

**MICHIGAN STATE  
UNIVERSITY**

**Department of Agricultural Economics**

80443

**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**

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**Submitted by**

**Michigan State University  
Department of Agricultural Economics**

**To the  
United States Agency for International Development  
Dakar, Senegal**

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## PREFACE

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**

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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'Economie 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
SENCHEM	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.<sup>1</sup>

[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 SARII project implementation began.<sup>2</sup>

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.<sup>3</sup> Compared to SARP, 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

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<sup>1</sup>This 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.

<sup>2</sup>Contract No. 685-0975-C-00-8004-00, Modification No. 5, p. 3.

<sup>3</sup>The 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:

1988	\$ 49,925
1989	\$ 89,203
1990	\$ 94,467
1991	\$101,531
1992	\$ <u>76,701</u>
<b>Total</b>	<b>\$411,827</b>

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.<sup>4</sup>

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 LTTA; and (c) a consultant was identified but was unable to travel due to restrictions during the Gulf war.

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<sup>4</sup>Modification 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 1**  
**LIST OF LONG-TERM PARTICIPANT TRAINEES**

NAME	UNIVERSITY	SPECIALIZATION	TRAINING PERIOD (d/m/y)	ASSIGNMENT (PROGR./CENTER)
Mamadou NDIAYE, (M.Sc.)	U. of Minnesota	Agronomy (maize)	July 5, 1988- June 30, 1990	DRPV/Nioro
Babou NDOUR, (M.Sc.)	U. of Idaho	Agroforestry	March 8, 1989- July 4, 1991	DRPF/Kaolack
Abibou GAYE, (M.Sc.)	M.S.U.	Forestry Genetics	March 19, 1989- September 18, 1991	DRPF/Dakar
Boubacar BARRY, (M.Sc.)	M.S.U.	Agric. Engineering	Jan 1, 1989- March 30, 1991	DRSAEA/Djibelor
Désiré SARR, (Ph.D.)	M.S.U.	Sociology	Sept 13, 1989- May 16, 1991	DRSAEA/Kaolack
Ousseynou NDOYE, (Ph.D.)	M.S.U.	Agric. Economics	March , 1988- June 30, 1992	DRSAEA/Dakar

### **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 59.3.

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 LTTA and STTA 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 STTA 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'Renforcement 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 Ouédraogo, 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 Staats (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 décrue*) 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 within 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 (Arciz *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).<sup>5</sup> 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.

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<sup>5</sup>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 LTTA (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 DRSAEA 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<sup>6</sup>, 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

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<sup>6</sup>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.

which 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 Bamby
- 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.<sup>7</sup> 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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<sup>7</sup>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 Ndoeye 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;<sup>8</sup> 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.

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<sup>8</sup>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.

### 4.1.3 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 LTTA 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 Ouédraogo noted that co-authorship of research reports by ISRA scientists with project LTTA 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.<sup>9</sup> 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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<sup>9</sup>This 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.

#### 4.43 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.

**APPENDICES**

**APPENDIX 1. Local Currency Budget and Expenditure Report**

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SAR II PROJECT DAMAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	CEREALS MARKETING		LIVESTOCK PROG		FOOD SECURITY		C A T		RESEARCH PLANNER	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
12\87-7\88	317	638,208	2,013	0	0	0	0	0	0	0	0
8\88	314	573,530	1,827	0	0	21,400	68	0	0	0	0
9\88	314	1,020,619	3,250	248,410	791	82,840	264	0	0	0	0
10\88	314	4,610,784	14,684	126,885	404	158,880	506	0	0	0	0
11\88	315	3,946,091	12,527	225,565	716	0	0	0	0	0	0
12\88	321	786,387	2,450	144,590	450	0	0	0	0	0	0
<b>TOTAL 88 EXPENSES</b>		<b>11,575,619</b>	<b>36,751</b>	<b>745,450</b>	<b>2,362</b>	<b>263,120</b>	<b>838</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL LOP BUDGET</b>		<b>34,679,000</b>	<b>138,716</b>	<b>845,535</b>	<b>2,688</b>	<b>5,199,500</b>	<b>24,798</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
<b>TOTAL LOP EXPEND.</b>		<b>11,575,619</b>	<b>36,751</b>	<b>745,450</b>	<b>2,362</b>	<b>263,120</b>	<b>838</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>RUNNING LOP BALANCE</b>		<b>23,103,381</b>	<b>101,965</b>	<b>100,085</b>	<b>326</b>	<b>4,936,380</b>	<b>23,960</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
1\89	307	200,388	653	0	0	0	0	0	0	0	0
2\89	307	487,497	1,588	100,085	326	0	0	0	0	84,405	275
3\89	338	966,147	2,858	0	0	0	0	0	0	1,258,990	3,725
4\89	337	365,038	1,083	0	0	41,417	123	9,040	27	0	0
5\89	322	894,369	2,778	0	0	0	0	0	0	25,381	79
6\89	335	1,552,383	4,634	0	0	0	0	438,609	1,309	0	0
7\89	335	973,102	2,905	0	0	0	0	343,111	1,024	10,000	30
8\89	314	540,119	1,720	0	0	27,680	88	1,051,344	3,348	415,905	1,325
9\89	291	1,205,252	4,142	0	0	65,410	225	270,086	928	34,905	120
10\89	291	1,569,442	5,393	0	0	13,920	48	1,035,206	3,557	36,905	127
11\89	291	4,096,630	14,078	0	0	362,820	1,247	3,376,753	11,604	438,860	1,508
12\89	286	951,511	3,327	0	0	100,000	350	519,462	1,816	(856,765)	(2,996)
<b>TOTAL 89 EXPENSES</b>		<b>13,801,878</b>	<b>45,158</b>	<b>100,085</b>	<b>326</b>	<b>611,247</b>	<b>2,080</b>	<b>7,043,611</b>	<b>23,614</b>	<b>1,448,586</b>	<b>4,192</b>
<b>TOTAL LOP BUDGET</b>		<b>34,679,000</b>	<b>138,716</b>	<b>845,535</b>	<b>2,688</b>	<b>5,199,500</b>	<b>24,798</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
<b>TOTAL LOP EXPEND.</b>		<b>25,377,497</b>	<b>81,910</b>	<b>845,535</b>	<b>2,688</b>	<b>874,367</b>	<b>2,918</b>	<b>7,043,611</b>	<b>23,614</b>	<b>1,448,586</b>	<b>4,192</b>
<b>RUNNING LOP BALANCE</b>		<b>9,301,503</b>	<b>56,806</b>	<b>0</b>	<b>0</b>	<b>4,325,133</b>	<b>21,880</b>	<b>30,954,389</b>	<b>128,378</b>	<b>8,722,414</b>	<b>36,492</b>

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a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

SAR II PROJECT DAKAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	DOCUMENT. SUPPORT		CONTRACT SUPPORT		SYSTEM DEPARTMENT		AGRO-FORESTRY		TOTAL	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
12\87-7\88	317	0	0	89,319	282	249,500	787	0	0	977,027	3,082
8\88	314	980,000	3,121	355,468	1,132	77,710	247	0	0	2,008,108	6,395
9\88	314	0	0	108,224	345	30,000	96	0	0	1,490,093	4,746
10\88	314	441,000	1,404	74,350	237	103,300	329	0	0	5,515,199	17,564
11\88	315	0	0	87,363	277	56,622	180	0	0	4,315,641	13,700
12\88	321	278,925	869	142,553	444	72,000	224	0	0	1,424,455	4,438
<b>TOTAL 88 EXPENSES</b>		<b>1,699,925</b>	<b>5,394</b>	<b>857,277</b>	<b>2,717</b>	<b>589,132</b>	<b>1,863</b>	<b>0</b>	<b>0</b>	<b>15,730,523</b>	<b>49,925</b>
<b>TOTAL LOP BUDGET</b>		<b>6,151,000</b>	<b>29,804</b>	<b>21,021,750</b>	<b>84,087</b>	<b>1,596,500</b>	<b>5,258</b>	<b>3,215,250</b>	<b>10,371</b>	<b>120,877,535</b>	<b>488,398</b>
<b>TOTAL LOP EXPEND.</b>		<b>1,699,925</b>	<b>5,394</b>	<b>857,277</b>	<b>2,717</b>	<b>589,132</b>	<b>1,863</b>	<b>0</b>	<b>0</b>	<b>15,730,523</b>	<b>49,925</b>
<b>RUNNING LOP BALANCE</b>		<b>4,451,075</b>	<b>24,410</b>	<b>20,164,473</b>	<b>81,370</b>	<b>1,007,368</b>	<b>3,395</b>	<b>3,215,250</b>	<b>10,371</b>	<b>105,147,012</b>	<b>438,473</b>
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	782,562	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	4	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	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	76,987	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	287	1,551,572	5,425
<b>TOTAL 89 EXPENSES</b>		<b>1,127,250</b>	<b>3,506</b>	<b>2,174,424</b>	<b>7,192</b>	<b>647,668</b>	<b>2,106</b>	<b>297,478</b>	<b>1,027</b>	<b>27,252,227</b>	<b>89,203</b>
<b>TOTAL LOP BUDGET</b>		<b>6,151,000</b>	<b>29,804</b>	<b>21,021,750</b>	<b>84,087</b>	<b>1,596,500</b>	<b>5,258</b>	<b>3,215,250</b>	<b>10,371</b>	<b>120,877,535</b>	<b>488,398</b>
<b>TOTAL LOP EXPEND.</b>		<b>2,827,175</b>	<b>8,901</b>	<b>3,031,701</b>	<b>9,909</b>	<b>1,236,800</b>	<b>3,969</b>	<b>297,478</b>	<b>1,027</b>	<b>42,982,750</b>	<b>139,128</b>
<b>RUNNING LOP BALANCE</b>		<b>3,323,825</b>	<b>20,903</b>	<b>17,990,049</b>	<b>74,178</b>	<b>359,700</b>	<b>1,289</b>	<b>2,917,772</b>	<b>9,344</b>	<b>77,894,785</b>	<b>349,270</b>

a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

SAR II PROJECT DANAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	CEREALS MARKETING		LIVESTOCK PROG		FOOD SECURITY		C A T		RESEARCH PLANNER	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
1\90	286	552,070	1,930	0	0	5,295	19	38,940	136	171,065	598
2\90	285	925,312	3,282	0	0	0	0	804,004	2,821	0	0
3\90	283	384,429	1,358	0	0	128,810	455	607,353	2,146	0	0
4\90	277	539,712	1,948	0	0	206,100	744	101,355	366	0	0
5\90	263	380,188	1,446	0	0	249,554	949	1,012,261	3,849	0	0
6\90	263	363,551	1,382	0	0	117,898	448	481,841	1,832	0	0
7\90	253	360,600	1,425	0	0	0	0	174,791	691	0	0
8\90	259	369,125	1,425	0	0	1,400	5	1,087,162	4,198	22,000	85
9\90	259	553,198	2,136	0	0	0	0	981,618	3,790	52,500	203
10\90	265	308,827	1,165	0	0	14,090	53	302,789	1,143	0	0
11\90	265	94,180	355	0	0	2,180	8	1,919,233	7,242	1,865,000	7,038
12\90	265	92,000	347	0	0	22,000	83	453,560	1,712	0	0
<b>TOTAL 90 EXPENSES</b>		<b>4,933,192</b>	<b>18,201</b>	<b>0</b>	<b>0</b>	<b>747,327</b>	<b>2,765</b>	<b>7,964,907</b>	<b>29,925</b>	<b>2,110,565</b>	<b>7,924</b>
<b>TOTAL LOP BUDGET</b>		<b>34,679,000</b>	<b>138,716</b>	<b>845,535</b>	<b>2,688</b>	<b>5,199,500</b>	<b>24,798</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
<b>TOTAL LOP EXPEND.</b>		<b>30,310,689</b>	<b>100,111</b>	<b>845,535</b>	<b>2,688</b>	<b>1,621,694</b>	<b>5,683</b>	<b>15,008,518</b>	<b>53,540</b>	<b>3,559,151</b>	<b>12,116</b>
<b>RUNNING LOP BALANCE</b>		<b>4,368,311</b>	<b>38,605</b>	<b>0</b>	<b>0</b>	<b>3,577,806</b>	<b>19,115</b>	<b>22,989,482</b>	<b>98,452</b>	<b>6,611,849</b>	<b>28,568</b>
1\91	306	220,923	722	0	0	713	2	829,566	2,711	0	0
2\91	306	126,200	412	0	0	27,445	90	351,817	1,150	0	0
3\91	301	381,724	1,269	0	0	18,500	61	1,229,803	4,086	0	0
4\91	296	664,875	2,246	0	0	243,262	822	1,364,372	4,609	718,599	2,428
5\91	296	210,565	711	0	0	0	0	994,553	3,360	27,393	93
6\91	296	144,758	489	0	0	15,975	54	1,381,173	4,666	0	0
7\91	273	95,663	350	0	0	33,146	121	1,334,866	4,890	20,350	75
8\91	273	94,500	346	0	0	45,150	165	1,644,495	6,024	93,350	342
9\91	273	92,000	337	0	0	115,061	421	1,318,967	4,831	294,434	1,079
10\91	272	239,912	882	0	0	206,100	758	2,699,676	9,925	235,267	865
11\91	283	6,000	21	0	0	108,161	382	876,482	3,097	143,102	506
12\91	283	1,357,283	4,796	0	0	15,500	55	782,919	2,766	211,275	747
<b>TOTAL 91 EXPENSES</b>		<b>3,634,603</b>	<b>12,583</b>	<b>0</b>	<b>0</b>	<b>829,013</b>	<b>2,932</b>	<b>14,808,689</b>	<b>52,116</b>	<b>1,743,770</b>	<b>6,132</b>
<b>TOTAL LOP BUDGET</b>		<b>34,679,000</b>	<b>138,716</b>	<b>845,535</b>	<b>2,688</b>	<b>5,199,500</b>	<b>24,798</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
<b>TOTAL LOP EXPEND.</b>		<b>33,945,292</b>	<b>112,694</b>	<b>845,535</b>	<b>2,688</b>	<b>2,450,707</b>	<b>8,615</b>	<b>29,817,207</b>	<b>105,655</b>	<b>5,302,921</b>	<b>18,248</b>
<b>RUNNING LOP BALANCE</b>		<b>733,708</b>	<b>26,022</b>	<b>0</b>	<b>0</b>	<b>2,748,793</b>	<b>16,183</b>	<b>8,180,793</b>	<b>46,337</b>	<b>4,868,079</b>	<b>22,436</b>

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a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

