle Valley of the Fleuve region (Sidibé, 1991a,b).

3.2.3 Agricultural policy analysis and policy dialogue

Under the contract, a conference on Food and Agriculture Policy in Senegal was held in Dakar on July 7-8, 1988. The purpose of the conference was to synthesize and present, for discussion with GOS and donor representatives, the results of research carried out under two ISRA/MSU/USAID projects--SARP, and the Food Security in Africa Cooperative Agreement. Eighteen papers were presented by ISRA and MSU researchers on topics including fertilizer demand, economics of improved technology, cereals marketing, impacts of marketing and price policy, modelling analysis of the food situation, livestock production and marketing, and public and private development organizations. The presentations were well-received by an audience that included 28 GOS and donor representatives as well as 16 ISRA and MSU researchers. Discussion on many points was quite lively, since the topics were of current interest to the policy makers in attendance. The conference proceedings were subsequently published by ISRA with support from the SAR-II contract (Bingen and Crawford, 1989).
Both Agricultural Economist Ouédraogo and food security researcher Sidibé presented and discussed the findings of the applied economics research program during numerous briefings with GOS and USAID officials and ISRA researchers and top-level managers, through their participation in several GOS task forces, and at regional or international conferences which included participation by Senegalese decision makers. Ouédraogo and Sidibé were members of the GOS interministerial Agricultural Inputs Committee and the CILSS Committee on Regional Cereals Trade. During 1989, Sidibé participated on a special MDR task force examining the role of market information systems in assuring food security. Since January 1992, Sidibé has been a member of the Special Sub-Committee on Fertilizers. Papers presented by Ouédraogo and Sidibé at various regional conferences can be found in the alphabetical publications list (Appendix 3.2).

Agricultural Economist Ouédraogo, together with ISRA economists Mamadou Sidibé and Pape Abdoulaye Seck, led a move to re-establish the Bureau d'Analyses Macroéconomiques (BAME). Their position papers and recommendations (Ouédraogo and Sidibé, 1990; Sidibé and Seck, 1991), together with a paper by the Research Planner (Siebert, 1991) and briefings held by the socioeconomics disciplinary group, were successful in convincing ISRA management to restore the BAME as an agricultural policy analysis unit within ISRA. The BAME became operational in January 1992, with Seck as the Chief and Sidibé as the Assistant Chief.

3.2.4 Livestock marketing

ISRA Livestock Economist Cheikh Mbacké Ndione received local currency support from SAR-II through February 1989. Based at the Dahra research station, Ndione studied small ruminant and poultry prices in the Ferlo region, and the behavior of livestock traders. He also analyzed the returns to cattle fattening (embouche paysanne), finding a considerable range in profitability for the 110-125 day fattening period. Profitability was determined more by farmer know how than by access to credit. During 1988, MSU consultant John Holtzman worked with Ndione and ISRA Livestock Economist Cheikh Ly to prepare a paper on the livestock and meat marketing subsectors of Senegal (Holtzman, Ly, Ndione, 1988). This paper was presented at the July 1988 Food and Agricultural Policy Conference in Dakar.

3.3 Strengthening and Coordination of Cereals and Applied Economics Research

The contract supported the socioeconomics disciplinary group, and fostered collaboration between economists and cereals researchers in three main areas: improved linkages between the St. Louis production systems research team and other economists, economic analysis of agricultural experiments, and assessment of the economic returns to investment in agricultural research.

In the mid-1980s, BAME researchers developed a reputation for carrying out valuable agricultural policy analysis studies. In late 1986, the BAME was eliminated as a separate unit; its research programs were folded into the Direction de Recherches sur les Systèmes Agraires et l'Economie Agricole.
3.3.1 Socioeconomics disciplinary group

Project local currency funds, STTA, and LTDA (Agricultural Economist Ouédraogo) were used to support the establishment and activities of ISRA's socioeconomics disciplinary group. The basic purpose of this group was to provide ISRA's economists and sociologists, assigned to a variety of programs and locations, with the opportunity to exchange research ideas and experiences, and to build or maintain their professional skills.

Under the leadership of ISRA economists Seck (Coordinator of the group) and Sidibé, and with the support of Ouédraogo, the group met on seven separate occasions during 1990-92. Following an organizational meeting in July 1990, a two-day workshop was held in September 1990 to discuss food security research issues in Senegal and Mali, the use of crop budgets for policy analysis, the role of economists within an agricultural research institute such as ISRA, and the proposed re-establishment of the BAME. MSU consultants Crawford, Staatz, and Dioné led some of the workshop sessions.

Subsequent meetings of the group were held in 1991 to discuss various aspects of ISRA’s reorganization that had implications for the assignment and activities of socioeconomics researchers. In October 1991, the group assembled, together with other interested ISRA researchers, to participate in a workshop on evaluation of research impacts held at ISRA/Bambey and led by MSU consultant Eric Crawford (cf. section 3.3.4).

3.3.2 Consolidation of production systems research and applied economics

Contract-supported economists engaged in a variety of collaborative activities with the Fleuve region production research team. Agricultural Economist Ouédraogo advised the team on methods of yield gap analysis and economic analysis of agricultural experiments, to facilitate their assessment of new rice technologies. He also collaborated with the Fleuve PSR team's economist Moustapha Gaye on studies of rice marketing and farmer groups (Gaye, 1990).

ISRA economist Sidibé worked closely with Gaye to revise the crop budgets and the LP model for the Lower Senegal River Valley. Consultant Anthony Yeboah visited the St. Louis PSR team in mid-1988 to review their activities and make recommendations (Yeboah, 1988). MSU consultant Julie Fischer conducted a short-term study of land holdings, land use, and land tenure arrangements in one of the principal Delta zone irrigation schemes where the St. Louis team was working (Fischer, 1989).

Project local currency funding for the St. Louis PSR team ended on June 30, 1990. By that time, adequate funding for PSR activities was being provided by other projects.

3.3.3 Economic analysis of agricultural experiments

A variety of contract personnel provided technical assistance support to ISRA crop researchers concerning the economic analysis of on-station or on-farm trials. Agricultural Economist Ouédraogo discussed this topic with the St. Louis production systems research team. Collaborating with Ouédraogo were former DRSEA Director Léopold Sarr, ISRA biometrician Lamine Diédhiou, and ISRA economists Sidibé and Fadel Ndiame. The St. Louis
team did not carry out all proposed suggestions, primarily because previous trials had not been designed to facilitate economic analysis or yield gap analysis.

Graduate Assistant Boughton, Project Director Crawford and others prepared a review of approaches to the economic analysis of on-farm trials (Boughton et al., 1990). In addition to a review of analytical methods with examples, the paper discussed how trials must be designed and data collected in order to facilitate economic analysis, given the objective of identifying the "best" technologies to recommend to farmers.

Consultant James Tefft collaborated with maize researcher Mamadou Ndiaye and other ISRA researchers to carry out an economic analysis of ISRA experiments on maize, millet, sorghum and rice. The experiments focused on evaluation of alternative varieties, fertilizer levels, and agronomic practices. Tefft travelled to Senegal in May 1991 to discuss his draft analysis with the researchers concerned, to hold informal workshops on the analytical methods concerned, and to gather information needed to finalize the analysis. Tefft's reports include a discussion of trials design and data requirements for economic analysis (Tefft, 1991a,b).

Food security researcher Sidibé collaborated with maize researcher Mamadou Ndiaye to analyze 1990 field data from a maize fertilizer trial financed by SAR-II (Ndiaye and Sidibé, 1991). Subsequently, Sidibé has been analyzing the 1991 season data with the objective of estimating supply response curves and identifying optimal fertilizer levels (report in preparation).

3.3.4 Evaluating the impact of agricultural research

At the request of the ISRA Director General, and with the active support of Research Planner Siebert and Administrator/Research Specialist Williams-Sidibé, a committee of ISRA researchers was formed to begin evaluating the impact of ISRA's research programs. Siebert and Williams-Sidibé organized a subsequent workshop on "Evaluation of Research Impacts," held at ISRA/Bambey on October 26, 1991, and led by MSU consultant Eric Crawford. The workshop was attended by 25 ISRA researchers from a variety of disciplines.

Following Dr. Crawford's review of issues and methods of conducting research impact evaluations, a working group of ISRA researchers met with MSU contract personnel to identify examples of technology development and transfer by ISRA that could serve as case studies. The improved millet variety Souna III and the improved grain mill developed by ISRA were chosen as examples. Some data were collected later by the working group, but found to be insufficient for a satisfactory analysis of economic impact.

3.4 Research Planning and Management

As previously noted, ISRA went through two major stages in its reorganization during the period of the contract, which affected both the recruitment and the scope of work of the Research Planner. In 1990-1991, ISRA reduced its support staff, restructured the research centers, and changed its management practices. Following this phase, ISRA began to reexamine and redefine its research portfolio. This included a series of discussions at each major research
center to discuss specific research program objectives and approaches with farmers and representatives from extension and development agencies.

The uncertainty of continued USAID financing for ISRA early in its reorganization process and the short period of the project extensions complicated the recruitment of a Research Planner, just as they initially had affected the recruitment of a Cereals Program Advisor. In January 1989, Dr. Tjaart Schillhorn van Veen, from Michigan State University, assumed responsibilities as the Research Planner/Chief of Party on a one-year contract.