SAR II PROJECT DAKAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	DOCUMENT. SUPPORT		CONTRACT SUPPORT		SYSTEM DEPARTMENT		AGRO-FORESTRY		TOTAL	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
1\90	286	0	0	411,710	1,440	21,000	73	724,842	2,534	1,924,922	6,730
2\90	285	1,234,035	4,330	99,960	351	43,000	151	724,842	2,543	3,841,153	13,478
3\90	283	220,000	777	279,996	989	0	0	724,842	2,561	2,345,430	8,288
4\90	277	0	0	416,370	1,503	19,500	70	743,000	2,682	2,026,037	7,314
5\90	263	0	0	150,217	571	275,953	1,049	0	0	2,068,173	7,864
6\90	263	0	0	548,965	2,087	0	0	0	0	1,512,255	5,750
7\90	253	0	0	188,291	744	0	0	0	0	723,682	2,860
8\90	259	0	0	319,871	1,235	0	0	0	0	1,799,558	6,948
9\90	259	6,000	23	212,884	822	0	0	0	0	1,806,200	6,974
10\90	265	0	0	669,983	2,528	0	0	0	0	1,295,689	4,889
11\90	265	625,000	2,358	415,635	1,568	0	0	0	0	4,921,228	18,571
12\90	265	0	0	704,537	2,659	0	0	0	0	1,272,097	4,800
<b>TOTAL 90 EXPENSES</b>		<b>2,085,035</b>	<b>7,489</b>	<b>4,418,419</b>	<b>16,498</b>	<b>359,453</b>	<b>1,344</b>	<b>2,917,526</b>	<b>10,321</b>	<b>25,536,424</b>	<b>94,467</b>
<b>TOTAL LOP BUDGET</b>		<b>6,151,000</b>	<b>29,804</b>	<b>21,021,750</b>	<b>84,087</b>	<b>1,596,500</b>	<b>5,258</b>	<b>3,215,250</b>	<b>10,371</b>	<b>120,877,535</b>	<b>488,398</b>
<b>TOTAL LOP EXPEND.</b>		<b>4,912,210</b>	<b>16,390</b>	<b>7,450,120</b>	<b>26,406</b>	<b>1,596,253</b>	<b>5,313</b>	<b>3,215,004</b>	<b>11,348</b>	<b>68,519,174</b>	<b>233,595</b>
<b>RUNNING LOP BALANCE</b>		<b>1,238,790</b>	<b>13,414</b>	<b>13,571,630</b>	<b>57,681</b>	<b>247</b>	<b>(55)</b>	<b>246</b>	<b>(977)</b>	<b>52,358,361</b>	<b>254,803</b>
1\91	306	0	0	567,592	1,855	0	0	0	0	1,618,794	5,290
2\91	306	340,500	1,113	908,646	2,969	0	0	0	0	1,754,608	5,734
3\91	301	0	0	434,828	1,445	0	0	0	0	2,065,055	6,861
4\91	296	0	0	1,176,320	3,974	0	0	0	0	4,167,428	14,079
5\91	296	0	0	636,316	2,150	0	0	0	0	1,868,827	6,314
6\91	296	10,000	34	281,034	949	0	0	0	0	1,832,940	6,192
7\91	273	0	0	448,296	1,642	0	0	0	0	1,932,321	7,078
8\91	273	0	0	400,678	1,468	0	0	0	0	2,278,173	8,345
9\91	273	0	0	546,228	2,001	0	0	0	0	2,366,690	8,669
10\91	272	0	0	941,175	3,460	0	0	0	0	4,322,130	15,890
11\91	283	157,806	558	391,757	1,384	0	0	0	0	1,683,308	5,948
12\91	283	157,806	558	625,105	2,209	0	0	0	0	3,149,888	11,130
<b>TOTAL 91 EXPENSES</b>		<b>666,112</b>	<b>2,262</b>	<b>7,357,975</b>	<b>25,506</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29,040,162</b>	<b>101,531</b>
<b>TOTAL LOP BUDGET</b>		<b>6,151,000</b>	<b>29,804</b>	<b>21,021,750</b>	<b>84,087</b>	<b>1,596,500</b>	<b>5,258</b>	<b>3,215,250</b>	<b>10,371</b>	<b>120,877,535</b>	<b>488,398</b>
<b>TOTAL LOP EXPEND.</b>		<b>5,578,322</b>	<b>18,651</b>	<b>14,808,095</b>	<b>51,913</b>	<b>1,596,253</b>	<b>5,313</b>	<b>3,215,004</b>	<b>11,348</b>	<b>97,559,336</b>	<b>335,125</b>
<b>RUNNING LOP BALANCE</b>		<b>572,678</b>	<b>11,153</b>	<b>6,213,655</b>	<b>32,174</b>	<b>247</b>	<b>(55)</b>	<b>246</b>	<b>(977)</b>	<b>23,318,199</b>	<b>153,273</b>

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a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

SAR II PROJECT DANAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	CEREALS MARKETING		LIVESTOCK PROG		FOOD SECURITY		C A T		RESEARCH PLANNER	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
1\92	283	8,111	29	0	0	21,200	75	700,074	2,474	59,198	209
2\92	274	0	0	0	0	8,115	30	1,212,502	4,425	1,385,036	5,055
3\92	274	274,549	1,002	0	0	233,951	854	3,466,610	12,652	147,769	539
4\92*	274	14,500	53	0	0	2,385	9	558,230	2,037	1,222,025	4,460
5\92*	274	(660,183)	(2,409)	0	0	569,716	2,079	4,843,096	17,676	1,189,698	4,342
6\92*	274	0	0	0	0	0	0	0	0	0	0
<b>TOTAL 92 EXPENSES</b>		<b>(363,023)</b>	<b>(1,326)</b>	<b>0</b>	<b>0</b>	<b>835,367</b>	<b>3,046</b>	<b>10,780,512</b>	<b>39,264</b>	<b>4,003,726</b>	<b>14,605</b>
<b>TOTAL LOP BUDGET</b>		<b>34,679,000</b>	<b>138,716</b>	<b>845,535</b>	<b>2,688</b>	<b>5,199,500</b>	<b>24,798</b>	<b>37,998,000</b>	<b>151,992</b>	<b>10,171,000</b>	<b>40,684</b>
<b>TOTAL LOP EXPEND.</b>		<b>33,582,269</b>	<b>111,368</b>	<b>845,535</b>	<b>2,688</b>	<b>3,286,074</b>	<b>11,661</b>	<b>40,597,719</b>	<b>144,919</b>	<b>9,306,647</b>	<b>32,853</b>
<b>RUNNING LOP BALANCE</b>		<b>1,096,731</b>	<b>27,348</b>	<b>0</b>	<b>0</b>	<b>1,913,426</b>	<b>13,137</b>	<b>(2,599,719)</b>	<b>7,073</b>	<b>864,353</b>	<b>7,831</b>

a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

SAR II PROJECT DAKAR-BASED BUDGET MANAGED BY MSU: VOUCHER AND EXPENDITURE RECONCILIATION a/

DATE	RATE	DOCUMENT. SUPPORT		CONTRACT SUPPORT		SYSTEM DEPARTMENT		AGRO-FORESTRY		TOTAL	
		CFA	\$	CFA	\$	CFA	\$	CFA	\$	CFA	\$
1\92	283	0	0	557,222	1,969	0	0	0	0	1,345,805	4,755
2\92	274	0	0	408,497	1,491	0	0	0	0	3,014,150	11,001
3\92	274	0	0	1,334,520	4,871	0	0	0	0	5,457,399	19,918
4\92*	274	0	0	1,124,003	4,102	0	0	0	0	2,921,143	10,661
5\92*	274	0	0	2,391,437	8,728	(25,000)	(91)	0	0	8,308,764	30,324
6\92*	274	0	0	11,700	43		0	0	0	11,700	43
TOTAL 92 EXPENSES		0	0	5,827,379	21,203	(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	488,398
TOTAL LOP EXPEND.		5,578,322	18,651	20,635,474	73,116	1,571,253	5,222	3,215,004	11,348	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

a/ Updated June 17, 1992. Dollar amounts based on estimated exchange rates.

**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  
Wrdrobe 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  
Refigerator  
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

**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

- Fofana, Amadou, 1990. "Sélection Mil, Rapport Analytique 1989", CNRA/Bambey, mai.
- CNRA/Bambey, 1991. "Rapport de Synthèse des Activités du Programme D'Amélioration du Mil Pendant 1990".
- Fofana, Amadou, 1991. "Sélection Mil, Rapport de Synthèse 1990", CNRA/Bambey, avril.
- Fofana, Amadou, 1991. "Sélection Mil, Rapport Analytique 1990", CNRA/Bambey, avril.
- Fofana, Amadou et M. Cissokho, 1991. "Sélection Mil, Rapport Analytique Contre-Saison 1991", CNRA/Bambey, octobre.
- Diangar, Saliou, 1991. "Rapport sur le Essais de Contre-Saison 1991 A Thiago", CNRA/Bambey, octobre.

##### Maize

- Diangar, Saliou, Limamoulaye Cissé et Kent Crookston, 1989. "Rapport Préliminaire: Recherche d'une dose optimale pour la fertilisation du maïs en culture pluviale", CNRA/Bambey, décembre.
- Ndiaye, Mamadou, Ganda Dème et Ibrahima Dioum, 1990. "Détermination des densités de peuplement optimales", ISRA/Nioro, décembre.
- Ndiaye, Mamadou, 1991. "Evaluation des Performances de variétés de maïs à la Station Nioro, ISRA/Nioro, janvier.
- Ndiaye, Mamadou, Ibrahima Dioum et Ganda Dème, 1991. "Recherche de formules d'engrais NPK pour la culture du maïs pluvial", ISRA/Nioro, janvier.
- Ndiaye, Mamadou, 1991. "Contraintes à la production du maïs pluvial acquis et perspectives de recherche", document présenté dans le cadre de l'animation scientifique de la Direction des Recherches sur les Productions Végétales, mai.
- Ndiaye, Mamadou et Mamadou Sidibé, 1991. "Recherche de formules d'engrais NPK économiquement rentables pour la culture du maïs pluvial", ISRA/Nioro, août.
- Ndiaye, Mamadou, 1991. "Note Succincte sur le Maïs Pluvial au Sénégal et son Exploitation en Culture Pure", août.

Ndiaye, Mamadou, Ibrahima Dioum et Ganda Dème, 1992. "Rapport d'activité Phytotechnie Mais Pluvial, Hivernage 1991", ISRA/Nioro, janvier.

Ndiaye, Mamadou, 1992. "Rapport synthétique d'activités 1991, Agronomie/Phytotechnie Mais Pluvial", ISRA/Nioro, février.

Ndiaye, Mamadou, 1992. "Propositions pour une harmonisation et une animation des activités de recherches en agronomie de la DRCSP", CNRA/Bambey, mars.

### Sorghum

CNRA/Bambey, 1992. "Rapport d'Activité sur l'Expérimentation Variétale Multilocale - Sorgho 1991", mars.

Trouche, Gilles, 1990. "Amélioration Variétale du Sorgho, Région de Fleuve, Sénégal, Rapport Analytique 1989", CNRA/Bambey, mars.

Trouche, G. S. Samb, M. Ndiaye, O. Hann, 1990. "Amélioration Variétale du Sorgho, Rapport Analytique Contre-Saison 1989-90", CNRA/Bambey, août.

Trouche, Gilles, 1990. "Rapport de Synthèse 1989-1990", CNRA/Bambey, septembre.

Trouche, G. et S. Samb, 1991. "L'Amélioration Variétale du Sorgho au Sénégal", Communication Atelier Réseau Sorgho, SAFGRAD-ICRISAT à Niamey, mars.

Trouche G., S. Samb et M. Cissokho, 1991. "Amélioration Variétale du Sorgho- Région du Fleuve Sénégal, Rapport Analytique Hivernage 1990". CNRA/Bambey, février.

Trouche G., S. Samb, O. Hann, et B. Sall, 1991. "Amélioration variétale du sorgho, zones de culture pluviale, Rapport Analytique Hivernage 1990", CNRA/Bambey, avril.

Trouche, Gilles, 1991. "Programme Sorgho, Rapport de Synthèse 1990", CNRA/Bambey, avril.

Trouche, Gilles, et Moussa Cissokho, 1992. "Amélioration Variétale du Sorgho: Région du Fleuve Sénégal - Rapport Analytique Hivernage 1991", ISRA, Direction de Recherches sur les Cultures et les Systèmes Pluviaux, CNRA/Bambey, mars.

CNRA/Bambey, 1992. "Rapport d'activité sur l'Expérimentation Variétale Multilocale, Sorgho 1991", mars.

Trouche, Gilles, B. Sall et O. Hann, 1992. "Amélioration Variétale du Sorgho Pluvial, Rapport Analytique, Hivernage 1991", avril.

## TRIP REPORTS--CONSULTANTS

### Cereals Advisory Team (CAT)

- Andrews, David, 1988. "Sorghum and Pearl Millet Breeding for the Senegal River Valley", prepared for the Senegal Agricultural Research II Project, December.
- Andrews, David, 1989. "Trip Report, Senegal, October 7-13, 1989", prepared for the Senegal Agricultural Research II Project, October.
- Andrews, David, 1990. "Trip Report, Senegal October 15-24, 1990", prepared for the Senegal Agricultural Research II Project, October.
- Andrews, David J., 1992. "Senegal Agricultural Research II Support Project: Cereal Advisory Team -- Sorghum and Pearl Millet". June.
- "Cereals Advisory Team Commodity Research Reviews" prepared by IISU and edited by ISRA, June 1992.
- Clafin, Larry E., 1990. "Consultation Report to ISRA/MSU/USAID: The Potential Effect of Plant Diseases on Production of Maize, Pearl Millet and Sorghum in Senegal, October 15-25", November.
- Clafin, Larry E., 1991. "Consultation Report to ISRA/MSU/USAID: The Potential Effect of Plant Diseases on Production of Maize, Pearl Millet, and Sorghum in Senegal, September 30 through October 10, 1991", November.
- Crookston, Kent, 1989. "Maize Production in Senegal, Observations and Suggestions", prepared for the Senegal Agricultural Research II Project, October.
- Gleason, Lowell, 1988. "Report of Interviews with Personnel of Crop Production Section of ISRA, March 19-30, 1988", April.
- Hall, Tony, 1988. "Proposed Collaborative Program of Research Support for the Crop Production Research Department of the Institut Sénégalais de Recherches Agricoles, 1-5 October 1988", October.
- Robert, Pierre, 1990. "Caractérisation et Inventaire des Soils en vue de leur utilisation en Agriculture", rapport d'une mission du 26 septembre 1990 au 9 octobre 1990 au Sénégal, Département de Sciences du Sol, Université du Minnesota, St-Paul, Minnesota, novembre.

### Agro-forestry

- Seyler, James, 1989. "Agro-Forestry Research in Senegal: Problems and Potential", October.

Seyler, James, 1990. "An Investigation of Internal and External Biophysical and Socio-Economic Factors Relating to the Decline, Maintenance and/or Replication of the Acacia albida System in Senegal's North Central Peanut Basin, Interim Report", prepared for USAID/Senegal and ISRA, SARII Project, February.

#### Economic Analysis of Trials

Boughton, D., E. Crawford, M. Krause and B. Henry de Frahan, 1990. "Economic Analysis of On-Farm Trials: A Review of Approaches and Implications for Research Program Design", September.

Tefft, James, 1991. "Trip report to Senegal, May 9 to May 17, 1991", ISRA/MSU/USAID Senegal Agricultural Research Project, Dakar, May.

Tefft, James, 1991. "Une analyse économique des essais variétaux et agronomiques à l'institut sénégalais de recherches agricoles, rapport préparé pour l'USAID/Sénégal et l'ISRA dans le cadre du projet de recherche agricole II au Sénégal, juin.

#### TRIP REPORTS--ISRA RESEARCHERS

Coly, Jean-Pierre, 1992. "Stage de Formation sur la Gestion d'une Station Expérimentale à Niamey du 9-2 au 6-3-92", juin.

Mbaye, Demba Farba, 1990. "Rapport de Mission aux Etats-Unis, KSU et Texas A&M du 15/04 au 04/05/90, CNRA Bambey, mai.

Mbaye, Demba F., 1991. "Rapport de Mission Effectuee au Corpus Christi, Texas State (07-12 Juillet) et a Manhattan (12-20 juillet 1991) Kansas State, U.S.A.", aout.