Despite some differences of opinion between ISRA and USAID concerning the scope of work for an expatriate research planner position during the early period of ISRA's reorganization, Dr. Schillhorn van Veen was able to identify and carry out a program of work that helped to improve ISRA's research planning and management. Specifically, Dr. Schillhorn van Veen helped ISRA:

- consolidate the headquarters office space in order to save rental and office costs
- initiate biweekly meetings between the Director General and the research department directors
- implement stricter control over the use of utilities and travel
- insure adherence to written procedures in accounting and management and timely preparation of budgets
- begin an assessment of the indirect costs of stations and programs
- identify researchers who could perform as extension coordinators with the government's rural development and agricultural production agencies.

In the course of his work, Dr. Schillhorn van Veen prepared several management reports for ISRA that covered a range of topics, including an evaluation of the international travel of ISRA researchers; an evaluation of ISRA publications and of AID-sponsored training for ISRA researchers; ISRA reorganization and management; indirect costs and budget allocation; a land and building inventory; and, ISRA personnel (Schillhorn van Veen, 1989a-i, 1990a,b). Dr. Schillhorn van Veen spent considerable time on budget evaluation and on defining methods and criteria for evaluating staff performance.

When USAID was unable by the end of 1989 to guarantee a continuation of project financing through at least 1990, Dr. Schillhorn van Veen had to complete his contract obligation in January 1990. During 1990, ISRA and USAID refused several proposed candidates. Fortunately, by the end of 1990, MSU was able to recruit Dr. Jay Siebert to assume the Research Planner/Chief of Party position. Dr. Siebert arrived at post in late March 1991.

During the second phase of ISRA's reorganization, the Research Planner was able to define a program of work that was oriented more to assisting ISRA with improved research program planning and implementation. Following a series of review meetings in early 1991

USAID was interested in a management advisor who could influence research priorities and management, as well as advise USAID. ISRA, on the other hand, was more interested in a person who could carry out specific administrative and management analyses.
whi. consolidated ISRA's research programs from 64 to 23, the headquarters management
team, accompanied by the new Research Planner, made several field visits in
September/October 1991 to discuss the new program structure with researchers and to review
the proposed 1992 scientific and budget proposals.

Throughout his 15-month tenure as Research Planner/Chief of Party, Dr. Siebert also
helped to support various scientific activities such as the discussions leading to the
reorganization of the BAME, the discussions of the socioeconomics disciplinary group and, as
noted above, the work of the Cereals Advisory Team. Moreover, Dr. Siebert was instrumental
in arranging for seven ISRA station managers representing three scientific departments to
attend a one-month training program in station management at the ICRISAT Sahelian Center
in Niamey, Niger in February/March 1992. The Planner also helped to facilitate and participate
in Hannibal Muhtar's April 1992 consultant mission to evaluate ISRA station management
following the Niamey training program.

In fulfillment of his terms of reference, Dr. Siebert:

- established a data base to be used by ISRA research directors and station managers
to improve station management
- compiled a series of documents dealing with on-farm research methods and
technical-economic collaboration in research, and distributed them to each of the
institute's crops research programs
- worked with ISRA cereals program researchers to identify research priorities, to
strengthen links among cereals researchers, and to plan the May 1992 workshop on
rainfed cereals program planning at Bambey
- on the basis of materials provided by MSU on-campus staff, compiled an
information packet on personnel evaluation systems and criteria used in some US
universities
- coordinated the development of a special study video on "ISRA and Its Relations
with Partners in Agricultural Development." The objectives of the video are to make
a policy statement concerning the importance of ISRA's research partners and
illustrate various types of collaboration
- worked with ISRA's agronomy disciplinary group to examine ways of enhancing
collaborative work with other ISRA researchers through multilocational trials with a
farming systems perspective, and through research testing by farmer groups.

In addition, the Research Planner/Chief of Party collaborated with the ISRA Scientific
Director in order to analyze both the budgeted and actual costs of the institute's research
programs.

Prior to Dr. Siebert's arrival in early 1991, the Administrator/Research Specialist worked
closely with ISRA's Secretary General to identify priority areas of financial, administrative and
research management which could benefit from contract-supported short-term consultants or
short-term training. The areas included program evaluation and monitoring, financial analysis,
indirect cost analysis, administrative procedures analysis and the use of personal computers in
administrative and scientific management. To follow up in some of these issue areas, Ms. Anne
Williams-Sidibé participated in ISRA’s *Journées de Réflexion sur la Gestion de la Recherche* and in the *Journées de Réflexion* on ISRA’s Handbook of Procedures.

More specifically, Ms. Williams-Sidibé collaborated closely with the ISRA Secretary General on a preliminary analysis of the indirect costs (actual and budgeted) for all of ISRA’s centers (Dieng and Williams-Sidibé, 1992). Three years of data (from 1988 through 1990) were analyzed and an institute-wide indirect cost rate was derived along with center-level indirect cost rates. Since ISRA’s expenditures more often reflect budget availability rather than actual or potential research costs, however, the indirect costs are underestimated. Data on real research costs, which could be used to estimate the unit costs of standard research activities, do not exist.

### 3.5 Agroforestry Study

During 1989 and 1990, Agroforester James Seyler conducted a nine-month study of the current status and evolution of the *Acacia albida* population in the Peanut Basin. The study included a farm-level socioeconomic survey, a farm-level biophysical inventory, and an assessment of farmer perceptions of the value of *Acacia albida*. The study area covered the primary *Acacia albida* zone, including parts of the administrative districts of Thiès, south Louga, Diourbel, and northern Kaolack. The surveys were conducted in a stratified random sample of approximately 72 farm households in 36 villages, primarily during October-December 1989.

An interim report on the study was submitted in February 1990 (Seyler, 1990). Annotated draft analyses of the biophysical inventory and preliminary financial budgets, and four draft chapters from Seyler’s Ph.D. dissertation, were subsequently provided to USAID/Senegal. The complete dissertation will be sent to USAID/Senegal and to ISRA when available.

### 3.6 Training

The four M.Sc. and two Ph.D. participant trainees successfully completed their degree programs, and returned to ISRA. Both Ph.D. trainees and two of the four M.Sc. trainees did their research on Senegal-related topics. (See section VIII of Appendix 3.1 for a list of their theses.) This training strengthened the skills of ISRA researchers in the priority areas of cereals research, forestry, water management, sociology, and economics.

In-country English language training had a modest impact on the skills of the ISRA researchers and administrators involved. For the ISRA researchers scheduled for training in the U.S., this initial training in Senegal shortened the length of time they needed to spend in further English language training in the U.S., if not obviating it entirely.

### 3.7 Computer and Communications Support

In addition to computer equipment and related hardware and software, the contract also provided a range of training, advisory, diagnostic, and repair services in support of computer use by ISRA research and administrative personnel. Guidelines for the use of word processing,

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*Seyler is currently a Ph.D. candidate in MSU’s Forestry Department.*
statistical analysis, communications, and anti-virus software were prepared by MSU on-campus computer analysts and provided to ISRA. Problems of hardware or software operation were diagnosed when they occurred and repair or other solutions provided—often when in-country computer firms were unable to diagnose the problem or fix it at reasonable cost. During each of his trips, Project Director Crawford addressed existing computer hardware or software problems.

Advice on the design of field survey questionnaires and the preparation and documentation of data files was also provided by on-campus computer analysts. In addition, on-campus computer analysts advised Participant Trainee Ousseynou Ndoye on procedures for processing and analyzing the field survey data that he used in his Ph.D. dissertation research.

MSU’s use of electronic modem transmission of messages and files was initiated to facilitate contract management. When this proved both technically feasible and cost effective, the expertise gained was transferred to ISRA. Modems and communication programs were installed in ISRA offices at Dakar, Dakar-Hann, Bambey, and St. Louis, to facilitate communication between the DRSAEA Director based in St. Louis and other DRSAEA researchers based at Dakar-Hann, between the DRPV Director based at Bambey and his staff in Dakar, and between all field stations and ISRA headquarters.

3.8 Documentation and Publications

The support to ISRA’s documentation and publication programs initiated under the SARP project was continued under SAR-II (cf. section 2.5). Scientific journal subscriptions and reference materials provided under the contract were increasingly oriented to support of cereals research programs. Although the DRSAEA was not able to retain the documentalist hired under SARP, ISRA’s general publications unit (UNIVAL) grew in effectiveness during the period of SAR-II, reopening the avenues for publication of research results by ISRA scientists.

A substantial amount of time was spent by the Project Director, Associate Director, and Graduate Assistant in editing project-related research reports, reviewing translations, and preparing documents for publication. This included the 19 papers contained in the proceedings of the July 1988 Conference on Food and Agriculture Policy (Bingen and Crawford, 1989), and the 24 ISRA/MSU International Development Reprint Papers (most published in both English and French), and numerous progress reports on contract activities.

4. LESSONS LEARNED AND RECOMMENDATIONS

4.1 Technical Assistance

The short-term "bridging" nature of project made it difficult to recruit senior scientists, and made it difficult for the Research Planners to design and implement long-term support programs.
4.1.1 Cereals research

The CRSP-like Cereals Advisory Team approach was successful and low-cost compared to the alternative of employing a single in-country advisor. The approach was well-received by national researchers and administrators. They controlled the research activities while having access to international experts. In addition, ISRA researchers received seed and protocols, short- and long-term training, in-country opportunities to discuss operational and strategic program constraints and future orientations, and local currency funding for trials. The success of such an approach, however, depends on the availability of day-to-day support and scientific guidance from senior, national researchers.

The CAT approach to research program support proved to be an effective means of tapping into and linking with the technical resources available from a series of international research networks. Two of the CAT members, for example, were members of CRSP programs (Bean/Cowpea and INTSORMIL) and relied heavily on the networks of these programs for both training opportunities and for research material. More long-term planning for each of the programs and a regular program of visits would have improved the effectiveness of the CAT approach.