Ndiaye, Samba Arona, 1991. "Rapport d'une Mission Effectuee aux USA par le Coordinateur du Programme d'Agroforesterie du 5 au 20 octobre 1991", novembre.

Sène, Maniével, 1991. "Rapport de Mission Effectuée aux Etats- Unis du 7 au 26 Septembre 1991". Centre National de Recherches Agronomiques de Bambey, Novembre.

Trouche, Gilles, 1991. "Rapport de Mission aux Etats-Unis (Nebraska, Kansas, Texas), Centre National de Recherches Agronomiques, Novembre.

#### OTHER REPORTS

Cissé, Limamoulaye, 1990. "Propositions de Programme de Recherches sur le Mil, le Sorgho, le Mais et le Niébé pour la Campagne Agricole 1990-1991" dans le cadre du Projet de Recherche Agricole II, ISRA/Direction des Recherches sur les Productions Végétales, juin.

- Cissé, Limamoulaye, 1990. "Propositions d'activités de recherche sur les céréales pour la période Juillet 1990 à juin 1992 dans le cadre du Projet de Recherche Agricole II au Sénégal", CNRA/Bambey, juin.
- CNRA/Bambey, 1990. "Cereals Review", ISRA/MSU/USAID Senegal Agricultural Research Project, draft prepared by MSU, September.
- CNRA/Bambey, 1992. "Rapport d'un séminaire de concertation sur la recherche céréalière - Partenaires, Bambey du 6 au 7 mai 1992 et séance de planning du programme céréale du vendredi 8 mai 1992", CNRA/Bambey, juin.
- Diedhiou, Mamadou Lamine, 1988. "Notes sur le système d'Exploitation dos". Novembre.
- Diedhiou, Mamadou Lamine, 1989. "Session de formation au système d'Exploitation dos à l'Intention des techniciens supérieurs de l'ISRA". Janvier.
- Posner, Joshua, Mulumba Kamuanga, and Mamadou Lô, 1991. "Lowland Cropping Systems in the Lower Casamance of Senegal: Results of Four Years of Agronomic Research (1982-85)". International Development Reprint No. 30. ISRA/Department of Agricultural Economics, Michigan State University.
- Siebert, Jay Dee, 1992. "Aperçu sur les activités des agronomes au Botswana", note préparée à l'occasion de la Réunion du groupe disciplinaire des agronomes de la DRCSP, ISRA à Bambey le 21 avril.

## II. FOOD SECURITY RESEARCH SUPPORT

### TECHNICAL REPORTS

- Arcia, Gustavo, Mary Young Rice, Mamadou Sidibé and Khardiata Lo Ndiaye, 1990. "Senegal Country Report". Prepared for the Grand Project, Research Triangle Institute, April.
- Arcia, Gustavo, Mary Young Rice, Mamadou Sidibé and Khardiata Lo Ndiaye, 1990. "Senegal GRAND Model: Technical Description". Prepared for the Grand Project, Research Triangle Institute, April.
- Gaye, Matar, 1988. "Le crédit informel en milieu rural Sénégalais: Enquête dans les régions de Fatick et de Kaolack". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Gaye, Matar, 1988. "Les coopératives rurales au Sénégal et l'expérience de la responsabilisation". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- ISRA/BAME, 1991. Briefing documents prepared by Mamadou Sidibé for the ISRA Director General on the millet, rice and maize subsectors, January.

- Kelly, Valerie Auserehl, 1988. "Vers une meilleure connaissance de la demande pour les engrais dans le Bassin Arachidier". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Martin, Frédéric, 1988. "Présentation des budgets de culture au Sénégal construits à l'ISRA/BAME". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Martin, Frédéric, 1988. "Analyse de la situation alimentaire du Sénégal à l'aide de l'exercice de modélisation effectué à l'ISRA/BAME". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Ouédraogo, Ismael and Mamadou Sidibé, 1990. "Propositions pour revitaliser le BAME, Miméo, ISRA-D/Systèmes, Dakar, octobre.
- Sarr, Desire Y., 1988. "Les sections villageoises et l'approvisionnement des exploitations agricoles en facteurs de production (étude de cas dans la communauté rurale de Kaymor)". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Seck, Abdoulaye et Mamadou Sidibé, 1991. "Rentabilité des Exploitations Maraichères: Mythe ou Réalité". Bulletin de Liaison, Numéro 3, du 31 octobre 1991, Coopération Régionale pour le Développement des Productions Maraichères en Afrique, FAO, octobre.
- Sidibé, Mamadou, 1988. "Développement Agricole et Croissance Démographique au Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Sidibé, Mamadou, 1989. "Simulation des Effets du Risque dans une allocation optimale des Ressources Agricoles: cas de la Vallée du Fleuve Sénégal". Mémoire de titularisation, ISRA, mars.
- Sidibé, Mamadou, 1989. "Système de Support à la Décision en Agriculture". Note d'information, juillet.
- Sidibé, Mamadou, 1989. "Participation de l'ISRA au Document Introductif du Séminaire sur la gestion de l'Information et la Sécurité Alimentaire du 16 au 18 octobre 1989". Séminaire organisé conjointement par le Ministère du Développement Rural, la Direction de l'Agriculture et le Centre Européen de Gestion de Politiques de Développement, octobre.
- Sidibé, Mamadou, 1990. "Analyse Econométrique des Prix du Mil aux Producteurs", draft, juin.
- Sidibé, Mamadou, 1990. "Note Récapitulative de l'ISRA sur le Cadre Institutionnel des Echanges Céréaliers dans le Sahel", note contributive de l'ISRA préparé pour le Comité du CILSS sur l'Espace Céréaliier, juillet.

Sidibé, Mamadou, 1991. "Analyse de la Rentabilité Financière des Cultures dans le Sud-Est du Bassin Arachidier", préparé pour le Comité des Intrants du Ministère du Développement Rural et de l'Hydraulique, février.

Sidibé, Mamadou, 1991. "Ajustement Structurel en Agriculture: Impact d'une baisse du prix du paddy sur les stratégies optimales des producteurs de la moyenne vallée ", présenté au concours du Prix du Président pour les Sciences, ISRA/BAME, mars.

Sidibé, Mamadou, 1991. "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.

Sidibé, Mamadou, 1991. "Options de Développement Rural et Emploi au Sénégal: Thème introductif pour le Symposium National sur l'Emploi", juillet.

Sidibé, Mamadou, 1991. "Note d'information suite à la mission d'évaluation du projet hollandais à l'Ile à Morphil du 2 au 5 octobre 1991". Mission effectuée à la demande de l'Unité de Politiques Agricoles au Ministère du Développement Rural et de l'Hydraulique, octobre.

Sidibé, Mamadou, 1991. "Note d'information sur les Engrais". Elaborée à la demande du Directeur Général de l'ISRA, décembre.

Sidibé, Mamadou et Abdoulaye Sadio, 1988. "Effets de la croissance démographique sur l'Auto-suffisance Alimentaire et les coûts de céréales au Sénégal". Bureau National de Recensement, avril.

Sidibé, Mamadou et Abdoulaye Seck, 1991. "Note d'information sur le BAME". Elaborée à la demande du Directeur Général de l'ISRA, novembre.

#### TRIP REPORTS--CONSULTANTS

Crawford, Eric, 1990. "Trip Report October 9-19, 1991". Trip Conducted in Support of the Senegal Agricultural Research II Project, October.

Martin, Frédéric, 1989. "Rapport de Consultation- Mission à l'ISRA", préparé pour l'ISRA et l'USAID/Sénégal dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II, avril.

Martin, Frédéric, 1990. "Rapport de Consultation-Mission à l'ISRA", préparé pour l'ISRA et l'USAID/Sénégal dans le cadre du projet de recherche agricole II, juin.

Martin, Frédéric, 1990. "Documentation Technique sur le Modèle du Secteur Agricole du Sénégal élaboré à l'ISRA/BAME", juin.

Staatz, John, 1990. "Report on Trip to Montpellier, France and Dakar, Senegal, 8-20 September 1990", prepared for the Food Security in Africa Cooperative Agreement and the Senegal Agricultural Research Project, MSU, October.

## TRIP REPORTS--ISRA RESEARCHERS

Sidibé, Mamadou, 1989. "Compte-rendu de mission: séminaire sur les Stratégies et Politiques Alimentaires au Sahel à l'Université de Ouagadougou du 12 au 15 juin 1989", juin.

Sidibé, Mamadou, 1991. "Rapport de mission à l'atelier régional du PRISAS sur le Bilan des Etudes et Priorités de Recherches sur les Politiques de Sécurité Alimentaire au Sahel à Bamako au Mali du 6 au 9 mai 1991", mai.

Sidibé, Mamadou, 1991. "Rapport de mission à l'atelier régional du PRISAS sur le Bilan des Etudes et Priorités de Recherches sur les Politiques de Sécurité Alimentaire au Sahel à Bamako au Mali du 24 au 29 novembre 1991", décembre.

## III. CEREALS MARKETING RESEARCH SUPPORT

### TECHNICAL REPORTS

Commander, S., O. Ndoye and I. Ouédraogo, 1989. "The Impact of Structural Adjustment Programmes: Senegal 1979-88", In Structural Adjustment and Agriculture, Theory and Practice in Africa and Latin America, ed. S. Commander. London; O.D.I.

Dieng, Alioune, 1992. "Recueil de statistiques sur les prix moyens mensuels et/ou annuels et sur la commercialisation des produits agricoles pendant la période de 1984 à 1989", juin.

Kelly, Valerie, and Ismael Ouédraogo, 1990. "Developing Fertilizer Policies for Sustainable Agricultural Growth: The Need to Move Beyond Panterritorial Policies", paper prepared for the 1991 International Agricultural Economists Association Meeting, November.

Ndoye, Ousseynou and Ismael Ouédraogo, 1988. "Commercialisation des Produits Agricoles dans le Bassin Arachidier. Situation Actuelle et Implications pour la Politique Agricole". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

Ndoye, Ousseynou, Duncan Boughton and Eric Crawford, 1991. "Cereal Pricing in Senegal: Synthesis of Selected Studies Since the New Agricultural Policy", prepared for the Senegal Agricultural Research II Project, June.

Ouédraogo, Ismael, 1991. "Agricultural Input Marketing in St-Louis Region, Survey Results: 1989-90", prepared for ISRA and USAID/Senegal, SARII Project, February.

Ouédraogo, Ismael, 1991. "Village-Level Rice Milling in the Delta of the Senegal River Valley: 1988". Report prepared under Senegal Agricultural Research II Project, September.

Ndoye, Ousseynou, Ismael Ouédraogo and Stephan Goetz, 1989. "The significance and cause of sene-gambian Rice Trade", paper presented at the CILSS/Club du Sahel Conference on Regional Grain Trade in West Trade in West Africa, Lomé, 6-10 novembre 1989, October.

Ouédraogo, Ismael et Babacar Faye, 1989. "Mythe et Réalité de la surtaxe d'enregistrement des groupements d'intérêt économique dans la région de Saint-Louis", juillet.

Ouédraogo, Ismael and Ousseynou Ndoye, 1988. "Guide de collecte des prix agricoles en Afrique du Sud du Sahara: leçons tirées du Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

Ouédraogo, Ismael et Ousseynou Ndoye, 1988. "Les marges et coûts de commercialisation des céréales dans le Bassin Arachidier". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

Ouédraogo, Ismael et Mamadou Sidibé, 1990. "Le système d'information sur les prix agricoles au Sénégal". Rapport préparé pour le séminaire sur les systèmes d'information et les marchés céréaliers dans le sahel organisé par le CILSS à Bamako au Mali, avril.

Ouédraogo, Ismael, Mamadou Sidibé, Lamine Diedhiou et Babacar Faye, 1989. "Evaluation du système d'information sur les prix du commissariat à la sécurité alimentaire: rapport final, mars.

Williams-Sidibé, 1991. "Characteristics of Millet Collectors in the Peanut Basin from 1986 to 1989", prepared for the ISRA/MSU/USAID Senegal Agricultural Research Project, June.

#### TRIP REPORTS--CONSULTANTS

Ouédraogo, Ismael, 1991. "End-Of-Tour Report", prepared under the ISRA/MSU/USAID SARI Project, February.

Ouédraogo, Ismael, 1992. "Lessons Learned From the ISRA/MSU/USAID Project's Economic Programs, 1986-1991." Prepared for ISRA and USAID/Senegal, SARI Project, June.

Staatz, John, 1990. "Report on Trip to Montpellier, France and Dakar, Senegal, 8-20 September 1990", prepared for the Food Security in Africa Cooperative Agreement and the Senegal Agricultural Research Project, MSU, October.

### **IV. ISRA/SAINT-LOUIS PRODUCTION SYSTEMS RESEARCH SUPPORT**

#### TECHNICAL REPORTS

Gaye, Moustapha, 1990. "Rapport sur les Résultats du Projet Financé par SAR/MSU/USAID pour l'année 1989", ISRA.

Legal, Pierre-Yves, 1987. "Programme de Recherche sur les Systèmes de Production dans le Delta du Fleuve Sénégal, Premier Bilan et Propositions d'Actions", décembre.

Ndiaye, Mamadou, 1989. "Liaison-recherche-développement, Expérience de la Région du Fleuve". Document présenté à l'atelier sur "La Recherche-Développement" dans le cadre du PNVA, Djibélor du 3 au 5 octobre 1989, septembre.

Ndiaye, Mamadou, 1990. "Suivi-diagnostique du Périmètre de Thiagar - Résultats de la Campagne d'Hivernage 1989 - CRA/St-Louis, mars.

Ndiaye, Mamadou, Jean-Yves Jamin et Moustapha Gaye, 1989. "La Fertilisation Azotée et Phosphatée en Riziculture Irriguée dans le Delta, Résultats d'expérimentations en milieu paysan", ISRA/Saint-Louis, mai.

Touré, Oussouby, 1988. "Structure et Fonctionnement des Exploitations Agricoles de Diawar (Delta du Fleuve Senegal)", décembre.

Tourrand, Jean-François, 1988. "Les Acquis de la Recherche sur l'Elevage dans la Vallée du Fleuve Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

#### TRIP REPORTS-CONSULTANTS

Fischer, Julie, 1989. "A descriptive analysis of Land Holdings in the village of Lampsar", prepared for the ISRA/MSU/USAID Senegal Agricultural Research Project, August.

Yeboah, Anthony, 1988. "Consultancy Report: May 20 to June 4, 1988". Prepared for the ISRA/MSU/USAID Senegal Agricultural Project II, June.

#### TRIP REPORTS-ISRA RESEARCHERS

Ndiaye, Mamadou, 1989. "Organisations paysannes et Politiques agricoles de Développement dans le Delta du Fleuve Sénégal". Communication présentée au séminaire sur les "Organisations de Producteurs et la Politique Agricole" à Michigan State University, East Lansing, juin.

### **V. DAHRA LIVESTOCK MARKETING RESEARCH SUPPORT**

#### TECHNICAL REPORTS

Dione, Cheikh Mbacké, 1989. "Rapport annuel: Projet SARII/MSU/USAID". décembre.

Dione, Cheikh Mbacké et Mamadou Diop, 1989. "Embouche Paysanne: quelques résultats d'enquêtes", mars.

Holtzman, John, 1988. "Le Bétail et la Sécurité Alimentaire". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

Holtzman, J.S., Ch. Ly, et Ch. M. Ndione, 1988. "La Commercialisation et l'Organisation de la Production du Bétail et de la Viande au Sénégal: Problèmes et Perspectives de Recherches". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

## VI. RESEARCH PLANNING SUPPORT

### TECHNICAL REPORTS

- Bingen, R. James, 1990. "Quelques observations sur une expérience en planification et programmation." Dans Le Point sur la Recherche Agricole en Afrique, Journées de Réflexion de Dakar, les 28-30 juin 1990, *Actes*, Vol. 2., No. 3, Dakar: ISRA, 165-169.
- Crawford, Eric, 1991. "Esquisse de Présentation à l'Atelier: Méthodes pour l'évaluation de l'impact économique de la recherche agricole", novembre.
- Dieng, Ndiaga et Anne Williams Sidibé, 1992. "Etude sur les coûts indirects au niveau de l'Institut Sénégalais de Recherches Agricoles et étude de cas du CNRA/Bambey", projet ISRA/MSU/USAID de Recherche Agricole II, juin 1992.
- Kamuanga, Mulumba, and Joshua L. Posner, 1992. "Farming Systems Research in Southern Senegal: The Djibélor Experience". ISRA/MSU International Development Paper Reprint No. 31. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- "Présentation des coûts de fonctionnement des programmes de recherches de l'ISRA pour les années 1988, 1989, 1990 et 1991", projet ISRA/MSU/USAID de Recherche Agricole II, juin 1992.
- "Recueil de documents de référence sur la méthodologie de recherche en milieu paysan", compilé par le projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, mai 1992.
- Schillhorn van Veen, Tjaart, 1990. "A Summary of Crop Production Research in Senegal", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989. "Preliminary Report on International Travel at ISRA, 1986-1989", rapport interne préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989. "Notes regarding ISRA's consulting services", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1990. "Evaluation et Suggestions Relatives à la Gestion de l'ISRA", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, avril.
- Schillhorn van Veen, Tjaart, 1989. "Notes regarding ISRA's supervisory boards", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.

Schillhorn van Veen, Tjaart, 1989. "Notes sur le Département des Recherches sur les productions végétales", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.

Schillhorn van Veen, Tjaart, 1989. "Observations concernant la vulgarisation, après l'atelier du PAGRI au LNERV-Hann", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.

Schillhorn van Veen, Tjaart, 1989. "MSU/ISRA Graduate Training Program - Evaluation of Training during 1981-1989", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.

Schillhorn van Veen, Tjaart, 1989. "Suggestions on Information". Management note number 2, prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research II.

Schillhorn van Veen, Tjaart, 1989. "Some notes on the history of Agricultural Research in Senegal, prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project.

Schillhorn van Veen, Tjaart, 1989. "Options for ISRA Facilities", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, January.

Siebert, Jay Dee, 1991. "Document d'Etude sur la Reorganisations du BAME", Direction Générale/ISRA, juin.

Siebert, Jay Dee, 1992. "Réflexions sur la gestion du personnel à l'ISRA", note préparée à l'intention du DG de l'ISRA, Décembre.

#### TRIP REPORTS--CONSULTANTS

Bingen, James, 1990. "Report of a mission to Dakar", prepared for ISRA/MSU/USAID Senegal Agricultural Research Project, July.

Schillhorn van Veen, Tjaart, 1990. "Report of a Mission to Dakar, May 1990", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, May.

Muhtar, A. Hannibal, 1992. "Trip Report: April 3-17, 1992 - A Diagnostic Survey of Research Stations, ISRA", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, May.

"A Diagnostic Survey of Research Stations: Senegal Institute for Agronomic Research - Executive Summary", ISRA/MSU/USAID Senegal Agricultural Research Project, May 1992.

## TRIP REPORTS--ISRA RESEARCHERS

- Dieng, Ndiaga, 1991. "Rapport de Mission aux Etats-Unis du 16 au 30 mars 1991", ISRA/DG, avril.
- Manga, Seyni J. Louis, 1992. "Rapport de Stage de Formation sur la Gestion d'une Station Expérimentale á l'ICRISAT-Centre Sahélien au Niger", juin.
- Niang, Saliou, 1992. "Rapport de Stage de formation sur La Gestion de la Station Expérimentale du 9/02 au 6/03/92", ISRA/Nioro, mars.
- Sane, Gabriel et Papa Faye, 1992. "Rapport de Stage: Gestion de la Station Expérimentale (ICRISAT- Centre Sahélien Niamey (Niger))", juin.
- Sarr, Mamadou, 1992. "Rapport du Cours de Formation sur "La Gestion de la Station de Recherche Agricole du 09 Fevrier au 06 Mars 1992 à Niamey - Niger", juin.
- Williams-Sidibé, Anne, 1991. "Trip Report: March 16-30, 1991", ISRA/MSU/USAID Senegal Agricultural Research Project, April.

## CONFERENCE PROCEEDINGS

- Bingen, R. James, and Eric W. Crawford (Eds.), 1989. *La politique agricole au Sénégal*. Proceedings of the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July 1988. *Actes*, Vol. 1, No. 2. Dakar: ISRA.
- Institut Sénégalais de Recherches Agricoles, 1989. "Actes - Le Point sur la Recherche Agricole en Afrique, Journées de Réflexion en Afrique du 28 au 30 juin 1990", séminaire organisé par l'ISRA.
- Institut Sénégalais de Recherches Agricoles, 1992. " Compte Rendu des Journées de Réflexion sur la Gestion des Ressources Naturelles, Kaolack, du 26 au 28 février, 1992".
- Rodale International et l'ISRA, 1991. " Séminaire-Paysan sur la Gestion des Ressources Naturelles pour la Conservation et la Restauration des Sols au Sénégal du 27 au 29 octobre 1991 au CETAD de Pout".

## **VII. PROJECT MANAGEMENT SUPPORT**

- Crawford, Eric, 1990. "Rapport de mission à l'ISRA: 15 au 27 Septembre 1990" préparé pour l'ISRA dans le contexte du projet ISRA/MSU/USAID de Recherche Agricole II, octobre.
- Crawford, Eric, 1991. "Trip Report: October 9-19, 1991, Trip conducted in Support of the Senegal Agricultural Research II Project, Contract No. 685-0957-C-00-8004-00.
- Siebert, Jay, 1992. "End-of-Tour Report", ISRA/MSU/USAID Senegal Agricultural Research Project, May.

Williams, Anne, 1992. "End-of-Tour Report," ISRA/MSU/USAID Senegal Agricultural Research II Project, June.

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

Barry, Aboubacar, 1991. "Groundwater Flow and Quality Behind an Anti-Salt Dam in Lower Casamance, Senegal." Unpublished M.Sc. Thesis. East Lansing, Michigan State University, Department of Agricultural Engineering.

Gaye, Abibou, 1991. "Genetic and Environmental Variation in an Intensely Cultured Black Locust (*Robinia pseudoacacia* L.) Half-Sib Progeny Test." Unpublished M.Sc. Thesis. East Lansing, Michigan State University, Department of Forestry.

Ndiaye, Mamadou, 1990. "Net Returns of Variable Corn and Soybean Cropping Systems." Unpublished M.Sc. Thesis. Minneapolis, University of Minnesota, Department of Agronomy.

Ndour, Babou, 1991. "Criteria for Agroforestry Research Planning in the Developing Countries: A Delphi Approach." Unpublished M.Sc. Thesis. Moscow, University of Idaho, Department of Agroforestry.

NDoye, Ousseynou, 1992. "An Economic Analysis of Factors Affecting Millet Production and Transactions in the Peanut Basin of Senegal." Unpublished Ph.D. dissertation. East Lansing, Michigan State University, Department of Agricultural Economics.

Sarr, Desire Yande, 1990. "Segmentation of Family Farms Within Two Ethnic Groups in Senegal: The Serer and Wolof." Unpublished Ph.D. dissertation. East Lansing, Michigan State University, Department of Rural Sociology.

#### IX. LIST OF ISRA-UNIVAL/MSU REPRINTS

##### *Etudes et Documents Series*

Crawford, Eric, 1991. "L'Analyse Economique des Essais Zootechniques", série ISRA/MSU Etudes et Documents, Vol. 4, No. 8.

Crawford, Eric and Mulumba Kamuanga, 1991. "L'Analyse Economique des Essais Agronomiques pour la Formulation des Recommendations aux Paysans", série ISRA/MSU Etudes et Documents, Vol. 4, No. 7.

Jolly, Curtis M., M. Kamuanga, S. Sall and J.L. Posner, 1991. "Situation Céréalière en Milieu Paysan en Basse Casamance: Résultats d'une Enquête de Terrain", série ISRA/MSU Etudes et Documents, Vol. 4, No. 13.

Kelly, Valérie Auserehl, 1991. "Demande d'Engrais de la Part des Exploitants dans le Contexte de la Nouvelle Politique Agricole au Sénégal: Une Etude des Facteurs Influençant les

- Décisions d'Achat d'Engrais prises par les Exploitants", série ISRA/MSU Etudes et Documents, Vol. 4, No. 10.
- Martin, Frédéric, 1991. "Budgets de Culture au Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1991. "Budgets de Culture au Sénégal: Annexe 1, Budgets de culture et analyses des marges dans le Bassin arachidier", série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1992. "Budgets de Culture au Sénégal: Annexe 2. Budgets de culture et analyses des marges au Sénégal Oriental et en Casamance", série MSU/ISRA Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1991. "Budgets de Culture au Sénégal: Annexe 3. Budgets de culture et analyses des marges dans la Vallée du Fleuve Sénégal, série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Morris, Michael, 1991. "Cereals Marketing in the Senegal River Valley," série ISRA/MSU Etudes et Documents, Vol. 4, No. 6.
- Morris, Michael, 1991. "Etude sur la Commercialisation des Céréales dans la Région du Fleuve Sénégal: Méthodologie", série ISRA/MSU Etudes et Documents, Vol. 4, No. 12.
- Ndoye, O., D. Boughton et E. Crawford, 1991. "Politique de Fixation des Prix des Céréales au Sénégal: Synthèse d'Etudes Réalisées depuis l'Installation de la Nouvelle Politique Agricole", série ISRA/MSU Etudes et Documents, Vol. 4, No. 17.
- Ouédraogo, Ismael, 1991. "Commercialisation des Intrants Agricoles dans la Région de Saint-Louis (Sénégal): Résultats d'Enquête 1989-90", série ISRA/MSU Etudes et Documents, Vol. 4, No. 16.
- Ouédraogo, Ismael et M. Sidibé, 1991. "Le Système d'Information sur les Prix Agricoles au Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 18.
- Posner, Josh, 1991. "Contribution à la Connaissance Agronomique de la Basse Casamance: Synthèse Bibliographique", série ISRA/MSU Etudes et Documents, Vol. 4, No. 9.
- Posner, Josh L., M. Kamuanga et S. Sall, 1991. "Les Systèmes de Production en Basse Casamance et les Stratégies Paysannes Face au Deficit Pluviométrique", série ISRA/MSU Etudes et Documents, Vol. 4, No. 11.
- Sidibé, Mamadou, 1991. "Ajustement Structurel en Agriculture: Impact d'une Baisse de Prix du Riz Paddy sur les Stratégies Optimales des Producteurs dans la Vallée du Fleuve Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 15.

## X. LIST OF ISRA/MSU REPRINT PAPERS

4. "Cereals Marketing in the Senegal River Valley (1985)," by Michael L. Morris, 1987 (126 pp.).
6. "Economic Analysis of Agronomic Trials for the Formulation of Farmer Recommendations," by Eric Crawford and Mulumba Kamuanga, 1988 (41 pp.).
- 6F. "L'Analyse Economiques des Essais Agronomiques Pour la Formulation des Recommandations aux Paysans," par Eric Crawford et Mulumba Kamuanga, 1987 (33 pp.).
7. "Economic Analysis of Livestock Trials," by Eric W. Crawford, 1987 (38 pp.).
- 7F. "L'Analyse Economique des Essais Zootechniques," par Eric Crawford, 1987 (36 pp.).
8. "A Field Study of Fertilizer Distribution and Use in Senegal, 1984: Summary Report," by Eric Crawford and Valerie Kelly, 1987 (32 pp.).
- 8F. "Enquête sur la Distribution et l'Utilisation de l'Engrais au Sénégal, 1984: Résumé Analytique," by Eric Crawford and Valerie Kelly, 1988 (43 pp.).
10. "Policy Relevant Research on the Food and Agricultural System in Senegal," by Mark Newman, Eric Crawford and Jacques Faye, 1987 (30 pp.).
- 10F. "Orientations et Programmes de Recherche Macro-Economiques sur le Système Agro-Alimentaire Sénégalais," par Mark Newman, Eric Crawford et Jacques Faye, 1987 (37 pp.).
11. "A Field Study of Fertilizer Distribution and Use in Senegal, 1984: Final Report," by Eric Crawford, Curtis Jolly, Valerie Kelly, Philippe Lambrecht, Makhona Mbaye and Matar Gaye, 1987 (111 pp.).
- 11F. "Enquête sur la Distribution et l'Utilisation de l'Engrais au Sénégal, 1984: Rapport Final," par Eric Crawford, Curtis Jolly, Valerie Kelly, Philippe Lambrecht, Makhona Mbaye et Matar Gaye, 1987 (106 pp.).
12. "Private and Public Sectors in Developing Country Grain Markets: Organizational Issues and Options in Senegal," by Mark D. Newman, P. Alassane Sow and Ousseynou NDoye, 1987 (14 pp.).
13. "Agricultural Research and Extension in Francophone West Africa: The Senegal Experience," by R. James Bingen and Jacques Faye, 1987 (23 pp.).
- 13F. "La Liaison Recherche-Développement en Afrique de l'Ouest Francophone: L'Expérience du Sénégal," par R. James Bingen et Jacques Faye, 1987 (32 pp.).

14. "Grain Marketing in Senegal's Peanut Basin: 1984/85 Situation and Issues," by Mark D. Newman, 1987 (16 pp.).
15. "Tradeoffs Between Domestic and Imported Cereals in Senegal: A Marketing Systems Perspective," by Mark D. Newman, Ousseynou NDoye and P. Alassane Sow, 1987 (41 pp.).
- 15F. "Céréales Locales et Céréales Importées au Sénégal: La Politique Alimentaire à Partir des Systèmes de Commercialisation," par Mark D. Newman, Ousseynou Ndoye et P. Alassane Sow, 1988 (48 pp.).
16. "An Orientation to Production Systems Research in Senegal," by R. James Bingen, 1987 (88 pp.).
- 16F. "Orientation de la Recherche sur les Systèmes de Production au Sénégal," par R. James Bingen, 1987 (94 pp.).
17. "A Contribution to Agronomic Knowledge of the Lower Casamance (Bibliographical Synthesis)," by J.L. Posner, 1988 (47 pp.).
- 17F. "Contribution à la Connaissance Agronomique de la Basse Casamance (Synthèse Bibliographique)," par J.L. Posner, 1988 (47 pp.).
18. "Acquisition and Use of Agricultural Inputs in the Context of Senegal's New Agricultural Policy: The Implications of Farmers' Attitudes and Input Purchasing Behavior for the Design of Agricultural Policy and Research Programs," by Valerie Auserehl Kelly, 1988 (30 pp.).
- 18F. "Acquisition et Utilisation d'Intrants Agricoles dans le Contexte de la Nouvelle Politique Agricole du Sénégal: Implications des Attitudes et du Comportement d'Achat d'Intrants des Exploitants pour l'Elaboration d'une Politique Agricole et de Programmes de Recherches," par Valerie Auserehl Kelly, 1988 (35 pp.).
19. "Farmers' Demand for Fertilizer in the Context of Senegal's New Agricultural Policy: A Study of Factors Influencing Farmers' Fertilizer Purchasing Decisions," by Valerie Auserehl Kelly, 1988 (47 pp.).
- 19F. "Demande d'Engrais de la Part des Exploitants dans les Contexte de la Nouvelle Politique Agricole au Sénégal: Une Etude des Facteurs Influençant les Decisions d'Achat d'Engrais Prises par les Exploitants," par Valerie Auserehl Kelly, 1988 (58 pp.).
20. "Production Systems in the Lower Casamance and Farmer Strategies in Response to Rainfall Deficits," by J.L. Posner, M. Kamuanga and S. Sall, 1988 (30 pp.).
- 20F. "Les Systèmes de Production en Basse Casamance et les Stratégies Paysannes Face au Deficit Pluviométrique," par J.L. Posner, M. Kamuanga et S. Sall, 1988 (33 pp.).