4.1.2 Research planning and management

It proved difficult to (a) obtain a joint ISRA-USAID-MSU agreement on the terms of reference for the Research Planner position and on the most appropriate candidate for the job; and (b) identify a candidate with the required language skills and experience who was interested in a position for less than two full years. The nature of the position required the Research Planner to spend a long enough time in-country to "learn the ropes" and gain the confidence of ISRA research managers and researchers. The short-term financing and uncertain financial commitment to ISRA from USAID made it difficult to adopt such a long-term perspective and subsequently led to the departure of the first Research Planner. In sum, the short-term nature of the project financing was inconsistent with the need to plan a long-term program.

The combined administrative and subject area responsibilities of the Research Planner/Chief of Party and Administrator/Research Specialist were difficult to balance. Their professional contributions to improved ISRA management, in the form of concrete analyses in response to specific ISRA needs, however, provided evidence that such dual assignments can be effective. The contract experience with these positions also clearly demonstrated the contribution of the Planner and the Administrator to the achievement of project objectives through on-the-job training, co-authorship of publications, and other non-administrative and collaborative activities.

USAID/Senegal had a not-so-hidden expectation that the Research Planner would feed them information on activities and discussions within ISRA. It was clearly difficult for the Research Planner to do this and still maintain ISRA's trust. Thus, although USAID originally intended that the Research Planner would serve two masters--ISRA and USAID--ISRA was reluctant to accept that job definition.
4.13 Applied economics

Both long-term and short-term technical assistance were used in supporting ISRA's applied economics programs. In most cases, the individuals concerned had previous experience with ISRA research programs under the SARP project, thus ensuring continuity of support.

Agricultural Economist Ouédraogo served as the principal researcher in ISRA's cereals marketing program, and acted as MSU's Chief of Party during much of his tenure. By virtue of his residence in Senegal, Ouédraogo was able to carry out certain activities more effectively than would be possible for STTA, including conduct of seminars and workshops, participation at official meetings, co-authorship of research papers with ISRA colleagues, and on-the-job training. Ouédraogo particularly stressed the importance of on-the-job training as a means of capacity building (Ouédraogo, 1992). The terms of reference for the Agricultural Economist called explicitly for him to provide such training to ISRA's economists. Examples cited include proposal writing, questionnaire design, interview techniques, and computerized data entry and analysis. Resident advisors are able to convey such skills to local researchers in a way that is adapted to local conditions. Ouédraogo's participation in meetings of the socioeconomics disciplinary group was one avenue through which he was able to help improve the skills of ISRA's economists.

• Recommendation: On-the-job training, as one of the biggest contributions of long-term technical assistance, deserves more emphasis in projects.

A challenge for the Agricultural Economist was to meet simultaneously his obligations as a researcher, as an advisor and trainer, and as MSU's Chief of Party (when no Research Planner was in post). In this regard, Ouédraogo noted that participation at official meetings is both "a blessing and a curse," in that meetings provide a forum for engaging in policy dialogue but that they can also disrupt research work schedules and consume much time with administrative details (Ouédraogo, 1992, p. 4).

4.2 Support for ISRA Research Programs

The project provided scientific, financial, logistical and material support to ISRA research programs. Given the shortage of domestic funds for the operational costs of these programs, project support appeared critical.

4.2.1 Scientific

The combination of long-term and short-term technical assistance proved an effective mechanism for providing scientific support to ISRA. The volume of STTA was below the level planned, because of the time required to identify qualified candidates and to schedule a time convenient to all parties. The effectiveness of contract-provided STTA depended largely because depended heavily on the fact that the vast majority of consultants not only had high professional qualifications but also appropriate language skills and extensive experience working in Senegal. In the absence of STTA with these characteristics, LTTA is likely to be necessary to provide the needed depth, quality, and continuity of scientific support.
Maintaining continuity of scientific support is critical. MSU was fortunate to be involved with ISRA over a ten-year period. This made it possible, for example, to provide degree training for ISRA researchers, and then to help returning trainees get established in their research and maintain professional linkages with colleagues outside Senegal. It was observed that researchers trained at the M.Sc. level still needed substantial scientific guidance in order to be fully effective researchers. ISRA did not have enough senior researchers to do this, so the advice provided by contract L'TTA and STTA was critical.

This was perhaps especially important in the applied economics program, which suffered throughout the period of the SAR-II project from the absence of a head of the BAME, and from the lack of a senior Senegalese social scientist to lead the more micro-oriented economics research programs. These personnel shortages undoubtedly contributed to a lack of understanding and recognition by senior ISRA managers of the potential contribution of applied economics research to other ISRA research activities.

Support for documentation and publications was very important as a means of overcoming the isolation of local researchers working in an institution facing severe budget constraints. Agricultural Economist Ouedraogo noted that co-authorship of research reports by ISRA scientists with project L'TTA and STTA was not only a useful form of on-the-job training, but also provided a significant nonmonetary incentive. The opportunity to publish and thus to achieve recognition within the international scientific community is important. The efforts of BAME researchers were very much encouraged by the success of their publications in creating among policy makers an interest in and appreciation of policy-relevant research conducted by Senegalese organizations.

Distribution of ISRA/MSU research reports through the MSU International Development Paper series allowed for diffusion to a wider audience than would otherwise have been possible. Discussions between contract personnel and UNIVAL led to an agreement not only to reprint selected research reports, but also to establish a series for working papers that would not require extensive scientific review. Previously, delays in the review process had posed a major and very discouraging obstacle to researchers wishing to publish their work.

Other incentives provided to ISRA researchers were the opportunities provided by the contract to participate in short- or long-term training programs, and to obtain equipment and other research resources. In the absence of improvements in ISRA's salary scale for researchers, and establishment of merit promotion procedures, non-monetary incentives are often all that motivate the researchers to remain within ISRA.

### 4.2.2 Funding of in-country research

Late in the period of the SARP project, ISRA and GOS local currency funds for operational research expenses became inadequate. As a temporary measure, and with ISRA's agreement, USAID provided additional local currency for this purpose that was managed by the in-country MSU team leader. This mechanism was continued under SAR-II, and was formalized through the various PILs. Management by the MSU team was necessary where there was no ISRA unit whose accounting unit was certified by USAID to receive USAID funding directly.
The pro's and con's of this approach are discussed in Administrator/Research Specialist Williams-Sidibé's end-of-tour report. On the one hand, the local currency account was an effective means for supporting in-country research activities and responding to field-level research needs without sacrificing strict financial accountability. ISRA scientists received funding for research activities that probably could not have been implemented otherwise. They were particularly appreciative of "the fast turn-around time in project disbursements for temporary labor, per diem, and other miscellaneous purchases" (Williams-Sidibé, 1992, p. 11). On the other hand, the lack of an ISRA-MSU partnership in the financial management of the local currency account increased the administrative workload of the contractor (MSU), and denied ISRA full control over the funds.

Whether or not this increased or decreased ISRA's opportunity to learn how to manage such an account is difficult to say. MSU's in-country team developed streamlined and efficient procedures for budgeting, disbursing, monitoring, and accounting for the use of these local currency funds, which can serve as a potential model for future projects. Some of this experience undoubtedly was absorbed at least second-hand by ISRA managers and administrators. However, ISRA staff, in contrast to the local contract office assistant, did not benefit directly from any on-the-job training in computer use, accounting and general administration.

Although MSU contract staff worked together with ISRA researchers and research directors to develop the local currency budgets, ISRA's top management (e.g., Scientific Director) was inadequately involved in this process. As a result, they tended to regard the local currency funded research activities as "MSU project" activities.

Two situations may face future projects: either ISRA's accounting system has been certified by USAID, allowing ISRA to manage funds received directly from USAID/Senegal, or ISRA's accounting is not certified, in which case local currency funds may need to be managed by the contractor.

In the event that ISRA's accounting is not certified, it would be important for all parties to specify and agree upon the procedures and responsibilities for administering such an account. Under its contract, MSU was not responsible for management of the local currency account. Project Implementation Letter No. 6 assigned responsibility for managing the local currency account to the MSU in-country team, but MSU was not a signatory to this letter. Several recommendations follow from Williams-Sidibé's report (1992, p. 11):

* Recommendation: If a project local currency account is managed by the contractor, as during SAR-II, then the management rights and responsibilities of the contractor and ISRA for such an account should be clearly identified.

* Recommendation: Consideration should be given to the degree of ISRA management responsibility and the local personnel required for effective financial management. For example, it may be desirable for ISRA and the contractor to be made co-signatories on the project local currency bank account.
• Recommendation: USAID should provide ISRA with written guidelines on USAID financial and procurement procedures, so that ISRA knows what expenditures and procedures are allowable.

• Recommendation: To lighten the burden of project implementation, USAID should assist ISRA to develop simplified financial and administrative procedures.

Agricultural Economist Ouédraogo argued that ISRA could do more to create financial support for its programs, based on its ability to deliver useful studies in response to requests from the GOS. Ouédraogo (1992) cited studies by the BAME, and specifically ISRA's evaluation of the CSA price information system, as examples of high quality, low cost research.

• Recommendation: ISRA should actively market the skills of its researchers, particularly those of its economists, to help pay for their research programs.

Two personnel issues also need consideration. First, the MSU team decided to hire its local staff according to ISRA’s hiring and salary practices. MSU’s local staff were given an above-average workload, yet ISRA’s salary and benefit package provided very little incentive.

• Recommendation: In order to attract and retain qualified and motivated staff for in-country contract management, hiring policies more consistent with those of USAID/Senegal should be considered.

Second, ISRA uses selected physicians to provide health coverage for its employees, and pays 80% of most medical costs. MSU elected to follow the same guideline. Such open-ended medical coverage could have serious budgetary and legal implications for the contractor, however.

Also, ISRA staff have no medical coverage outside of Senegal. MSU therefore had to finance medical insurance for ISRA travellers to the U.S. under SAR-II. Unfortunately, no U.S. health coverage could be obtained for ISRA employees travelling to other African countries, who therefore had to travel at their own risk.

• Recommendation: Project local staff should be enrolled in a Dakar-based private medical insurance plan. Such policies cost about $1,500 per year per person, and provide coverage outside Senegal. ISRA staff travelling elsewhere in Africa would need similar policies.

4.2.3 Computer and communications support

The contract’s computer support was modest in scale but critical in enabling ISRA researchers to be effective. Especially for the applied economics researchers involved in field surveys, improved access to computer hardware and statistical software made it possible to

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9This was partly to avoid creating a completely autonomous project office, and partly to limit MSU's liability.
shorten significantly the turn-around time between collection of data and write-up of the research results. Specialized software also facilitated the analysis of experiments by crops researchers.

Facilitating the increased use of computers by ISRA researchers for scientific purposes required a basic orientation to the use of microcomputers. One seemingly mundane but important obstacle for many researchers was lack of typing skills.

To ensure that researchers benefit from the use of computers requires attention to a number of factors: basing computer hardware and software purchases on a careful diagnosis of the tasks for which they would be used; providing technology that is appropriate to local circumstances, including electrical current, language used (and hence keyboard layout), and availability of supplies and repair facilities; and providing adequate protection against electrical power fluctuations. It appeared that many hardware problems experienced at the Dakar-Hann were associated with electrical power problems, or to infection by computer viruses.

Use of modems for communication in support of contract management served as a pilot project preparing the way for ISRA's subsequent installation of modems at other research centers. This was intended to improve communications among researchers in the field, and between the field centers and ISRA headquarters.

4.3 Training

The success of the degree training program resulted in part from careful identification of universities and programs that would meet the educational objectives of the trainees. For certain trainees, successive extensions of the project made it possible for them to go further in their training than initially expected, although this entailed an administrative cost associated with numerous training program extensions.

Not surprisingly, acquisition of English language skills made a big difference in how easily both degree and nondegree trainees moved through their programs. English language training in Senegal was effective in preparing the researchers for their future programs, since they were able to participate full-time in the English training. For the senior ISRA administrators, the English language training was much less effective, since the distractions posed by their on-going duties prevented them from participating full-time. For economists and sociologists, another effective type of preparation was provided by the Economics Institute at Boulder, Colorado, where the program combines excellent English language training with introductory or refresher training in economics and statistics.

On the administrative side, the most time-consuming activity was handling the trainees' U.S. income tax obligations. Another administrative challenge was to work out what types of decisions regarding trainee programs could be made by MSU, what decisions required approval by USAID/Senegal or the Office of International Training (OIT) of AID/Washington, and in what order USAID/Senegal and OIT needed to be consulted.
4.4 Contract Management and Administration

It is worth noting that MSU's on-campus contract management was led by two individuals, Crawford and Bingen, who had served long-term tours under the SARP project, Bingen for four years as Chief of Party. Under SAR-II, their presence on campus, and the presence of a relatively small team in the field, led initially to a relatively centralized management approach. On occasion, USAID/Senegal perceived that conflicting or duplicate messages were received from on-campus and in-country personnel. At the request of USAID/Senegal, it was agreed that communication between MSU and USAID and ISRA should pass through the in-country Chief of Party.

4.4.1 In-country contract management

The contract management office and operations were integrated with ISRA offices in Dakar as one means of assuring closer communication and more equitable working relationships among ISRA and contract personnel. This objective may have been achieved, but it probably did so at the expense of some reduction in the efficiency of day-to-day contract operation and management. There is a trade-off between assuring the degree of operational autonomy necessary for effective contract management, and integrating a contract management office into the national structure in order to encourage the institutionalization of management procedures through (indirect) training. In retrospect, it is difficult to set up a separate project or contract office and also maintain an equitable working relationships within a national agency. Decisions about investments in equipment and support for contract management (such as a telephone, FAX, photocopier, vehicle, secretarial support) must be weighed carefully to ensure achievement of contract objectives without creating an undue imbalance between the contract office and the national agency.

* Recommendation: While SAR-II's institution-building focus made it important to design the support for substantive research programs on a modest enough scale to be sustainable over the long run, the same issues are less compelling for contract management. It is in everyone's interest for contract manpower, financial, and commodity resources to be provided efficiently. Investment in contract management office facilities is therefore important.

Experience under SAR-II confirmed the necessity of having a local project administrator who is qualified, energetic, resourceful, and equipped with the resources necessary to do the job. It was also helpful that the Administrator/Research Specialist had training in one of the major disciplinary areas covered by contract activities, i.e., agricultural economics. MSU has found in other projects that the most effective project backstopping is provided by those who combine administrative skills with an understanding of the substance of the work being done, so that, within the bounds of allowable practice, administrative decisions can facilitate rather than hinder the achievement of substantive objectives.

4.4.2 On-campus contract management

The composition of the on-campus support team partly reflected the above point that substantive and administrative backstopping are both necessary. Long-term faculty input is
needed for this; it cannot be accomplished using personnel whose duties are largely administrative. The involvement of Crawford and Bingen achieved this purpose, and also provided an important continuity in direction of MSU's support for ISRA, which began under the SARP project.

MSU's decision to provide on-campus support by mobilizing as many as eight individuals, each working part-time on project, seemed to cause concern at USAID/Senegal. Looking at numbers of individuals rather than person-equivalents, USAID/Senegal perceived the on-campus team as being too large. MSU adopted this practice because it already had an international project administrative team within the Department of Agricultural Economics. Rather than hire new personnel, it was more cost-effective to have members of this experienced team devote part of their time to the administration of SAR-II.

4.4.3 Links with USAID and ISRA

A not-surprising "lesson learned" was the importance of maintaining good communication between MSU and USAID and ISRA. A practical contract management style needs to be worked out between the parties concerned, so that procedures are respected and people kept informed, without excessive red tape. For example, USAID/Senegal occasionally expressed exasperation with the number and detail of MSU requests for travel concurrences and other clearances. MSU regarded this as sound contract management, and thought USAID would appreciate the information contained in the clearance letters. After more than a year, a meeting between USAID/Senegal, the MSU Project Director, and MSU in-country staff provided the opportunity to discuss the views of each party. This clarified when and how the Mission wanted to receive clearance requests, and considerably simplified the format to be used. Obviously, holding such a meeting earlier would have helped to avoid a number of headaches.

The Chief of Party played an important role in facilitating communication. As alluded to earlier, to avoid mixed signals it was agreed that the Chief of Party in Senegal would be the main contact point for USAID/Senegal, ISRA, and MSU on-campus staff.
APPENDIX 1. Local Currency Budget and Expenditure Report
### SAR II Project Dakar-Based Budget Managed by HSU: Voucher and Expenditure Reconciliation a/

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### SAR II Project Dakar-Based Budget Managed by MSU: Voucher and Expenditure Reconciliation a/

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**TOTAL 88 EXPENSES** 1,699,925 5,394 857,277 2,717 50,132 1,863 0 0 15,730,523 49,925

**TOTAL LOP BUDGET** 6,151,000 29,804 21,021,750 84,087 1,596,500 5,258 3,215,250 10,371 120,877,535 488,398

**TOTAL LOP EXPEND.** 1,699,925 5,394 857,277 2,717 50,132 1,863 0 0 15,730,523 49,925

**RUNNING LOP BALANCE** 4,451,075 24,410 20,164,473 81,370 1,007,368 3,395 3,215,250 10,371 105,147,012 438,473

| 1\89 | 307 | 0 0             | 65,371           | 213               | 24,000        | 78    | 0 0 | 289,759 | 944 |
| 2\89 | 307 | 0 0             | 65,575           | 214               | 45,000        | 147   | 0 0 | 702,562 | 2,549 |
| 3\89 | 338 | 0 0             | 179,410          | 531               | 27,400        | 81    | 0 0 | 2,431,947 | 7,195 |
| 4\89 | 337 | 384,150 1,140   | 9,160            | 27                | 35,400        | 105   | 0 0 | 844,205 | 2,505 |
| 5\89 | 322 | 0 0             | 89,955           | 279               | 103,600       | 322   | 0 0 | 1,113,305 | 3,457 |
| 6\89 | 335 | 1,500           | 216,765          | 647               | 38,800        | 116   | 0 0 | 2,248,057 | 6,711 |
| 7\89 | 335 | 0 0             | 60,000           | 179               | 60,000        | 179   | 0 0 | 1,446,213 | 4,317 |
| 8\89 | 314 | 741,600 2,362   | 222,525          | 709               | 0 0           | 0     | 0 0 | 2,999,173 | 9,552 |
| 9\89 | 291 | 0 0             | 49,905           | 171               | 24,000        | 82    | 0 0 | 1,649,558 | 5,669 |
| 10\89 | 291 | 0 0             | 76,907           | 265               | 60,000        | 206   | 8,140 | 28 2,800,600 | 9,624 |
| 11\89 | 291 | 0 0             | 408,447          | 1,404             | 204,468       | 703   | 207,298 | 712 9,095,276 | 31,255 |
| 12\89 | 286 | 0 0             | 730,324          | 2,554             | 25,000        | 87    | 82,040 | 267 1,551,572 | 5,425 |