22. "The Creation and Establishment of Production Systems Research in a National Agricultural Research Institute: The Senegal Experience," by Jacques Faye, James Bingen, and Etienne Landais, 1988 (25 pp.).
23. "Foreign Trade of Agricultural Products and Inputs in Senegal from 1975 to 1984," by Frederic Martin and Alioune Dieng, 1988 (45 pp.).
- 23F. "Le Commerce Extérieur de Produits et d'Intrants Agricoles du Sénégal de 1975 à 1984," par Frédéric Martin et Alioune Dieng, 1990, (45 pp.).
24. "Regulatory Uncertainty and Government Objectives for the Organization and Performance of Cereal Markets: The Case of Senegal," by Mark D. Newman, P. Alassane Sow and Ousseynou Ndoye, 1988 (24 pp.).
- 24F. "Incertitude Réglementaire, Objectifs Gouvernementaux, Organisation et Performances des Marchés Céréalières: Le Cas du Sénégal," par Mark D. Newman, P. Alassane Sow et Ousseynou Ndoye, 1988 (24 pp.).
- 25F. "Etude sur la Commercialisation des Céréales dans la Région du Fleuve Sénégal: Méthodologie," par Michael Morris, 1988 (48 pp.).
26. "The Regulation and Organization of Cereal Markets in Senegal: Report on the Marketing Campaigns of 1983/84 and 1984/85" by P. Alassane Sow and Mark D. Newman, 1988 (29 pp.).
- 26F. "La Réglementation et l'Organisation des Marchés Céréalières au Sénégal: Situation des Campagnes des Commercialisation 1983/84 et 1984/85," par P. Alassane Sow et Mark D. Newman, 1988 (31 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.).
- 27F. "Situation Céréalière en Milieu Paysan en Basse Casamance: Résultats d'une Enquête de Terrain," par C.M. Jolly, M. Kamuanga, S. Sall et J.L. Posner, 1988, (41 pp.).
- 28F. "Budgets de Culture au Sénégal," par Frédéric Martin, 1988, (54 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.).
- Annexe 3--"Budgets de Culture et Analyse des Marges dans la Vallée du Fleuve Sénégal," 1988 (214 pp.).

30. "Lowland Cropping Systems in the Lower Casamance of Senegal: Results of Four Years of Agronomic Research (1982-1985)," by Joshua Posner, Mulumba Kamuanga, and Mamadou Lô, 1991 (130 pages).
31. "Farming Systems Research in Southern Senegal: The Djibélor Experience (1982-1986)," by Mulumba Kamuanga, and Joshua L. Posner, 1992 (57 pages).

#### **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.

"L'ISRA et ses partenaires", prepared for ISRA by Daour Wade under the ISRA/MSU/USAID Senegal Agricultural Research II project, June 1992.

### APPENDIX 3.2 Alphabetical List of Publications

- "A Diagnostic Survey of Research Stations: Senegal Institute for Agronomic Research - Executive Summary", ISRA/MSU/USAID Senegal Agricultural Research Project, May 1992.
- "Cereals Advisory Team Commodity Research Reviews" prepared by MSU and edited by ISRA, June 1992.
- "Présentation des coûts de fonctionnement des programmes de recherches de l'ISRA pour les années 1988, 1989, 1990 et 1991", projet ISRA/MSU/USAID de Recherche Agricole II, juin 1992.
- "Recueil de documents de référence sur la méthodologie de recherche en milieu paysan", compilé par le projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, mai 1992.
- Andrews, David, 1988. "Sorghum and Pearl Millet Breeding for the Senegal River Valley", prepared for the Senegal Agricultural Research II Project, December.
- Andrews, David, 1989. "Trip Report, Senegal, October 7-13, 1989", prepared for the Senegal Agricultural Research II Project, October.
- Andrews, David, 1990. "Trip Report, Senegal October 15-24, 1990", prepared for the Senegal Agricultural Research II Project, October.
- Andrews, David J., 1992. "Senegal Agricultural Research II Support Project: Cereal Advisory Team -- Sorghum and Pearl Millet". June.
- Arcia, Gustavo, Mary Young Rice, Mamadou Sidibé and Khardiata Lo Ndiaye, 1990a. "Senegal GRAND Model: Technical Description". Prepared for the Grand Project, Research Triangle Institute, April.
- Arcia, Gustavo, Mary Young Rice, Mamadou Sidibé and Khardiata Lo Ndiaye, 1990b. "Senegal Country Report". Prepared for the Grand Project, Research Triangle Institute, April.
- Barry, Aboubacar, 1991. "Groundwater Flow and Quality Behind an Anti-Salt Dam in Lower Casamance, Senegal." Unpublished M.Sc. Thesis. East Lansing, Michigan State University, Department of Agricultural Engineering.
- Bingen, James, 1990a. "Report of a mission to Dakar", prepared for ISRA/MSU/USAID Senegal Agricultural Research Project, July.
- Bingen, R. James, 1990b. "Quelques observations sur une expérience en planification et programmation." Dans Le Point sur la Recherche Agricole en Afrique, Journées de Réflexion de Dakar, les 28-30 juni 1990, Actes, Vol. 2., No. 3, Dakar: ISRA, 165-169.

- Bingen, R. James, 1987. "An Orientation to Production Systems Research in Senegal," ISRA/MSU International Development Reprint Paper No. 16. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Bingen, R. James, 1987. "Orientation de la Recherche sur les Systèmes de Production au Sénégal," ISRA/MSU International Development Reprint Paper No. 16F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Bingen, R. James, and Eric W. Crawford (Eds.), 1989. *La politique agricole au Sénégal*. Proceedings of the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July 1988. *Actes*, Vol. 1, No. 2. Dakar: ISRA.
- Bingen, R. James and Jacques Faye, 1987. "Agricultural Research and Extension in Francophone West Africa: The Senegal Experience," ISRA/MSU International Development Reprint Paper No. 13. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Bingen, R. James et Jacques Faye, 1987. "La Liaison Recherche-Développement en Afrique de l'Ouest Francophone: L'Expérience du Sénégal," ISRA/MSU International Development Reprint Paper No. 13F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Boughton, D., E. Crawford, M. Krause and B. Henry de Frahan, 1990. "Economic Analysis of On-Farm Trials: A Review of Approaches and Implications for Research Program Design", September.
- Cissé, Limamoulaye, 1990a. "Propositions d'activités de recherche sur les céréales pour la période Juillet 1990 à juin 1992 dans le cadre du Projet de Recherche Agricole II au Sénégal", CNRA/Bambey, juin.
- Cissé, Limamoulaye, 1990b. "Propositions de Programme de Recherches sur le Mil, le Sorgho, le Mais et le Niébé pour la Campagne Agricole 1990-1991" dans le cadre du Projet de Recherche Agricole II, ISRA/Direction des Recherches sur les Productions Végétales, juin.
- Claflin, Larry E., 1990. "Consultation Report to ISRA/MSU/USAID: The Potential Effect of Plant Diseases on Production of Maize, Pearl Millet and Sorghum in Senegal, October 15-25", November.
- Claflin, Larry E., 1991. "Consultation Report to ISRA/MSU/USAID: The Potential Effect of Plant Diseases on Production of Maize, Pearl Millet, and Sorghum in Senegal, September 30 through October 10, 1991", November.
- CNRA/Bambey, 1990. "Cereals Review", ISRA/MSU/USAID Senegal Agricultural Research Project, draft prepared by MSU, September.
- CNRA/Bambey, 1991. "Rapport de Synthèse des Activités du Programme D'Amélioration du Mil Pendant 1990".

- CNRA/Bambey, 1992a. "Rapport d'Activité sur l'Expérimentation Variétale Multilocale - Sorgho 1991", mars.
- CNRA/Bambey, 1992b. "Rapport d'un séminaire de concertation sur la recherche céréalière - Partenaires, Bambeby du 6 au 7 mai 1992 et séance de planning du programme céréale du vendredi 8 mai 1992", CNRA/Bambey, juin.
- Coly, Jean-Pierre, 1992. "Stage de Formation sur la Gestion d'une Station Expérimentale à Niamey du 9-2 au 6-3-92", juin.
- Commander, S., O. Ndoye and I. Ouédraogo, 1989. "The Impact of Structural Adjustment Programmes: Senegal 1979-88", In Structural Adjustment and Agriculture, Theory and Practice in Africa and Latin America, ed. S. Commander. London; O.D.I.
- Crawford, Eric, 1987. "L'Analyse Economique des Essais Zootechniques," ISRA/MSU International Development Reprint Paper No. 7F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric, 1990a. "Rapport de mission à l'ISRA: 15 au 27 Septembre 1990" préparé pour l'ISRA dans le contexte du projet ISRA/MSU/USAID de Recherche Agricole II, octobre.
- Crawford, Eric, 1990b. "Trip Report October 9-19, 1991". Trip Conducted in Support of the Senegal Agricultural Research II Project, October.
- Crawford, Eric, 1991a. "Esquisse de Présentation à l'Atelier: Méthodes pour l'évaluation de l'impact économique de la recherche agricole", novembre.
- Crawford, Eric, 1991b. "L'Analyse Economique des Essais Zootechniques", série ISRA/MSU Etudes et Documents, Vol. 4, No. 8.
- Crawford, Eric, 1991c. "Trip Report: October 9-19, 1991", Trip conducted in Support of the Senegal Agricultural Research II Project, Contract No. 685-0957-C-00-8004-00.
- Crawford, Eric et Mulumba Kamuanga, 1987. "L'Analyse Economiques des Essais Agronomiques Pour la Formulation des Recommandations aux Paysans," ISRA/MSU International Development Reprint Paper No. 6F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric and Mulumba Kamuanga, 1988. "Economic Analysis of Agronomic Trials for the Formulation of Farmer Recommendations," ISRA/MSU International Development Reprint Paper No. 6. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric and Mulumba Kamuanga, 1991. "L'Analyse Economique des Essais Agronomiques pour la Formulation des Recommandations aux Paysans", série ISRA/MSU Etudes et Documents, Vol. 4, No. 7.

- Crawford, Eric and Valerie Kelly, 1987. "A Field Study of Fertilizer Distribution and Use in Senegal, 1984: Summary Report," ISRA/MSU International Development Reprint Paper No. 8. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric and Valerie Kelly, 1988. "Enquête sur la Distribution et l'Utilisation de l'Engrais au Sénégal, 1984: Résumé Analytique," ISRA/MSU International Development Reprint Paper No. 8F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric, Curtis Jolly, Valerie Kelly, Philippe Lambrecht, Makhona Mbaye, and Matar Gaye, 1987a. "A Field Study of Fertilizer Distribution and Use in Senegal, 1984: Final Report," ISRA/MSU International Development Reprint Paper No. 11. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric, Curtis Jolly, Valerie Kelly, Philippe Lambrecht, Makhona Mbaye, et Matar Gaye, 1987b. "Enquête sur la Distribution et l'Utilisation de l'Engrais au Sénégal, 1984: Rapport Final," ISRA/MSU International Development Reprint Paper No. 11F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crawford, Eric W., 1987. "Economic Analysis of Livestock Trials," ISRA/MSU International Development Reprint Paper No. 7. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Crookston, Kent, 1989. "Maize Production in Senegal, Observations and Suggestions", prepared for the Senegal Agricultural Research II Project, October.
- Diangar, Saliou, 1991. "Rapport sur le Essais de Contre-Saison 1991 A Thiago", CNRA/Bambey, octobre.
- Diangar, Saliou, Limamoulaye Cissé et Kent Crookston, 1989. "Rapport Préliminaire: Recherche d'une dose optimale pour la fertilisation du maïs en culture pluviale", CNRA/Bambey, décembre.
- Diedhiou, Mamadou Lamine, 1988. "Notes sur le système d'Exploitation dos". Novembre.
- Diedhiou, Mamadou Lamine, 1989. "Session de formation au système d'Exploitation dos à l'Intention des techniciens supérieurs de l'ISRA". Janvier.
- Dieng, Alioune, 1992. "Recueil de statistiques sur les prix moyens mensuels et/ou annuels et sur la commercialisation des produits agricoles pendant la période de 1984 à 1989", juin.
- Dieng, Ndiaga, 1991. "Rapport de Mission aux Etats-Unis du 16 au 30 mars 1991", ISRA/DG, avril.
- Dieng, Ndiaga et Anne Williams Sidibé, 1992. "Etude sur les coûts indirects au niveau de l'Institut Sénégalais de Recherches Agricoles et étude de cas du CNRA/Bambey", projet ISRA/MSU/USAID de Recherche Agricole II, juin 1992.

- Dione, Cheikh Mbacké, 1989. "Rapport annuel: Projet SARII/MSU/USAID". décembre.
- Dione, Cheikh Mbacké et Mamadou Diop, 1989. "Embouche Paysanne: quelques résultats d'enquêtes", mars.
- Faye, Jacques, James Bingen, and Etienne Landais, 1988. "The Creation and Establishment of Production Systems Research in a National Agricultural Research Institute: The Senegal Experience," ISRA/MSU International Development Reprint Paper No. 22. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Fischer, Julie, 1989. "A Descriptive Analysis of Land Holdings in the Village of Lampsar", prepared for the ISRA/MSU/USAID Senegal Agricultural Research Project, August.
- Fofana, Amadou, 1990. "Sélection Mil, Rapport Analytique 1989", CNRA/Bambey, mai.
- Fofana, Amadou, 1991a. "Sélection Mil, Rapport Analytique 1990", CNRA/Bambey, avril.
- Fofana, Amadou, 1991b. "Sélection Mil, Rapport de Synthèse 1990", CNRA/Bambey, avril.
- Fofana, Amadou et M. Cissokho, 1991. "Sélection Mil, Rapport Analytique Contre-Saison 1991", CNRA/Bambey, octobre.
- Gaye, Abibou, 1991. "Genetic and Environmental Variation in an Intensely Cultured Black Locust (*Robinia pseudoacacia* L.) Half-Sib Progeny Test." Unpublished M.Sc. Thesis. East Lansing, Michigan State University, Department of Forestry.
- Gaye, Matar, 1988a. "Le credit informel en milieu rural Sénégalais: Enquete dans les regions de Fatick et de Kaolack". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Gaye, Matar, 1988b. "Les coopératives rurales au Sénégal et l'expérience de la responsabilisation". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Gaye, Moustapha, 1990. "Rapport sur les Résultats du Projet Financé par SAR/MSU/USAID pour l'année 1989", ISRA.
- Gleason, Lowell, 1988. "Report of Interviews with Personnel of Crop Production Section of ISRA, March 19-30, 1988", April.
- Hall, Tony, 1988. "Proposed Collaborative Program of Research Support for the Crop Production Research Department of the Institut Sénégalais de Recherches Agricoles, 1-5 October 1988", October.
- Holtzman, J.S., Ch. Ly, et Ch. M. Ndione, 1988. "La Commercialisation et l'Organisation de la Production du Bétail et de la Viande au Sénégal: Problèmes et Perspectives de Recherches". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.