**TOTAL 89 EXPENSES** 1,127,250 3,506 2,174,424 7,192 647,668 2,106 297,478 1,027 27,252,227 89,203

**TOTAL LOP BUDGET** 6,151,000 29,804 21,021,750 84,087 1,596,500 5,258 3,215,250 10,371 120,877,535 488,398

**TOTAL LOP EXPEND.** 2,827,175 8,901 3,031,701 9,909 1,236,800 3,969 297,478 1,027 42,982,750 139,128

**RUNNING LOP BALANCE** 3,323,825 20,903 17,390,049 74,178 359,700 1,289 2,917,772 9,344 77,894,785 349,270

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| 2/91 | 306  | 126,200           | 412            | 0             | 0     | 0               |
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| 4/91 | 296  | 664,875           | 2,266          | 0             | 0     | 0               |
| 5/91 | 296  | 210,565           | 711            | 0             | 0     | 0               |
| 6/91 | 296  | 144,750           | 409            | 0             | 0     | 0               |
| 7/91 | 273  | 95,663            | 350            | 0             | 0     | 0               |
| 8/91 | 273  | 94,500            | 346            | 0             | 0     | 0               |
| 9/91 | 273  | 92,000            | 337            | 0             | 0     | 0               |
| 10/91| 272  | 239,912           | 882            | 0             | 0     | 0               |
| 11/91| 283  | 6,000             | 21             | 0             | 0     | 0               |
| 12/91| 283  | 1,357,283         | 4,796          | 0             | 0     | 0               |
| TOTAL 91 EXPENSES | | 3,634,603 | 12,583 | 0 | 0 | 829,013 | 2,932 | 14,008,689 | 52,116 | 1,743,770 | 6,132 |
| TOTAL LOP BUDGET | | 34,679,000 | 138,716 | 845,535 | 2,688 | 5,199,500 | 24,798 | 37,998,000 | 151,992 | 10,171,000 | 40,684 |
| TOTAL LOP EXPEND. | | 33,945,292 | 112,694 | 845,535 | 2,688 | 2,450,707 | 8,615 | 29,817,207 | 105,655 | 5,302,921 | 18,248 |
| RUNNING LOP BALANCE | | 733,708 | 26,022 | 0 | 0 | 2,748,793 | 16,183 | 8,180,793 | 46,337 | 4,868,079 | 22,416 |

### SAR II Project Dakar-Based Budget Managed by MSU: Voucher and Expenditure Reconciliation a/

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**TOTAL 90 EXPENSES**

| CPA $ | 2,085,035 | 7,489 | 4,418,419 | 16,498 | 359,453 | 1,344 | 2,917,526 | 10,321 | 25,536,424 | 94,467 |

**TOTAL LOP BUDGET**

| CPA $ | 6,151,000 | 29,804 | 21,021,750 | 84,087 | 1,596,500 | 5,258 | 3,215,250 | 10,371 | 120,877,535 | 488,398 |

**TOTAL LOP EXPEND.**

| CPA $ | 4,912,210 | 16,390 | 7,450,120 | 26,406 | 1,596,253 | 5,313 | 3,215,004 | 11,348 | 68,519,174 | 233,595 |

**RUNNING LOP BALANCE**

| CPA $ | 1,238,790 | 13,414 | 13,571,630 | 57,681 | 247 (55) | 246 (977) | 52,358,361 | 254,803 |

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**TOTAL 91 EXPENSES**

| CPA $ | 666,112 | 2,262 | 7,357,975 | 25,506 | 0       | 0       | 29,040,162 | 101,531 |

**TOTAL LOP BUDGET**

| CPA $ | 6,151,000 | 29,804 | 21,021,750 | 84,087 | 1,596,500 | 5,258 | 3,215,250 | 10,371 | 120,877,535 | 488,398 |

**TOTAL LOP EXPEND.**

| CPA $ | 5,578,322 | 18,651 | 14,808,095 | 51,913 | 1,596,253 | 5,313 | 3,215,004 | 11,348 | 97,559,336 | 335,125 |

**RUNNING LOP BALANCE**

| CPA $ | 572,678 | 11,153 | 6,213,655 | 32,174 | 247 (55) | 246 (977) | 23,318,199 | 153,273 |

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<td>CFA $</td>
<td>CFA $</td>
</tr>
<tr>
<td>1\92</td>
<td>283</td>
<td>0 0</td>
<td>557,222 1,969</td>
<td>0 0</td>
<td>0 0</td>
<td>1,345,805 4,755</td>
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<tr>
<td>2\92</td>
<td>274</td>
<td>0 0</td>
<td>408,497 1,491</td>
<td>0 0</td>
<td>0 0</td>
<td>3,014,150 11,001</td>
</tr>
<tr>
<td>3\92</td>
<td>274</td>
<td>0 0</td>
<td>1,334,520 4,071</td>
<td>0 0</td>
<td>0 0</td>
<td>5,457,399 19,910</td>
</tr>
<tr>
<td>4\92*</td>
<td>274</td>
<td>0 0</td>
<td>1,124,000 4,102</td>
<td>0 0</td>
<td>0 0</td>
<td>2,921,143 10,661</td>
</tr>
<tr>
<td>5\92*</td>
<td>274</td>
<td>0 0</td>
<td>2,391,437 8,728</td>
<td>(25,000) (91)</td>
<td>0 0</td>
<td>8,300,764 30,324</td>
</tr>
<tr>
<td>6\92*</td>
<td>274</td>
<td>0 0</td>
<td>11,700 43</td>
<td>0 0</td>
<td>0 0</td>
<td>11,700 43</td>
</tr>
</tbody>
</table>

**TOTAL 92 EXPENSES**

| CFA $ | CFA $ | (25,000) (91) | 0 0 | 21,058,961 76,701 |

**TOTAL LOP BUDGET**

| 6,151,000 29,804 | 21,021,750 84,087 | 1,596,500 5,258 | 3,215,250 10,371 | 120,877,535 489,398 |

**TOTAL LOP EXPEND.**

| 5,578,322 18,651 | 20,635,474 73,116 | 1,571,253 5,222 | 3,215,004 11,346 | 118,618,297 411,827 |

**RUNNING LOP BALANCE**

| 572,678 11,153 | 386,276 10,971 | 25,247 36 | 246 (977) | 2,259,238 76,571 |

---

APPENDIX 2. Commodities Provided
APPENDIX 2.1 Furniture and Household Appliances

Patio table + 4 chairs
4 Wood folding chairs
Coffee table
180 cm mattress
4 single mattresses
2nd patio table + 6 chairs
Child's table + 4 chairs
4 single beds
10 large carpets
4 small carpets
2 Lamps
Office filing cabinet
Vacuum cleaner
Washing machine
Clothes dryer
1000W transformer
Chest of drawers
Wardrobe 2m
3 wardrobes 1.5m
Bookcase
TV-video stand
Dining room table + 12 chairs
2 children's dressing tables
1 dressing table
4 arm chairs
3 sofas
1 side table
2 pedestal tables
Curtains
Curtain rods
Refrigerator
Freezer
1 3-place sofa
2 shelves + 1 bureau
Fitted carpet
APPENDIX 2.2  Computer Equipment

Computers

Club AT CV325 IBM-Compatible Computer
--25 Mhz 80386 Processor
--80387 Math Coprocessor

Zenith Supersport 286 Laptop Computer, Model 40

2 Zeos Notebook 386SX IBM-Compatible Computers
--Built-in 2400 BPS MNP Class 5 Modem
--Additional 2 MB Dram
--Extra battery, battery charging stand, carry case

Modems

4 Multitech 224E 2400 Baud External Modems
-- 4 220 volt/50 hz. power adapters

ZA-181-24 Internal Modem, 2400 Baud for Supersport 286

Power Systems

2 ITT 610010 Power Systems VIP Executive Series Model (400 Amp. on-line uninterruptible)

Printers

2 Okidata Microline 391-Plus Dot-Matrix Printers

3 Okidata 390 Printers (220 volt/50 hz)

Other

2 Sota 386si Accelerator Boards

Motherboard for Club 325CI computer (replacement)

360K External Floppy Disk Drive for Supersport 286

Math Coprocessor (16 Mhz)

2 ZX-5000 220 Volt/50 hz Extended Range Series Surge/Spike/Noise Suppressors
APPENDIX 2.3 Computer Software

Battery Watch
  + Upgrade to Version 2.0
  + Upgrade from Version 2.0 to Battery Watch Pro

Fastback Plus 2.0 (for MS-DOS)
  + Upgrade to Version 3.0
Fastback Plus, Version 3.0

File Shuttle 4.1 File Transfer Program (for XT)

Flu-Shot Plus Program

Instant Recall 1.0
  + Upgrade from 1.0 to Version 1.2

Lap Link III File Transfer Program

Lotus 1-2-3 Version 2.1

3 LP 88/LP 87 Linear Programming packages

Mace Upgrade (from 4.1 to Mace Gold)

Norton Commander 3.0

2 Norton Utilities 6.0

Notebook II Ver. 2.0
  + Update to Ver. 3.0
  + Reference Manual

PDC Prolog Compiler, Version 3.21

3 Procomm Plus Ver. 1.1 Communication Software
  + Upgrade from Version 1.1 to 2.0

2 QDOS II File Manager Program (Gazelle Systems)
QDOS III
4DOS Version 3.0

2 Quarterdeck Expanded Memory Manager (QEMM-386)

4 Quattro Pro Ver. 2.0 Spreadsheet Program
  + 2 Upgrades from Ver. 2.0 to 3.0

Reflex Data Base Software Program

49
Rightwriter, Version 3.1

Scitor Project Scheduler 5

Spinrite Disk Drive Analysis Program

Systat with Sysgraph Version 4.1 Statistics Program

2 WordPerfect French 5.0
  + 2 Upgrades to Version 5.1
WordPerfect English 5.1

SPSS/PC+ Manuals: Version 2, Data Entry II, Update, Tables, Graphics

Xerox Manuals: Model 630 API Interface Manual; Model 630 API Service Manual
APPENDIX 3. Publications
APPENDIX 3.1 Publications by Research Program and Publication Type

I. CEREALS RESEARCH SUPPORT

TECHNICAL REPORTS

Millet


Maize


Sorghum


TRIP REPORTS—CONSULTANTS

Cereals Advisory Team (CAT)


"Cereals Advisory Team Commodity Research Reviews" prepared by ISU and edited by ISRA, June 1992.


Agro-forestry


Economic Analysis of Trials


TRIP REPORTS--ISRA RESEARCHERS


OTHER REPORTS


II. FOOD SECURITY RESEARCH SUPPORT

TECHNICAL REPORTS


58


TRIP REPORTS–CONSULTANTS


TRIP REPORTS—ISRA RESEARCHERS


III. CEREALS MARKETING RESEARCH SUPPORT

TECHNICAL REPORTS


TRIP REPORTS—CONSULTANTS


IV. ISRA/SAINP-LOUIS PRODUCTION SYSTEMS RESEARCH SUPPORT

TECHNICAL REPORTS


TRIP REPORTS—CONSULTANTS


TRIP REPORTS—ISRA RESEARCHERS


V. DAHRA LIVESTOCK MARKETING RESEARCH SUPPORT

TECHNICAL REPORTS


VI. RESEARCH PLANNING SUPPORT

TECHNICAL REPORTS


TRIP REPORTS—CONSULTANTS


TRIP REPORTS—ISRA RESEARCHERS


CONFERENCE PROCEEDINGS


VII. PROJECT MANAGEMENT SUPPORT


VIII. M.Sc. AND Ph.D. THESES


IX. LIST OF ISRA-UNIVAL/MSU REPRINTS

Etudes et Documents Series


X. LIST OF ISRA/MSU REPRINT PAPERS


17F. "Contribution à la Connaissance Agronomique de la Basse Casamance (Synthèse Bibliographique)," par J.L. Posner, 1988 (47 pp.).


20F. "Les Systèmes de Production en Basse Casamance et les Stratégies Paysannes Face au Déficit Pluviométrique," par J.L. Posner, M. Kamuanga et S. Sall, 1988 (33 pp.).


27. "Farm Level Cereal Situation in Lower Casamance: Results of a Field Study," by C.M. Jolly, M. Kamuanga, S. Sall and J.L. Posner, 1988 (35 pp.).


Annexe 1- "Budgets de Culture et Analyse des Marges dans le Bassin Arachidier," 1988 (134 pp.).

Annexe 2--"Budgets de Culture et Analyse des Marges au Sénégal Orientale et en Casamance," 1988 (204 pp.).


XI. LIST OF VIDEO FILMS

"Inauguration de la Station de Recherche de Fanaye", prepared by the USAID Forestry Project for ISRA and USAID, Senegal Agricultural Research II Project, 1991.

APPENDIX 3.2 Alphabetical List of Publications


78


Ndiaye, Mamadou, 1991b. "Evaluation des Performances de variétés de mais à la Station Nioro, ISRA/Nioro, janvier.


Sidibé, Mamadou, 1991e. "Note d'information sur le programme d'Economie Appliquée dans le contexte de la Recherche Agricole basée sur les Ressources Naturelles". Rapport élaboré pour l'ISRA, juillet.


APPENDIX 4. Documentation
APPENDIX 4.1 Subscriptions

Agricultural Administration and Extension

American Journal of Agricultural Economics (3 copies)

Les Cahiers de la Recherche Développement (1989)
   -Including back issues: Nos. 2, 3-4, 7, 9-10, 12, 14-15, 17

Data Base Advisor

Economic Development & Cultural Change

European Review of Agricultural Economics

Experimental Agriculture

FAO Commodity Review & Outlook

Food Policy

Food Policy: U.S., Canada & Japan

Food Research Institute Studies

Journal of Developing Areas

PC Magazine: The Independent Guide to IBM-Standard

World Development
APPENDIX 4.2  Books Purchased

*Accelerating Food Production in Sub-Saharan Africa*, J.W. Mellor, C.L. Delgado and M.J. Blackie (eds.)

*Africa's Adjustment and Growth in the 1980's*, World Bank

*Agricultural Scientific Enterprise*, L. Busch and W.B. Lacy

*Analysis of Response in Crop and Livestock Production*, J. Dillon

*Applications, Basics, & Computing of Exploratory Data Analysis*, P.F. Velleman and D.C. Hoaglin

*Biotechnology and the New Agricultural Revolution*, J.J. Molnar and H. Kinnucan (2 copies)

*Change in an African Village: Kefa Speaks*, E. Skjonsberg

*Cost Economies in Cattle Feeding and Combination for Maximization of Profit and Stability*, E.O. Heady

*Dynamics of Grain Marketing in Burkina Faso (4 Vols.)*, CRED (In French)

*Economic Theory and Operational Analysis*, W.J. Baumol

*Economics of Cattle and Meat Marketing in Ivory Coast*, J.M. Staatz

*Economics of Livestock Systems in Developing Countries*, J.R. Simpson

*Fertilizer Marketing and Margins in Developing Countries*, A. Shepherd and R. Costner

*Glossaire Pratique de Termes Agricoles Anglais/Francais*, S. E. MacKay (10 copies)

*Handbook of Marketing Research*, R. Ferber, ed.

*Improving the Supply of Fertilizers to Developing Countries*, World Bank

*Managing the Farm Business*, S. Harsh, L. Connor and J. Schwab


*Measures of Protection: Methodology, Economic Interpretation and Policy Relevance*, P.L. Scandizzo

*Microcomputers in Public Policy: Applications for Developing Countries*, S.R. Ruth and C.K. Mann (eds.)

*National Policies & Agricultural Trade Vols. 1-8*, OECD (Includes 7 country studies)
Planning and Decision in Agribusiness: Principles and Experiences, a Case Study Approach to the Use of Models in Decision Planning, C.H. Hanf and G.W. Schiefer

Policy Matrix: A Manual for Practitioners, Pragma Corp.

Policy Analysis Matrix for Agricultural Development, E.A. Monke and S.R. Pearson

Policy for Agricultural Research, V. Ruttan and C.E. Pray

Political Economy of Plant Biotechnology, J.R. Kloppenburg

Principles and Procedures of Statistics, R.G.D. Steele and J.A. Torrie

Reports That Get Results: Guidelines for Executives, I. Mayo-Smith

Research Management for Development: Open Letter to a New Agricultural Research Director, J.L. Nickel (8 copies)

Simulation and Systems Analysis in Agriculture, C. Csaki

Soil Conservation in Developing Countries, J.R. Anderson and J. Thampapillai

Statistical Methods, G.W. Snedecor and W.D. Cochrane

Statistical Procedures for Agricultural Research, G. Gomez

Statistics: An Introduction to Quantitative Economic Research, D. Suits

Story of the NIH Grants Program, S.P. Strickland (2 copies)

Technology for Small-Scale Farmers in Sub-Saharan Africa, S.J. Carr

Trade, Exchange Rates and agricultural Pricing Policy in Portugal, T. Josling and F. Avillez

Writing Research Papers: An Easy Guide for Non-Native English Speakers, P. Stapleton (6 copies)
## APPENDIX 5. Short-Term Technical Assistance