- Holtzman, John, 1988. "Le Bétail et la Sécurité Alimentaire". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Institut Sénégalais de Recherches Agricoles, 1989. "Actes - Le Point sur la Recherche Agricole en Afrique, Journées de Réflexion en Afrique du 28 au 30 juin 1990", séminaire organisé par l'ISRA.
- Institut Sénégalais de Recherches Agricoles, 1992. "Compte Rendu des Journées de Réflexion sur la Gestion des Ressources Naturelles, Kaolack, du 26 au 28 février, 1992".
- ISRA/BAME, 1991. Briefing documents prepared by Mamadou Sidibé for the ISRA Director General on the millet, rice and maize subsectors, January.
- Jolly, C.M., M. Kamuanga, S. Sall and J.L. Posner, 1988a. "Farm Level Cereal Situation in Lower Casamance: Results of a Field Study," ISRA/MSU International Development Reprint Paper No. 27. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Jolly, C.M., M. Kamuanga, S. Sall et J.L. Posner, 1988b. "Situation Céréalière en Milieu Paysan en Basse Casamance: Résultats d'une Enquête de Terrain," ISRA/MSU International Development Reprint Paper No. 27F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Jolly, Curtis M., M. Kamuanga, S. Sall and J.L. Posner, 1991. "Situation Céréalière en Milieu Paysan en Basse Casamance: Résultats d'une Enquête de Terrain", série ISRA/MSU Etudes et Documents, Vol. 4, No. 13.
- Kamuanga, Mulumba and Joshua L. Posner, 1992. "Farming Systems Research in Southern Senegal: The Djibélor Experience (1982-1986)". ISRA/MSU International Development Reprint Paper No. 31. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Kelly, Valerie, and Ismael Ouédraogo, 1990. "Developing Fertilizer Policies for Sustainable Agricultural Growth: The Need to Move Beyond Panterritorial Policies", paper prepared for the 1991 International Agricultural Economists Association Meeting, November.
- Kelly, Valerie Auserehl, 1988a. "Acquisition and Use of Agricultural Inputs in the Context of Senegal's New Agricultural Policy: The Implications of Farmers' Attitudes and Input Purchasing Behavior for the Design of Agricultural Policy and Research Programs," ISRA/MSU International Development Reprint Paper No. 18. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Kelly, Valerie Auserehl, 1988b. "Acquisition et Utilisation d'Intrants Agricoles dans le Contexte de la Nouvelle Politique Agricole du Sénégal: Implications des Attitudes et du Comportement d'Achat d'Intrants des Exploitants pour l'Elaboration d'une Politique Agricole et de Programmes de Recherches," ISRA/MSU International Development Reprint Paper No. 18F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

- Kelly, Valerie Auserehl, 1988c. "Demande d'Engrais de la Part des Exploitants dans le Contexte de la Nouvelle Politique Agricole au Sénégal: Une Etude des Facteurs Influençant les Decisions d'Achat d'Engrais Prises par les Exploitants," ISRA/MSU International Development Reprint Paper No. 19F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Kelly, Valerie Auserehl, 1988d. "Farmers' Demand for Fertilizer in the Context of Senegal's New Agricultural Policy: A Study of Factors Influencing Farmers' Fertilizer Purchasing Decisions," ISRA/MSU International Development Reprint Paper No. 19. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Kelly, Valerie Auserehl, 1988e. "Vers une meilleure connaissance de la demande pour les engrais dans le Bassin Arachidier". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Kelly, Valérie Auserehl, 1991. "Demande d'Engrais de la Part des Exploitants dans le Contexte de la Nouvelle Politique Agricole au Sénégal: Une Etude des Facteurs Influençant les Décisions d'Achat d'Engrais prises par les Exploitants", série ISRA/MSU Etudes et Documents, Vol. 4, No. 10.
- Legal, Pierre-Yves, 1987. "Programme de Recherche sur les Systèmes de Production dans le Delta du Fleuve Sénégal, Premier Bilan et Propositions d'Actions", décembre.
- Manga, Seyni J. Louis, 1992. "Rapport de Stage de Formation sur la Gestion d'une Station Expérimentale à l'ICRISAT-Centre Sahélien au Niger", juin.
- Martin, Frederic and Alioune Dieng, 1988. "Foreign Trade of Agricultural Products and Inputs in Senegal from 1975 to 1984," ISRA/MSU International Development Reprint Paper No. 23. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Martin, Frédéric et Alioune Dieng, 1990. "Le Commerce Extérieur de Produits et d'Intrants Agricoles du Sénégal de 1975 à 1984," ISRA/MSU International Development Reprint Paper No. 23F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Martin, Frédéric, 1988a. "Analyse de la situation alimentaire du Sénégal à l'aide de l'exercice de modélisation effectué à l'ISRA/BAME". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Martin, Frédéric, 1988b. "Budgets de Culture au Sénégal." Annexe 3--"Budgets de Culture et Analyse des Marges dans la Vallée du Fleuve Sénégal". ISRA/MSU International Development Reprint Paper No. 28F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Martin, Frédéric, 1988c. "Budgets de Culture au Sénégal." Annexe 1- -"Budgets de Culture et Analyse des Marges dans le Bassin Arachidier". ISRA/MSU International Development Reprint Paper No. 28F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

- Martin, Frédéric, 1988d. "Budgets de Culture au Sénégal." Annexe 2--"Budgets de Culture et Analyse des Marges au Sénégal Orientale et en Casamance". ISRA/MSU International Development Reprint Paper No. 28F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Martin, Frédéric, 1988e. "Budgets de Culture au Sénégal". ISRA/MSU International Development Reprint Paper No. 28F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Martin, Frédéric, 1988f. "Présentation des budgets de culture au Sénégal construits à l'ISRA/BAME". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Martin, Frédéric, 1989. "Rapport de Consultation--Mission à l'ISRA", préparé pour l'ISRA et l'USAID/Sénégal dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II, avril.
- Martin, Frédéric, 1990a. "Documentation Technique sur le Modèle du Secteur Agricole du Sénégal élaboré à l'ISRA/BAME", juin.
- Martin, Frédéric, 1990b. "Rapport de Consultation-Mission à l'ISRA", préparé pour l'ISRA et l'USAID/Sénégal dans le cadre du projet de recherche agricole II, juin.
- Martin, Frédéric, 1991a. "Budgets de Culture au Sénégal: Annexe 1, Budgets de culture et analyses des marges dans le Bassin arachidier", série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1991b. "Budgets de Culture au Sénégal: Annexe 3. Budgets de culture et analyses des marges dans la Vallée du Fleuve Sénégal, série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1991c. "Budgets de Culture au Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 5.
- Martin, Frédéric, 1992. "Budgets de Culture au Sénégal: Annexe 2. Budgets de culture et analyses des marges au Sénégal Oriental et en Casamance", série MSU/ISRA Etudes et Documents, Vol. 4, No. 5.
- Mbaye, Demba F., 1991. "Rapport de Mission Effectuee au Corpus Christi, Texas State (07-12 Juillet) et a Manhattan (12-20 juillet 1991) Kansas State, U.S.A.", aout.
- Mbaye, Demba Farba, 1990. "Rapport de Mission aux Etats-Unis, KSU et Texas A&M du 15/04 au 04/05/90, CNRA Bambey, mai.
- Morris, Michael, 1988. "Etude sur la Commercialisation des Céréales dans la Région du Fleuve Sénégal: Méthodologie," ISRA/MSU International Development Reprint Paper No. 25F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

- Morris, Michael, 1991a. "Cereals Marketing in the Senegal River Valley," série ISRA/MSU Etudes et Documents, Vol. 4, No. 6.
- Morris, Michael, 1991b. "Etude sur la Commercialisation des Céréales dans la Région du Fleuve Sénégal: Méthodologie", série ISRA/MSU Etudes et Documents, Vol. 4, No. 12.
- Morris, Michael L., 1987. "Cereals Marketing in the Senegal River Valley (1985)," ISRA/MSU International Development Reprint Paper No. 4. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Muhtar, A. Hannibal, 1992. "Trip Report: April 3-17, 1992 - A Diagnostic Survey of Research Stations, ISRA", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, May.
- Ndiaye, Mamadou, 1989a. "Liaison-recherche-développement, Expérience de la Région du Fleuve". Document présenté à l'atelier sur "La Recherche-Développement" dans le cadre du PNVA, Djibélor du 3 au 5 octobre 1989, septembre.
- Ndiaye, Mamadou, 1989b. "Organisations paysannes et Politiques agricoles de Développement dans le Delta du Fleuve Sénégal". Communication présentée au séminaire sur les "Organisations de Producteurs et la Politique Agricole" à Michigan State University, East Lansing, juin.
- Ndiaye, Mamadou, 1990a. "Net Returns of Variable Corn and Soybean Cropping Systems." Unpublished M.Sc. Thesis. Minneapolis, University of Minnesota, Department of Agronomy.
- Ndiaye, Mamadou, 1990b. "Suivi-diagnostique du Périmètre de Thiagar - Résultats de la Campagne d'Hivernage 1989 - CRA/St-Louis, mars.
- Ndiaye, Mamadou, 1991a. "Contraintes à la production du maïs pluvial acquis et perspectives de recherche", document présenté dans le cadre de l'animation scientifique de la Direction des Recherches sur les Productions Végétales, mai.
- Ndiaye, Mamadou, 1991b. "Evaluation des Performances de variétés de maïs à la Station Nioro, ISRA/Nioro, janvier.
- Ndiaye, Mamadou, 1991c. "Note Succincte sur le Maïs Pluvial au Sénégal et son Exploitation en Culture Pure", août.
- Ndiaye, Mamadou, 1992a. "Propositions pour une harmonisation et une animation des activités de recherches en agronomie de la DRCSP", CNRA/Bambey, mars.
- Ndiaye, Mamadou, 1992b. "Rapport synthétique d'activités 1991, Agronomie/Phytotechnie Maïs Pluvial", ISRA/Nioro, février.
- Ndiaye, Mamadou et Mamadou Sidibé, 1991. "Recherche de formules d'engrais NPK économiquement rentables pour la culture du maïs pluvial", ISRA/Nioro, août.

- Ndiaye, Mamadou, Ganda Dème et Ibrahima Dioum, 1990. "Détermination des densités de peuplement optimales", ISRA/Nioro, décembre.
- Ndiaye, Mamadou, Ibrahima Dioum et Ganda Dème, 1991. "Recherche de formules d'engrais NPK pour la culture du maïs pluvial", ISRA/Nioro, janvier.
- Ndiaye, Mamadou, Ibrahima Dioum et Ganda Dème, 1992. "Rapport d'activité Phytotechnie Maïs Pluvial, Hivernage 1991", ISRA/Nioro, janvier.
- Ndiaye, Mamadou, Jean-Yves Jamin et Moustapha Gaye, 1989. "La Fertilisation Azotée et Phosphatée en Riziculture Irriguée dans le Delta, Résultats d'expérimentations en milieu paysan", ISRA/Saint-Louis, mai.
- Ndiaye, Samba Arona, 1991. "Rapport d'une Mission Effectuée aux USA par le Coordinateur du Programme d'Agroforesterie du 5 au 20 octobre 1991", novembre.
- Ndour, Babou, 1991. "Criteria for Agroforestry Research Planning in the Developing Countries: A Delphi Approach." Unpublished M.Sc. Thesis. Moscow, University of Idaho, Department of Agroforestry.
- Ndoye, O., D. Boughton et E. Crawford, 1991. "Politique de Fixation des Prix des Céréales au Sénégal: Synthèse d'Etudes Réalisées depuis l'Installation de la Nouvelle Politique Agricole", série ISRA/MSU Etudes et Documents, Vol. 4, No. 17.
- Ndoye, Ousseynou and Ismael Ouédraogo, 1988. "Commercialisation des Produits Agricoles dans le Bassin Arachidier. Situation Actuelle et Implications pour la Politique Agricole". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Ndoye, Ousseynou, Duncan Boughton and Eric Crawford, 1991. "Cereal Pricing in Senegal: Synthesis of Selected Studies Since the New Agricultural Policy", prepared for the Senegal Agricultural Research II Project, June.
- Ndoye, Ousseynou, Ismael Ouédraogo and Stephan Goetz, 1989. "The significance and cause of sene-gambian Rice Trade", paper presented at the CILSS/Club du Sahel Conference on Regional Grain Trade in West Trade in West Africa, Lomé, 6-10 novembre 1989, October.
- Ndoye, Ousseynou, 1992. "An Economic Analysis of Factors Affecting Millet Production and Transactions in the Peanut Basin of Senegal." Unpublished Ph.D. dissertation. East Lansing, Michigan State University, Department of Agricultural Economics.
- Newman, Mark D., 1987. "Grain Marketing in Senegal's Peanut Basin: 1984/85 Situation and Issues," ISRA/MSU International Development Reprint Paper No. 14. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Newman, Mark D., Alassane P. Sow, and Ousseynou Ndoye, 1987. "Private and Public Sectors in Developing Country Grain Markets: Organizational Issues and Options in Senegal,"

ISRA/MSU International Development Reprint Paper No. 12. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark D., Ousseynou Ndoye, et Alassane P. Sow, 1988. "Céréales Locales et Céréales Importées au Sénégal: La Politique Alimentaire à Partir des Systèmes de Commercialisation," ISRA/MSU International Development Reprint Paper No. 15F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark D., Ousseynou Ndoye, and Alassane P. Sow, 1987. "Tradeoffs Between Domestic and Imported Cereals in Senegal: A Marketing Systems Perspective," ISRA/MSU International Development Reprint Paper No. 15. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark D., P. Alassane Sow and Ousseynou Ndoye, 1988a. "Regulatory Uncertainty and Government Objectives for the Organization and Performance of Cereal Markets: The Case of Senegal," ISRA/MSU International Development Reprint Paper No. 24. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark D., P. Alassane Sow et Ousseynou Ndoye, 1988b. "Incertitude Réglementaire, Objectifs Gouvernementaux, Organisation et Performances des Marchés Céréalières: Le Cas du Sénégal," ISRA/MSU International Development Reprint Paper No. 24F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark, Eric Crawford, and Jacques Faye, 1987a. "Policy Relevant Research on the Food and Agricultural System in Senegal," ISRA/MSU International Development Reprint Paper No. 10. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Newman, Mark, Eric Crawford, et Jacques Faye, 1987b. "Orientations et Programmes de Recherche Macro-Economiques sur le Système Agro-Alimentaire Sénégalais," ISRA/MSU International Development Reprint Paper No. 10F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

Niang, Saliou, 1992. "Rapport de Stage de formation sur La Gestion de la Station Expérimentale du 9/02 au 6/03/92", ISRA/Nioro, mars.

Ouédraogo, Ismael, 1992. "Lessons Learned From the ISRA/MSU/USAID Project's Economic Programs, 1986-1991." Prepared for ISRA and USAID/Senegal, SARII Project, June.

Ouédraogo, Ismael, 1991a. "Agricultural Input Marketing in St-Louis Region, Survey Results: 1989-90", prepared for ISRA and USAID/Senegal, SARII Project, February.