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATES OF VISIT</th>
<th>PERSON-MONTHS</th>
<th>PURPOSE OF VISIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowell Gleason</td>
<td>March 19-30, 1988</td>
<td>.40</td>
<td>Interview for long-term technical assistance Agronomist position under SARII.</td>
</tr>
<tr>
<td>Anthony Yeboah</td>
<td>May 20 - June 4, 1988</td>
<td>.50</td>
<td>Monitoring of FSR programs at St. Louis and Djibelor.</td>
</tr>
<tr>
<td>Julie Fischer</td>
<td>July 7 - August 18, 1988</td>
<td>1.40</td>
<td>Land tenure in the Fleuve Region of Senegal.</td>
</tr>
<tr>
<td>Tony Hall</td>
<td>October 1-5, 1988</td>
<td>.17</td>
<td>Preliminary discussions on the Cereals Advisory Team (CAT) approach proposed by MSU and ISRA.</td>
</tr>
<tr>
<td>NAME</td>
<td>DATES OF VISIT</td>
<td>PERSON-MONTHS</td>
<td>PURPOSE OF VISIT</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------</td>
<td>---------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Dale Hicks</td>
<td>October 1-5, 1988</td>
<td>.17</td>
<td>Preliminary discussions on the CAT approach.</td>
</tr>
<tr>
<td>Larry Tombaugh</td>
<td>December 1-4, 1988</td>
<td>.13</td>
<td>Consultancy with ISRA/DRPF.</td>
</tr>
<tr>
<td><strong>Total person-months for 1988</strong></td>
<td></td>
<td>6.16</td>
<td></td>
</tr>
<tr>
<td>Frederic Martin</td>
<td>March 30 - April 12, 1989</td>
<td>.43</td>
<td>Monitoring of ISRA's Food Security Program.</td>
</tr>
<tr>
<td>Kent Crookston</td>
<td>September 27 - October 11, 1989</td>
<td>.50</td>
<td>Monitoring of CAT-Maize Program.</td>
</tr>
<tr>
<td>David Andrews</td>
<td>October 7-13, 1989</td>
<td>.23</td>
<td>Monitoring of CAT millet/sorghum activities.</td>
</tr>
<tr>
<td>James Seyler</td>
<td>September 1 - December 31, 1989</td>
<td>4.00</td>
<td>Agroforestry study on <em>Acacia albida</em>.</td>
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<tr>
<td><strong>Total Person-Months for 1989</strong></td>
<td></td>
<td>5.49</td>
<td></td>
</tr>
<tr>
<td>James Seyler</td>
<td>January 1 - July 31, 1990</td>
<td>7.00</td>
<td>Agroforestry study on <em>Acacia albida</em>.</td>
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<tr>
<td>Eric Crawford</td>
<td>April 21-26, 1990</td>
<td>.20</td>
<td>Monitoring of Food Security Program; discussions with ISRA/USAID concerning project extension.</td>
</tr>
<tr>
<td>Tjaart Schillhorn Van Veen</td>
<td>May 5-14, 1990</td>
<td>.33</td>
<td>Discussions with ISRA's Director General regarding the restructuring of ISRA.</td>
</tr>
<tr>
<td>James Bingen</td>
<td>June 20-30, 1990</td>
<td>.37</td>
<td>Participate in the workshop on the &quot;Enjeux de la Recherche&quot; and monitoring of the contract's activities.</td>
</tr>
<tr>
<td>NAME</td>
<td>DATES OF VISIT</td>
<td>PERSON-MONTHS</td>
<td>PURPOSE OF VISIT</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------</td>
<td>---------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>John Staatz</td>
<td>September 8-20, 1990</td>
<td>.43</td>
<td>Participate in meetings of Socio-economic disciplinary group.</td>
</tr>
<tr>
<td>Pierre Robert</td>
<td>September 26 - October 10, 1990</td>
<td>.50</td>
<td>Recommendations for possible soil fertilization activities.</td>
</tr>
</tbody>
</table>

Total Person-Months for 1990 9.86
<table>
<thead>
<tr>
<th>NAME</th>
<th>DATES OF VISIT</th>
<th>PERSON-MONTHS</th>
<th>PURPOSE OF VISIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Tefft</td>
<td>May 10-17, 1991</td>
<td>.27</td>
<td>Prepare economic analysis of variety trials and lead two workshops in St. Louis and in Bamby.</td>
</tr>
<tr>
<td>Larry Claflin</td>
<td>September 30 - October 10, 1991</td>
<td>.37</td>
<td>Monitoring of the cereal phytopathology program.</td>
</tr>
<tr>
<td>Eric Crawford</td>
<td>October 9-19, 1991</td>
<td>.37</td>
<td>Monitoring of the Food Security program and technical assistance in the area of the economic impact of agricultural research.</td>
</tr>
<tr>
<td>Hannibal Muhtar</td>
<td>April 3-17, 1992</td>
<td>.50</td>
<td>Visit of ISRA's research centers and diagnosis of the constraints and potential inherent in the management of these centers.</td>
</tr>
</tbody>
</table>

Total Person-Months for 1991: 1.18

Total Person-Months for 1992: .50

APPENDIX 6. Training
### APPENDIX 6.1 List of In-Country Workshops

<table>
<thead>
<tr>
<th>Research Program</th>
<th>Date and Location</th>
<th>Description of Training</th>
<th>Type of Training</th>
<th>Principal Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals Production</td>
<td>Nov. 23-29, 1988 at CDH; Dec. 5-9 at Djibouti; Dec. 2-16 at Kaolack; Dec. 19-26 at Bambe; Jan. 9-13, 1989 at St. Louis</td>
<td>Phase I of training on computer use and statistical analysis (57 participants)</td>
<td>updating technical skills</td>
<td>Lamine Diedhiou, ISRA Biometrician</td>
</tr>
<tr>
<td></td>
<td>Nov. 13-21, 1989 at CDH; Nov. 27 to Dec. 6, 1989 at CNRA/Bambe; Dec. 11-19, 1989 in Kaolack and Jan. 3-12, 1990 in Djibouti</td>
<td>Phase II of training on general computer use, introduction to the use of selected computer applications programs (MSTAT) and introductory statistics for ISRA technicians (32 technicians attended)</td>
<td>updating technical skills</td>
<td>Lamine Diedhiou, ISRA Biometrician</td>
</tr>
<tr>
<td></td>
<td>October 8, 1990 (Bambe)</td>
<td>Discussion on soil mapping and soil fertility (25 researchers attended)</td>
<td>sensitizing/updating technical skills</td>
<td>Pierre Robert, STTA</td>
</tr>
<tr>
<td></td>
<td>October 16, 1990 (Bambe)</td>
<td>Discussion on sorghum breeding in Africa - (12 researchers attended)</td>
<td>updating technical skills</td>
<td>David Andrews, STTA</td>
</tr>
<tr>
<td></td>
<td>October 25, 1990 (Bambe)</td>
<td>Discussion on sorghum diseases in West Africa and their significance, and present status of bacterial disease research on sorghum at Kansas State University (12 researchers attended)</td>
<td>updating technical skills</td>
<td>Larry Claslin, STTA</td>
</tr>
<tr>
<td></td>
<td>February 4 to 8, 1991 (Bambe)</td>
<td>Discussion on experimental design, statistical analysis and a review of DOS operating system for ISRA researchers (12 researchers attended)</td>
<td>updating technical skills</td>
<td>Lamine Diedhiou, ISRA Biometrician</td>
</tr>
<tr>
<td></td>
<td>May 14 (in Bambe) and May 16, 1991 (in St-Louis)</td>
<td>Discussion on the economic analysis of breeding and agronomy trials (30 researchers and other ISRA staff attended)</td>
<td>sensitizing/updating technical skills</td>
<td>James Tefft, STTA, Agricultural Economist</td>
</tr>
<tr>
<td>Applied Economics: Food Security Program</td>
<td>July 7 and 8, 1988</td>
<td>Seminar on Agricultural Policy attended by government and donor representatives and ISRA researchers: 18 papers presented by ISRA and MSU researchers on topics including fertilizer demand, economics of improved technology, cereals marketing, impacts of marketing and price policy, modelling analysis of the food situation, livestock production and marketing and public and private development organizations (40 people attended)</td>
<td>communication of research results; dialogue with policy makers</td>
<td>I. Ouedraogo, O. N'goye, M. Sidibé, Matar Gaye, Ch. Ndione, F. Martin, V. Kelly, J. Holtzman, J. Tourrand</td>
</tr>
<tr>
<td></td>
<td>July 17 to 19, 1989 (Dakar)</td>
<td>Discussions with Gambian GARD project researchers on ISRA's simulation model (3 researchers attended)</td>
<td>regional dialogue and cooperation</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td>Research Program</td>
<td>Date and Location</td>
<td>Description of Training</td>
<td>Type of Training</td>
<td>Principal Presenters</td>
</tr>
<tr>
<td>------------------</td>
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<td>-----------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>September 20 to 22, 1989 (St-Louis)</td>
<td>Presentation of ISRA's simulation model (crop budgets, linear programming model, calculation of margins) (8 researchers and collaborators from development agencies attended)</td>
<td>sensitizing/collaboration with development agencies</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td></td>
<td>December 2, 1989 (Dakar)</td>
<td>Presentation to the Commissariat à la Sécurité Alimentaire on the ISRA Simulation Model (10 people)</td>
<td>policy dialogue/collaboration with decision makers</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td></td>
<td>May 30, 1990 (Dakar)</td>
<td>Presentation of ISRA's simulation model and discussion of potential areas of collaboration with government decision makers (ISRA DG and ISRA scientific directors attended)</td>
<td>sensitizing/improving information exchange within ISRA</td>
<td>Frédéric Martin, STTA Agricultural Economist and Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td></td>
<td>September 1, 1990 (Dakar)</td>
<td>Discussion on food security issues and the ISRA Crop Budgets presented to the Committee on Agricultural Inputs (10 people attended)</td>
<td>policy dialogue/collaboration with decision makers</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td></td>
<td>September 17, 1990 (Dakar)</td>
<td>Discussion on the definition of food security; ISRA, Senegal and West Africa food security activities - presented to the ISRA Socio-Economic Disciplinary Group and to decision makers (20 people attended)</td>
<td>policy dialogue/collaboration with decision makers and other researchers</td>
<td>John Staatz, STTA, MSU Agricultural Economist</td>
</tr>
<tr>
<td></td>
<td>November 8, 1990 (Dakar)</td>
<td>Presentation of the GRAND (Gender Resource) model financed by AID/W and developed by the Research Triangle Institute using ISRA data (US Ambassador and 10 USAID project officers attended)</td>
<td>communication of research results</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td></td>
<td>November 28, 1990</td>
<td>Presentation of the ISRA Simulation Model and crop budgets to ISRA/Bambey agronomists and breeders (10 researchers attended)</td>
<td>sensitizing/updating technical skills and improving collaboration between agricultural economists and agronomists</td>
<td>Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td>Applied Economics: Cereals Marketing Program</td>
<td>September 27, 1990 (Saint-Louis)</td>
<td>Discussion with ISRA researchers and research directors on the research findings of marketing of agricultural inputs in the Fleuve (8 people)</td>
<td>communication of research results/collaboration with decision makers</td>
<td>Ismael Ouedraogo, LTTA, Agricultural Economist</td>
</tr>
<tr>
<td>Research Program</td>
<td>Date and Location</td>
<td>Description of Training</td>
<td>Type of Training</td>
<td>Principal Presenters</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
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<td>-----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Applied Economics</td>
<td>July 27, 1990 (Dakar)</td>
<td>First meeting of the Disciplinary Group to discuss and adopt new procedures for reviewing research documents, discuss plans to visit the members' research programs, to hold joint meetings with the agronomy disciplinary group and to prepare a pamphlet summarizing the ISRA socio-economic research programs (12 researchers attended)</td>
<td>improving effectiveness of agricultural economists</td>
<td>Papa Abdoulaye Seck, ISRA researcher, Agricultural Economist, Mamadou Sidibé, ISRA researcher, Food Security Program</td>
</tr>
<tr>
<td>ISRA Socio-Economics Disciplinary Group</td>
<td>September 18, 1990 (Dakar)</td>
<td>Meeting of the Socio-Economic Disciplinary Group to discuss reorganization of the BAME; role of agricultural economists in agricultural research institutes; food security research issues; and how to use crop budgets for policy analysis (20 researchers and technical advisors)</td>
<td>improving effectiveness of agricultural economists</td>
<td>Ismail Ouédraogo, Ag. Economist; Eric Crawford, Project Director; Mamadou Sidibé, ISRA economist</td>
</tr>
<tr>
<td></td>
<td>January 9, 1991 (Dakar)</td>
<td>Meeting of the Disciplinary Group held to discuss position papers requested by ISRA's Director General (8 researchers attended)</td>
<td>improving effectiveness of agricultural economists</td>
<td>Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists</td>
</tr>
<tr>
<td></td>
<td>May 14, 1991 (Bambey)</td>
<td>Meeting of the Disciplinary Group to discuss the role and responsibilities of ISRA's socio-economists in Natural Resource Management (6 people attended)</td>
<td>improving effectiveness of agricultural economists</td>
<td>Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists</td>
</tr>
<tr>
<td></td>
<td>June 24, 1991 (Dakar)</td>
<td>Meeting of the Disciplinary Group to discuss the reorganization of the BAME and to propose reassignment of the socio-economists at ISRA (20 people attended)</td>
<td>improving the effectiveness of agricultural economists</td>
<td>Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists</td>
</tr>
<tr>
<td></td>
<td>July 8, 1991 (St-Louis)</td>
<td>Meeting to discuss the orientation and budget of the ISRA economics program for 1992 and beyond. Discussion of the Group's proposal for the re-establishment of the BAME (12 researchers attended)</td>
<td>improving the effectiveness of the agricultural economists</td>
<td>Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists</td>
</tr>
<tr>
<td>Research Planning</td>
<td>October 26, 1991 (Ban’ey)</td>
<td>Workshop on the Techniques of Evaluation of Research Impact (30 researchers and ISRA staff attended)</td>
<td>sensitizing/updating technical skills</td>
<td>Eric Crawford, MSU project director, Agricultural Economist</td>
</tr>
<tr>
<td>Research Program</td>
<td>Date and Location</td>
<td>Description of Training</td>
<td>Type of Training</td>
<td>Principal Presenters</td>
</tr>
<tr>
<td>------------------</td>
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<tr>
<td></td>
<td>Feb. 26-28, 1992 (Kaolack)</td>
<td>Workshop on &quot;Natural Resource Management and Soil Conservation&quot; (40 researchers, farmers and support organizations attended). Organized by ISRA/Kaolack and financed by SARI.</td>
<td>Farmer-researcher-development collaboration</td>
<td>Organized by ISRA/Kaolack (Désiré Sarr)</td>
</tr>
<tr>
<td></td>
<td>May 6-7, 1992 (Bambey)</td>
<td>Program Planning Workshop for ISRA's Rainfed Cereals Program based at ISRA/Bambey (50 farmers, researchers and support organizations attended). Organized by SARIII and ISRA.</td>
<td>Strategic Program Planning with participation from farmers and support organizations</td>
<td>Organized jointly by ISRA (Demba F. Mbaye) and SARIII (Jay Siebert)</td>
</tr>
</tbody>
</table>
### APPENDIX 6.2 List of Short-Term Study Trips