Ouédraogo, Ismael, 1991b. "Commercialisation des Intrants Agricoles dans la Région de Saint-Louis (Sénégal): Résultats d'Enquête 1989-90", série ISRA/MSU Etudes et Documents, Vol. 4, No. 16.

Ouédraogo, Ismael, 1991c. "End-Of-Tour Report", prepared under the ISRA/MSU/USAID SARII Project, February.

- Ouédraogo, Ismael, 1991d. "Village-Level Rice Milling in the Delta of the Senegal River Valley: 1988". Report prepared under Senegal Agricultural Research II Project, September.
- Ouédraogo, Ismael and Mamadou Sidibé, 1990. "Propositions pour revitaliser le BAME, Miméo, ISRA-D/Systèmes, Dakar, octobre.
- Ouédraogo, Ismael and Ousseynou Ndoye, 1988. "Guide de collecte des prix agricoles en Afrique du Sud du Sahara: leçons tirées du Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Ouédraogo, Ismael et Babacar Faye, 1989. "Mythe et Réalité de la surtaxe d'enregistrement des groupements d'intérêt économique dans la région de Saint-Louis", juillet.
- Ouédraogo, Ismael et M. Sidibé, 1991. "Le Système d'Information sur les Prix Agricoles au Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 18.
- Ouédraogo, Ismael et Mamadou Sidibé, 1990. "Le système d'information sur les prix agricoles au Sénégal". Rapport préparé pour le séminaire sur les systèmes d'information et les marchés céréaliers dans le sahel organisé par le CILSS à Bamako au Mali, avril.
- Ouédraogo, Ismael et Ousseynou Ndoye, 1988. "Les marges et coûts de commercialisation des céréales dans le Bassin Arachidier". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Ouédraogo, Ismael, Mamadou Sidibé, Lamine Diedhiou et Babacar Faye, 1989. "Evaluation du système d'information sur les prix du commissariat à la sécurité alimentaire: rapport final, mars.
- Posner, J.L., 1988a. "A Contribution to Agronomic Knowledge of the Lower Casamance (Bibliographical Synthesis)," ISRA/MSU International Development Reprint Paper No. 17. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Posner, J.L., 1988b. "Contribution à la Connaissance Agronomique de la Basse Casamance (Synthèse Bibliographique)," ISRA/MSU International Development Reprint Paper No. 17F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Posner, J.L., M. Kamuanga and S. Sall, 1988a. "Production Systems in the Lower Casamance and Farmer Strategies in Response to Rainfall Deficits," ISRA/MSU International Development Reprint Paper No. 20. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Posner, J.L., M. Kamuanga et S. Sall, 1988b. "Les Systèmes de Production en Basse Casamance et les Stratégies Paysannes Face au Deficit Pluviométrique," ISRA/MSU International Development Reprint Paper No. 20F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

- Posner, J.L., M. Kamuanga et S. Sall, 1991. "Les Systèmes de Production en Basse Casamance et les Stratégies Paysannes Face au Deficit Pluviométrique", série ISRA/MSU Etudes et Documents, Vol. 4, No. 11.
- Posner, Josh, 1991. "Contribution à la Connaissance Agronomique de la Basse Casamance: Synthèse Bibliographique", série ISRA/MSU Etudes et Documents, Vol. 4, No. 9.
- Posner, Joshua, Mulumba Kamuanga, and Mamadou Lô, 1991. "Lowland Cropping Systems in the Lower Casamance of Senegal: Results of Four Years of Agronomic Research (1982-1985)". ISRA/MSU International Development Reprint Paper No. 30. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Robert, Pierre, 1990. "Caractérisation et Inventaire des Sols en vue de leur utilisation en Agriculture", rapport d'une mission du 26 septembre 1990 au 9 octobre 1990 au Sénégal, Département de Sciences du Sol, Université du Minnesota, St-Paul, Minnesota, novembre.
- Rodale International et l'ISRA, 1991. "Séminaire-Paysan sur la Gestion des Ressources Naturelles pour la Conservation et la Restauration des Sols au Sénégal du 27 au 29 octobre 1991 au CFTAD de Pout".
- Sane, Gabriel et Papa Faye, 1992. "Rapport de Stage: Gestion de la Station Expérimentale (ICRISAT- Centre Sahélien Niamey (Niger))", juin.
- Sarr, Desire Y., 1988. "Les sections villageoises et l'approvisionnement des exploitations agricoles en facteurs de production (étude de cas dans la communauté rurale de Kaymor)". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Sarr, Desire Yande, 1990. "Segmentation of Family Farms Within Two Ethnic Groups in Senegal: The Serer and Wolof." Unpublished Ph.D. dissertation. East Lansing, Michigan State University, Department of Rural Sociology.
- Sarr, Mamadou, 1992. "Rapport du Cours de Formation sur "La Gestion de la Station de Recherche Agricole du 09 Février au 06 Mars 1992 à Niamey - Niger", juin.
- Schillhorn van Veen, Tjaart, 1989a. "MSU/ISRA Graduate Training Program - Evaluation of Training during 1981-1989", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989b. "Notes regarding ISRA's consulting services", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989c. "Notes regarding ISRA's supervisory boards", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.

- Schillhorn van Veen, Tjaart, 1989d. "Notes sur le Département des Recherches sur les productions végétales", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989e. "Observations concernant la vulgarisation, après l'atelier du PAGRI au LNERV-Hann", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989f. "Options for ISRA Facilities", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, January.
- Schillhorn van Veen, Tjaart, 1989g. "Preliminary Report on International Travel at ISRA, 1986-1989", rapport interne préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1989h. "Some notes on the history of Agricultural Research in Senegal", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project.
- Schillhorn van Veen, Tjaart, 1989i. "Suggestions on Information". Management note number 2, prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research II.
- Schillhorn van Veen, Tjaart, 1990a. "A Summary of Crop Production Research in Senegal", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, January.
- Schillhorn van Veen, Tjaart, 1990b. "Evaluation et Suggestions Relatives à la Gestion de l'ISRA", préparé pour l'ISRA dans le cadre du projet ISRA/MSU/USAID de Recherche Agricole II au Sénégal, avril.
- Schillhorn van Veen, Tjaart, 1990c. "Report of a Mission to Dakar, May 1990", prepared for ISRA in the context of the ISRA/MSU/USAID Senegal Agricultural Research Project, May.
- Seck, Abdoulaye et Mamadou Sidibé, 1991. "Rentabilité des Exploitations Maraichères: Mythe ou Réalité". Bulletin de Liaison, Numéro 3, du 31 octobre 1991, Coopération Régionale pour le Développement des Productions Maraichères en Afrique, FAO, octobre.
- Sène, Maniével, 1991. "Rapport de Mission Effectuée aux Etats- Unis du 7 au 26 Septembre 1991". Centre National de Recherches Agronomiques de Bambey, Novembre.
- Seyler, James, 1989. "Agro-Forestry Research in Senegal: Problems and Potential", October.

- Seyler, James, 1990. "An Investigation of Internal and External Biophysical and Socio-Economic Factors Relating to the Decline, Maintenance and/or Replication of the Acacia albida System in Senegal's North Central Peanut Basin, Interim Report", prepared for USAID/Senegal and ISRA, SARI Project, February.
- Sidibé, Mamadou, 1988. "Développement Agricole et Croissance Démographique au Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Sidibé, Mamadou, 1989a. "Compte-rendu de mission: séminaire sur les Stratégies et Politiques Alimentaires au Sahel à l'Université de Ouagadougou du 12 au 15 juin 1989", juin.
- Sidibé, Mamadou, 1989b. "Participation de l'ISRA au Document Introductif du Séminaire sur la gestion de l'Information et la Sécurité Alimentaire du 16 au 18 octobre 1989". Séminaire organisé conjointement par le Ministère du Développement Rural, la Direction de l'Agriculture et le Centre Européen de Gestion de Politiques de Développement, octobre.
- Sidibé, Mamadou, 1989c. "Simulation des Effets du Risque dans une allocation optimale des Ressources Agricoles: cas de la Vallée du Fleuve Sénégal". Mémoire de titularisation, ISRA, mars.
- Sidibé, Mamadou, 1989d. "Système de Support à la Décision en Agriculture". Note d'information, juillet.
- Sidibé, Mamadou, 1990a. "Analyse Econométrique des Prix du Mil aux Producteurs", draft, juin.
- Sidibé, Mamadou, 1990b. "Note Récapitulative de l'ISRA sur le Cadre Institutionnel des Echanges Céréaliers dans le Sahel", note contributive de l'ISRA préparé pour le Comité du CILSS sur l'Espace Céréalière, juillet.
- Sidibé, Mamadou, 1991a. "Ajustement Structurel en Agriculture: Impact d'une baisse du prix du paddy sur les stratégies optimales des producteurs de la moyenne vallée ", présenté au concours du Prix du Président pour les Sciences, ISRA/BAME, mars.
- Sidibé, Mamadou, 1991b. "Ajustement Structurel en Agriculture: Impact d'une Baisse de Prix du Riz Paddy sur les Stratégies Optimales des Producteurs dans la Vallée du Fleuve Sénégal", série ISRA/MSU Etudes et Documents, Vol. 4, No. 15.
- Sidibé, Mamadou, 1991c. "Analyse de la Rentabilité Financière des Cultures dans le Sud-Est du Bassin Arachidier", préparé pour le Comité des Intrants du Ministère du Développement Rural et de l'Hydraulique, février.
- Sidibé, Mamadou, 1991d. "Note d'information suite à la mission d'évaluation du projet hollandais à l'Ile à Morphil du 2 au 5 octobre 1991". Mission effectuée à la demande de l'Unité de Politiques Agricoles au Ministère du Développement Rural et de l'Hydraulique, octobre.

- 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.
- Sidibé, Mamadou, 1991f. "Note d'information sur les Engrais". Elaborée à la demande du Directeur Général de l'ISRA, décembre.
- Sidibé, Mamadou, 1991g. "Options de Développement Rural et Emploi au Sénégal: Thème introductif pour le Symposium National sur l'Emploi", juillet.
- Sidibé, Mamadou, 1991h. "Rapport de mission à l'atelier régional du PRISAS sur le Bilan des Etudes et Priorités de Recherches sur les Politiques de Sécurité Alimentaire au Sahel à Bamako au Mali du 6 au 9 mai 1991", mai.
- Sidibé, Mamadou, 1991i. "Rapport de mission à l'atelier régional du PRISAS sur le Bilan des Etudes et Priorités de Recherches sur les Politiques de Sécurité Alimentaire au Sahel à Bamako au Mali du 24 au 29 novembre 1991", décembre.
- Sidibé, Mamadou et Abdoulaye Sadio, 1988. "Effets de la croissance démographique sur l'Auto-suffisance Alimentaire et les coûts de céréales au Sénégal". Bureau National de Recensement, avril.
- Sidibé, Mamadou et Abdoulaye Seck, 1991. "Note d'information sur le BAME". Elaborée à la demande du Directeur Général de l'ISRA, novembre.
- Siebert, Jay Dee, 1991. "Document d'Etude sur la Reorganisations du BAME", Direction Générale/ISRA, juin.
- Siebert, Jay Dee, 1992a. "End-of-Tour Report", ISRA/MSU/USAID Senegal Agricultural Research Project, May.
- Siebert, Jay Dee, 1992b. "Aperçu sur les activités des agronomes au Botswana", note préparée à l'occasion de la Réunion du groupe disciplinaire des agronomes de la DRCSP, ISRA à Bambey le 21 avril.
- Siebert, Jay Dee, 1992c. "Réflexions sur la gestion du personnel à l'ISRA", note préparée à l'intention du DG de l'ISRA, Décembre.
- Sow, P. Alassane and Mark D. Newman, 1988a. "The Regulation and Organization of Cereal Markets in Senegal: Report on the Marketing Campaigns of 1983/84 and 1984/85" ISRA/MSU International Development Reprint Paper No. 26. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.
- Sow, P. Alassane et Mark D. Newman, 1988b. "La Réglementation et l'Organisation des Marchés Céréalières au Sénégal: Situation des Campagnes des Commercialisation 1983/84 et 1984/85," ISRA/MSU International Development Reprint Paper No. 26F. East Lansing, MI: Dept. of Agricultural Economics, Michigan State University.

- Staatz, John, 1990. "Report on Trip to Montpellier, France and Dakar, Senegal, 8-20 September 1990", prepared for the Food Security in Africa Cooperative Agreement and the Senegal Agricultural Research Project, MSU, October.
- Tefft, James, 1991a. "Trip report to Senegal, May 9 to May 17, 1991", ISRA/MSU/USAID Senegal Agricultural Research Project, Dakar, May.
- Tefft, James, 1991b. "Une analyse économique des essais variétaux et agronomiques à l'institut sénégalais de recherches agricoles, rapport préparé pour l'USAID/Sénégal et l'ISRA dans le cadre du projet de recherche agricole II au Sénégal, juin.
- Touré, Oussouby, 1988. "Structure et Fonctionnement des Exploitations Agricoles de Diawar (Delta du Fleuve Senegal)", décembre.
- Tourrand, Jean-François, 1988. "Les Acquis de la Recherche sur l'Élevage dans la Vallée du Fleuve Sénégal". Paper presented at the ISRA/MSU Conference on Food and Agricultural Policy in Senegal, Dakar, 7-8 July, 1988.
- Trouche, G. et S. Samb, 1991. "L'Amélioration Variétale du Sorgho au Sénégal", Communication Atelier Réseau Sorgho, SAFGRAD-ICRISAT à Niamey, mars.
- Trouche G., S. Samb et M. Cissokho, 1991. "Amélioration Variétale du Sorgho- Région du Fleuve Sénégal, Rapport Analytique Hivernage 1990". CNRA/Bambey, février.
- Trouche, G. S. Samb, M. Ndiaye, O. Hann, 1990. "Amélioration Variétale du Sorgho, Rapport Analytique Contre-Saison 1989-90", CNRA/Bambey, août.
- Trouche G., S. Samb, O. Hann, et B. Sall, 1991. "Amélioration variétale du sorgho, zones de culture pluviale, Rapport Analytique Hivernage 1990", CNRA/Bambey, avril.
- Trouche, Gilles, 1990a. "Amélioration Variétale du Sorgho, Région de Fleuve, Sénégal, Rapport Analytique 1989", CNRA/Bambey, mars.
- Trouche, Gilles, 1990b. "Rapport de Synthèse 1989-1990", CNRA/Bambey, septembre.
- Trouche, Gilles, 1991a. "Rapport de Mission aux Etats-Unis (Nebraska, Kansas, Texas), Centre National de Recherches Agronomiques, Novembre.
- Trouche, Gilles, 1991b. "Programme Sorgho, Rapport de Synthèse 1990", CNRA/Bambey, avril.
- Trouche, Gilles, B. Sall et O. Hann, 1992. "Amélioration Variétale du Sorgho Pluvial, Rapport Analytique, Hivernage 1991", avril.

- Trouche, Gilles, et Moussa Cissokho, 1992. "Amélioration Variétale du Sorgho: Région du Fleuve Sénégal - Rapport Analytique Hivernage 1991", ISRA, Direction de Recherches sur les Cultures et les Systèmes Pluviaux, CNRA/Bambey, mars.
- USAID Forestry Project, 1991. Inauguration de la Station de Recherche de Fanaye. Prepared for ISRA and USAID, Senegal Agricultural Research II Project, 1991. Videocassette.
- Wade, Daour, 1992. L'ISRA et ses partenaires. Prepared for ISRA under the ISRA/MSU/USAID Senegal Agricultural Research II project, June, 1992. Videocassette.
- Williams, Anne, 1992. "End-of-Tour Report," ISRA/MSU/USAID Senegal Agricultural Research II Project, June.
- Williams-Sidibé, Anne, 1991a. "Characteristics of Millet Collectors in the Peanut Basin from 1986 to 1989", prepared for the ISRA/MSU/USAID Senegal Agricultural Research Project, June.
- Williams-Sidibé, Anne, 1991b. "Trip Report: March 16-30, 1991", ISRA/MSU/USAID Senegal Agricultural Research Project, April.
- Yeboah, Anthony, 1988. "Consultancy Report: May 20 to June 4, 1988". Prepared for the ISRA/MSU/USAID Senegal Agricultural Project II, June.

## **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 Burkinal 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
- Mathematical Programming for Economic Analysis in Agriculture*, P.B.R. Hazel and R.D. Norton
- 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. Cochran

*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**

<b>NAME</b>	<b>DATES OF VISIT</b>	<b>PERSON-MONTHS</b>	<b>PURPOSE OF VISIT</b>
Lowell Gleason	March 19-30, 1988	.40	Interview for long-term technical assistance Agronomist position under SARII.
Anthony Yeboah	May 20 - June 4, 1988	.50	Monitoring of FSR programs at St. Louis and Djibelor.
James Bingen	June 27 - July 14, 1988	.60	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
Eric Crawford	June 27 - July 14, 1988	.60	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
John Holtzman	July 4-16, 1988	.43	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
Frederic Martin	July 1-10, 1988	.33	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
Ousseynou Ndoye	July 4-16, 1988	.43	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
Joshua Posner	July 6-9, 1988	.13	Participation in MSU/ISRA/USAID Conference on Agricultural Policy in Senegal.
Julie Fischer	July 7 - August 18, 1988	1.40	Land tenure in the Fleuve Region of Senegal.
James Seyler	September 9-24, 1988	.53	Monitoring of the Agroforestry Program in Collaboration with ISRA/DRPF.
Tony Hall	October 1-5, 1988	.17	Preliminary discussions on the Cereals Advisory Team (CAT) approach proposed by MSU and ISRA.
Ahmed Bouaziz	October 1-5, 1988	.17	Preliminary discussions on the CAT approach.

## Appendix 5 (continued)

NAME	DATES OF VISIT	PERSON-MONTHS	PURPOSE OF VISIT
Dale Hicks	October 1-5, 1988	.17	Preliminary discussions on the CAT approach.
Larry Tombaugh	December 1-4, 1988	.13	Consultancy with ISRA/DRPF.
David Andrews	December 1-5, 1988	.17	CAT program design for 1989 and 1990.
Total person-months for 1988		6.16	
Frederic Martin	March 30 - April 12, 1989	.43	Monitoring of ISRA's Food Security Program.
James Bingen	April 21-30, 1989	.33	Monitoring of the Senegal Agricultural Research II Project.
Kent Crookston	September 27 - October 11, 1989	.50	Monitoring of CAT-Maize Program.
David Andrews	October 7-13, 1989	.23	Monitoring of CAT millet/sorghum activities.
James Seyler	September 1 - December 31, 1989	4.00	Agroforestry study on <i>Acacia albida</i> .
Total Person-Months for 1989		5.49	
James Seyler	January 1 - July 31, 1990	7.00	Agroforestry study on <i>Acacia albida</i> .
Eric Crawford	April 21-26, 1990	.20	Monitoring of Food Security Program; discussions with ISRA/USAID concerning project extension.
Tjaart Schillhorn Van Veen	May 5-14, 1990	.33	Discussions with ISRA's Director General regarding the restructuring of ISRA.
Frederic Martin	May 25 - June 6, 1990	.40	Monitoring of the Food Security Program.
James Bingen	June 20-30, 1990	.37	Participate in the workshop on the "Enjeux de la Recherche" and monitoring of the contract's activities.

Appendix 5 (continued)

NAME	DATES OF VISIT	PERSON-MONTHS	PURPOSE OF VISIT
John Staatz	September 8-20, 1990	.43	Participate in meetings of Socio-economic disciplinary group.
Eric Crawford	September 15-27, 1990	.43	Participate in socio-economic disciplinary group workshops.
Pierre Robert	September 26 - October 10, 1990	.50	Recommendations for possible soil fertilization activities.
Larry Clafin	October 10-15, 1990	.20	Monitoring of the cereal phytopathology program.
<b>Total Person-Months for 1990</b>		<b>9.86</b>	

## Appendix 5 (continued)

NAME	DATES OF VISIT	PERSON-MONTHS	PURPOSE OF VISIT
James Tefft	May 10-17, 1991	.27	Prepare economic analysis of variety trials and lead two workshops in St. Louis and in Bambey.
Larry Clafin	September 30 - October 10, 1991	.37	Monitoring of the cereal phytopathology program.
Eric Crawford	October 9-19, 1991	.37	Monitoring of the Food Security program and technical assistance in the area of the economic impact of agricultural research.
David Andrews	November 23-27, 1991	.17	Monitoring of the millet and sorghum breeding and agronomy programs.
Total Person-Months for 1991		1.18	
8 Hannibal Muhtar	April 3-17, 1992	.50	Visit of ISRA's research centers and diagnosis of the constraints and potential inherent in the management of these centers.
Total Person-Months for 1992		.50	
Total Person-Months for Jan. 1988 - June 1992		23.19	

**APPENDIX 6. Training**

APPENDIX 6.1 List of In-Country Workshops

Research Program	Date and Location	Description of Training	Type of Training	Principal Presenters
Cereals Production	Nov. 23-29, 1988 at CDH; Dec. 5-9 at Djibélor; Dec. 2-16 at Kaolack; Dec. 19-26 at Bambey; Jan. 9-13, 1989 at St. Louis	Phase I of training on computer use and statistical analysis (57 participants)	updating technical skills	Lamine Diedhiou, ISRA Biometrician
	Nov. 13-21, 1989 at CDH; Nov. 27 to Dec. 6, 1989 at CNRA/Bambey; Dec. 11-19, 1989 in Kaolack and Jan. 3-12, 1990 in Djibélor	Phase II of training on general computer use, introduction to the use of selected computer applications programs (MSTAT) and introductory statistics for ISRA technicians (52 technicians attended)	updating technical skills	Lamine Diedhiou, ISRA Biometrician
	October 8, 1990 (Bambey)	Discussion on soil mapping and soil fertility (25 researchers attended)	sensitizing/ updating technical skills	Pierre Robert, STTA
	October 16, 1990 (Bambey)	Discussion on sorghum breeding in Africa - (12 researchers attended)	updating technical skills	David Andrews, STTA
	October 25, 1990 (Bambey)	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)	updating technical skills	Larry Clafin, STTA
	February 4 to 8, 1991 (Bambey)	Discussion on experimental design, statistical analysis and a review of DOS operating system for ISRA researchers (12 researchers attended)	updating technical skills	Lamine Diedhiou, ISRA Biometrician
	May 14 (in Bambey) and May 16, 1991 (in St-Louis)	Discussion on the economic analysis of breeding and agronomy trials (30 researchers and other ISRA staff attended)	sensitizing/ updating technical skills	James Tefft, STTA, Agricultural Economist
Applied Economics: Food Security Program	July 7 and 8, 1988	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)	communication of research results; dialogue with policy makers	I. Ouedraogo, O. Ndoye, M. Sidibé, Matar Gaye, Ch. Ndione, F. Martin, V. Kelly, J. Holtzman, J. Tourrand
	July 17 to 19, 1989 (Dakar)	Discussions with Gambian GARD project researchers on ISRA's simulation model (3 researchers attended)	regional dialogue and cooperation	Mamadou Sidibé, ISRA researcher, Food Security Program

## Appendix 6.1 (continued)

Research Program	Date and Location	Description of Training	Type of Training	Principal Presenters
	September 20 to 22, 1989 (St-Louis)	Presentation of ISRA's simulation model (crop budgets, linear programming model, calculation of margins) (8 researchers and collaborators from development agencies attended)	sensitizing/ collaboration with development agencies	Mamadou Sidibé, ISRA researcher, Food Security Program
	December 2, 1989 (Dakar)	Presentation to the Commissariat à la Sécurité Alimentaire on the ISRA Simulation Model (10 people)	policy dialogue/ collaboration with decision makers	Mamadou Sidibé, ISRA researcher, Food Security Program
	May 30, 1990 (Dakar)	Presentation of ISRA's simulation model and discussion of potential areas of collaboration with government decision makers (ISRA DG and ISRA scientific directors attended)	sensitizing/ improving information exchange within ISRA	Frédéric Martin, STTA, Agricultural Economist and Mamadou Sidibé, ISRA researcher, Food Security Program
	September 1, 1990 (Dakar)	Discussion on food security issues and the ISRA Crop Budgets presented to the Committee on Agricultural Inputs (10 people attended)	policy dialogue/ collaboration with decision makers	Mamadou Sidibé, ISRA researcher, Food Security Program
	September 17, 1990 (Dakar)	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)	policy dialogue/ collaboration with decision makers and other researchers	John Staatz, STTA, MSU Agricultural Economist
	November 8, 1990 (Dakar)	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)	communication of research results	Mamadou Sidibé, ISRA researcher, Food Security Program
	November 28, 1990	Presentation of the ISRA Simulation Model and crop budgets to ISRA/Bambey agronomists and breeders (10 researchers attended)	sensitizing/ updating technical skills and improving collaboration between agricultural economists and agronomists	Mamadou Sidibé, ISRA researcher, Food Security Program
Applied Economics: Cereals Marketing Program	September 27, 1990 (Saint-Louis)	Discussion with ISRA researchers and research directors on the research findings of marketing of agricultural inputs in the Fleuve (8 people)	communication of research results/ collaboration with decision makers	Ismael Ouédraogo, LTTA, Agricultural Economist

## Appendix 6.1 (continued)

Research Program	Date and Location	Description of Training	Type of Training	Principal Presenters
	January 15, 1991 (Dakar) and January 17, 1991 (St-Louis)	Discussion with decision makers and ISRA researchers on the research findings on the privatization of agricultural inputs in the Fleuve region (20 people)	sensitizing/ dialogue with decision makers and researchers	Ismael Ouédraogo, LTTA, Agricultural Economist
Applied Economics: ISRA Socio-Economics Disciplinary Group	July 27, 1990 (Dakar)	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)	improving effectiveness of agricultural economists	Papa Abdoulaye Seck, ISRA researcher, Agricultural Economist and Mamadou Sidibé, ISRA researcher, Food Security Program
	September 18, 1990 (Dakar)	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)	improving effectiveness of agricultural economists	Ismael Ouédraogo, Ag. Economist; Eric Crawford, Project Director; Mamadou Sidibé, ISRA economist
	January 9, 1991 (Dakar)	Meeting of the Disciplinary Group held to discuss position papers requested by ISRA's Director General (8 researchers attended)	improving effectiveness of agricultural economists	Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists
	May 14, 1991 (Bambey)	Meeting of the Disciplinary Group to discuss the role and responsibilities of ISRA's socio-economists in Natural Resource Management (6 people attended)	improving effectiveness of agricultural economists	Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists
	June 24, 1991 (Dakar)	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)	improving the effectiveness of agricultural economists	Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists
	July 8, 1991 (St-Louis)	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)	improving the effectiveness of the agricultural economists	Papa Abdoulaye Seck and Mamadou Sidibé, ISRA researchers and agricultural economists
Research Planning	October 26, 1991 (Bam'ey)	Workshop on the Techniques of Evaluation of Research Impact (30 researchers and ISRA staff attended)	sensitizing/ updating technical skills	Eric Crawford, MSU project director, Agricultural Economist

Appendix 6.1 (continued)

Research Program	Date and Location	Description of Training	Type of Training	Principal Presenters
	Oct. 27-29, 1991 (Pout, Senegal)	Workshop on "Natural Resource Management and Soil Conservation" (20 farmers and 15 farmer agricultural support organizations attended). Organized by Rodale International and financed by SARII	farmer-researcher-development collaboration	Organized by Rodale International, Thiès, Senegal
	Feb. 26-28, 1992 (Kaolack)	Workshop on "Natural Resource Management and Soil Conservation" (40 researchers, farmers and support organizations attended). Organized by ISRA/Kaolack and financed by SARII	Farmer-researcher-development collaboration	Organized by ISRA/Kaolack (Désiré Sarr)
	May 6-7, 1992 (Bambey)	Program Planning Workshop for ISRA's Rainfed Cereals Program based at ISRA/Bambey (50 farmers, researchers and support organizations attended). Organized by SARII and ISRA.	Strategic Program Planning with participation from farmers and support organizations	Organized jointly by ISRA (Demba F. Mbaye) and SARII (Jay Siebert)

**APPENDIX 6.2 List of Short-Term Study Trips**

<b>NAME</b>	<b>COLLABORATING UNIVERSITY</b>	<b>PURPOSE OF TRIP</b>	<b>PERIOD OF TRAINING (d/m/y)</b>	<b>PLACE OF WORK</b>
Mamadou NDIAYE	M.S.U.	Participate in a workshop on the role of producer groups in rural development and development policy.	24/6-1/7/89	ISRA/St-Louis
Boubacar BARRY	M.S.U.	Together with Professor Bralts, participate in a work session to evaluate the research program on water management in lower casamance and identify future program objectives and activities.	11-21/5/88	ISRA/Djibélor
Désiré SARR	M.S.U.	Receive 9 months of training in survey methodology and statistics.	22/3-31/12/88	ISRA/Kaolack
Alioune DIENG	Economics Institute Boulder, Colorado	Receive diploma training in Economics at the Economics Institute in Boulder, Colorado.	7/7/88-30/5/89	ISRA/BAME
Amadou FOFANA	University of Nebraska-Lincoln	Together with Professor Andrews, evaluate ISRA's millet research program and identify future program objectives and activities.	23/9-1-/10/88	ISRA/Bambey
Cheikh Mbacké DIONE	M.S.U.	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.	11-21/5/88	ISRA/Dahra
Cheikh LY	M.S.U.	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.	11-21/5/88	ISRA/St-Louis
Samba SALL	M.S.U.	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.	1/1-1/9/89	ISRA/Djibélor

## Appendix 6.2 (continued)

NAME	COLLABORATING UNIVERSITY	PURPOSE OF TRIP	PERIOD OF TRAINING (d/m/y)	PLACE OF WORK
Demba F. MBAYE	1) K.S.U/ U. of Nebraska - Lincoln 2) Texas U. and K.S.U	1) Work in Professor Claflin's phytopathology laboratory at KSU and hold work sessions with Professor Frederiksen and Odvody, Texas A&M experts. 2) Participate in the INTSORMIL conference at Corpus Christi and work in Dr. Claflin's laboratory at KSU.	1) 15/4/90 4/5/90 2) 5-20/7/91	ISRA/Bambey
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/Bambey
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/ Secrétariat Général
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/Bambey
Samba NDIAYE	M.S.U., Florida, Idaho, Arizona	Participate in the AFSR/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 Gabriel SANE Seyni MANGA Saliou NIANG Antoine KOREA Mamadou SARR Jean-Pierre COLY	Niamey, Niger	Participate in the ICRISAT/University of Arkansas workshop on the "Management of Research Centers".	9/2-6/3/92	Ndiol/Fleuve Fanaye/Fleuve CNRA/Bambey CRA/Nioro Ferme Sangal. CDH CRA/Djibelor