<table>
<thead>
<tr>
<th>NAME</th>
<th>COLLABORATING UNIVERSITY</th>
<th>PERIOD OF TRAINING (d/m/y)</th>
<th>PURPOSE OF TRIP</th>
<th>PLACE OF WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mamadou NDIAYE</td>
<td>M.S.U.</td>
<td>24/6-1/7/89</td>
<td>Participate in a workshop on the role of producer groups in rural development and development policy.</td>
<td>ISRA/St-Louis</td>
</tr>
<tr>
<td>Boubacar BARRY</td>
<td>M.S.U.</td>
<td>11-21/5/88</td>
<td>Together with Professor Braits, participate in a work session to evaluate the research program on water management in lower casamance and identify future program objectives and activities.</td>
<td>ISRA/Djibolôr</td>
</tr>
<tr>
<td>Désiré SARR</td>
<td>M.S.U.</td>
<td>22/3-31/12/88</td>
<td>Receive 9 months of training in survey methodology and statistics.</td>
<td>ISRA/Kaolack</td>
</tr>
<tr>
<td>Alioune DIENG</td>
<td>Economics Institute</td>
<td>7/7/88-30/5/89</td>
<td>Receive diploma training in Economics at the Economics Institute in Boulder, Colorado.</td>
<td>ISRA/BAME</td>
</tr>
<tr>
<td></td>
<td>Boulder, Colorado</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amadou FOFANA</td>
<td>University of Nebraska-Lincoln</td>
<td>23/9-1-10/88</td>
<td>Together with Professor Andrews, evaluate ISRA's millet research program and identify future program objectives and activities.</td>
<td>ISRA/Bambey</td>
</tr>
<tr>
<td>Cheikh Mbaké DIONE</td>
<td>M.S.U.</td>
<td>11-21/5/88</td>
<td>Participate in a work session to complete the draft of a research document to be presented during a workshop organized by ISRA and MSU in Dakar.</td>
<td>ISRA/Dahra</td>
</tr>
<tr>
<td>Cheikh LY</td>
<td>M.S.U.</td>
<td>11-21/5/88</td>
<td>Participate in a work session to complete the draft of a research document to be presented during a workshop organized by ISRA and MSU in Dakar.</td>
<td>ISRA/St-Louis</td>
</tr>
<tr>
<td>Samba SALL</td>
<td>M.S.U.</td>
<td>1/1-1/9/89</td>
<td>Reinforce the skills of Mr. Sall in micro and macro economics, in production economics, in statistics and in econometrics. Mr. Sall will follow a series of classes at the Masters level at MSU's Agricultural Economics Department. He will discuss his ISRA research program (both present and future) with MSU professors.</td>
<td>ISRA/Djibolôr</td>
</tr>
</tbody>
</table>

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**Appendix 6.2 (continued)**

<table>
<thead>
<tr>
<th>NAME</th>
<th>COLLABORATING UNIVERSITY</th>
<th>PURPOSE OF TRIP</th>
<th>PERIOD OF TRAINING (d/m/y)</th>
<th>PLACE OF WORK</th>
</tr>
</thead>
</table>
| Demba F. Mbaye          | 1) K.S.U./U. of Nebraska - Lincoln  
                          | 2) Texas U. and K.S.U.                                                          | 1) Work in Professor Claffin's phytopathology laboratory at KSU  
                          |                                                                            | 1) 15/4/90  
                          |                                                                            | 4/5/90  
                          |                                                                            | 2) 5-20/7/91  
                          |                                                                            | ISRA/Bamby       |
| Emanuel Sene            | U. Nebraska, K.S.U., Texas A&M.                                                 | Participate in work sessions with American university sorghum breeding and agronomy experts. | 7-28/9/91       | ISRA/Bamby         |
| Ndiaga Dieng            | M.S.U., U.M.                                                                    | Discuss with US experts methods to derive indirect costs for research and develop computerized systems for programming, monitoring and budget analysis. | 16-30/3/91       | ISRA/Secretariat    
                          |                                                                            | General          |
| Limamoulaye CISSE       | Nebraska, Minnesota, California, A.T. Riverside                                | Discuss with members of the Cereals Advisory Team the forthcoming cereals program activities. | 8-20/3/89       | ISRA/Bamby         |
| Samba Ndiaye            | M.S.U., Florida, Idaho, Arizona                                                  | Participate in the AFPSR/E (Association for Farming Systems Research/Extension) at MSU and hold work sessions with agroforestry experts at the U. of Florida, the U. of Idaho and the U. of Arizona. | 5-24/10/91      | ISRA/Kaolack       |
| Papa Faye               | Namey, Niger                                                                    | Participate in the ICRISAT/University of Arkansas workshop on the "Management of Research Centers". | 9/2-6/3/92      | Ndol/Fleuve        
                          | Gabriel Sane  
                          | Seyni Manga  
                          | Salou Niang  
                          | Antoine Korea  
                          | Mamadou Sarr  
                          | Jean-Pierre Coly |                                                                 | Fanaye/Fleuve | CNRA/Bamby | CRA/Nioro | Ferme Sangal. | CDH | CRA/Djibelor |

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